

## California Coastal Commission Permitted Nature-Based Adaptation Strategy Projects

Updated 2025

The Coastal Commission has put together a list of permitted Nature-Based Adaptation Strategy (NBAS) projects. The list documents various NBAS projects approved across the state and serves as a resource for applicants and practitioners to access more information regarding each project. Each project entry includes:

- Location (by city, or marked as unincorporated county if applicable)
- Project description and outcome (includes intended project outcomes as proposed or approved, as well as observed outcomes where evaluation has been completed. Many projects are still in progress, and outcomes are subject to change.)
- Relevant Coastal Act sections (as noted in the staff report, or generalized for waivers). The sections are categorized by theme under the "Coastal Act Section Info" Tab.
- Link to the most comprehensive staff report or waiver

Please note that the list provides examples of approved projects to help inform NBAS planning and implementation efforts; it is not a comprehensive inventory of all NBAS projects approved by the Commission. The list will be updated periodically. Please email [statewideplanning@coastal.ca.gov](mailto:statewideplanning@coastal.ca.gov) with questions.

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Project Name	Location	Objective(s)	Description and Outcomes	Year Permitted	Year Completed	CDP #(s)	Coastal Act Sections
Elk Creek Bridge Replacement Project	Unincorporated Mendocino County	Bridge replacement; scour control; habitat restoration; infrastructure protection	This nature-based adaptation strategy will replace the existing unvegetated rock slope protection armoring along the creek bank near the Highway 1 bridge with a bioengineered root wad revetment. This project will use logs and natural materials to stabilize the bank and restore riparian vegetation and habitat along the creek to create essential in-stream habitat for salmonids. The replacement expands the shoulders on Highway 1 from two to six feet and installs a separate six-foot pedestrian-bicycle path on the bridge's western side, greatly improving safe public access for walkers and cyclists along this highly scenic coastal corridor. The replacement aims to improve ecological functionality and long-term resilience through habitat restoration and natural stabilization techniques.	2022	Est 2025	<a href="#">1-22-0446</a>	30210, 30211, 30212, 30230, 30231, 30232, 30233, 30236, 30241, 30253, 30254
Pillar Point Harbor West Trail Living Shoreline	Unincorporated San Mateo County	Erosion mitigation; habitat restoration; public access improvement	This project addressed shoreline erosion by constructing a living shoreline of roughly 1-acre of nourished beach with an elevated back dune system along approximately 300 feet of shoreline within the harbor. The project utilized low-profile rock fingers, a cobble berm (dynamic revetment), and native materials sourced from the harbor. These elements were covered with sand and planted with native dune vegetation to stabilize the shoreline and enhance habitat. Additionally, the project included stormwater drainage improvements, including the removal of an existing shoreline outfall and redirecting filtered stormwater to portions of Pillar Point Marsh, thereby enhancing terrestrial-wetland transition zones and improving water quality. The West Trail was regraded, widened to a minimum of 15 feet, and slightly elevated to accommodate sea level rise, increasing public access. In short, the proposed project represents a unique opportunity to apply living shoreline principles to an area that is currently leading to coastal resource degradation, including fundamentally in terms of public access and habitat resources. The project would protect the shoreline and trail area while also resulting in net gains to both habitat and sandy beach area, presenting a type of 'win-win' for the public and coastal resources. In fact, the impacts of the living shoreline construction, including the proposed cobble berm and rock fingers, can be appropriately offset by the creation of a recreated beach and back dune area, as well as removal of duplicative drainage infrastructure and addition of new filtration mechanisms that can help improve habitat function, resulting in a project that is essentially self-mitigating.	2021	2022	<a href="#">2-20-0443</a>	30210, 30211, 30212, 30220, 30221, 30224, 30230, 30231, 30233, 30235, 30240, 30251, 30253

Moss Landing Wildlife Area Bank Enhancement	Unincorporated Monterey County	habitat protection & creation; erosion mitigation; public access improvement	<p>This project will address erosion along the northern bank of Elkhorn Slough, just above the Highway 1 Bridge, which currently threatens salt pond habitats and levee infrastructure. Resultingly, without intervention, the existing levee is expected to breach in 7-10 years, exposing the managed ponds to tidal inundation that will effectively destroy the plover nesting habitat, and likely cause water quality and additional sedimentation issues in Elkhorn Slough. It will involve lowering the existing levee and constructing a new setback levee 150 feet north of the existing levee to protect salt ponds and habitats for a variety of species, including the addition of gravel or oyster shells to enhance plover nesting habitat. The area between the old and new levee will be recontoured, regraded, and vegetated to create high marsh habitat aimed at reducing erosion and supporting wildlife. Existing nearby eelgrass beds are expected to migrate upslope post-construction as CDFW will plant eelgrass offshore to expand existing beds and associated habitat values. Equitable public access is integrated into the project through the addition of a 14-foot-wide, ADA-accessible trail, enhancements to the parking lot, a repavement of the Highway 1 driveway entrance, and multilanguage signage with symbolic fencing. These efforts collectively aim to restore habitats while improving access for all visitors and ensuring infrastructure resilience.</p>	2023	Delayed at reconstruction phase due to supply issues	<a href="#">3-23-0176</a>	30210, 30212, 30213, 30221, 30223, 30230, 30231, 30233(a), 30233(c), 30236, 30253
Salinas River State Beach Dune Restoration	Unincorporated Monterey County	Foredune habitat restoration; erosion mitigation; long-term ecosystem evaluation	<p>This restoration program will plant nearby native habitat, remove invasive vegetation, and opportunistically collect driftwood to develop foredune habitat along the Salinas River State Beach, stretching from Moss Landing to the northern bank of the Salinas River mouth. The project will evaluate the effectiveness of buried driftwood in supporting dune formation and foredune restoration. The project includes public access trail improvements, such as installing post and cable fencing to delineate public access corridors and to dissuade informal trail creation, along with interpretive signing, will be employed to both enhance the dune restoration and to improve the public access experience at a widely used and popular coastal recreation area. A 10-year programmatic authorization was granted to implement approved actions as funding becomes available.</p>	2021	Est 2031	<a href="#">3-20-0396-W</a>	30210, 30221, 30230, 30231, 30240, 30253
Aptos Creek Living Shoreline	Unincorporated Santa Cruz County	Dune habitat restoration; erosion mitigation	<p>This nature-based project involved the creation of dune habitat by stacking and connecting driftwood logs and covering it with locally available sand and placing sand atop the driftwood; and planting native dune species (including foredune, mid-dune, and back-dune specific species). The project also included the installation of post-and-cable 'symbolic' barriers to protect revegetation efforts and to direct beach access. The restored dunes were designed to protect public-serving infrastructure, including restrooms and a parking lot, from erosion and heavy winter Aptos Creek flows. However, the January 2023 bomb cyclone and associated atmospheric river events washed out the site before the planting element was completed. Despite this, the dunes served their purpose by preventing damage to the restrooms.</p>	2022	Not completed due to bomb cyclone	<a href="#">3-22-0671-W</a>	30210, 30221, 30230, 30231, 30240, 30253

Surfer's Point Managed Retreat Phase I	City of Ventura	Managed retreat; erosion mitigation; flood protection; public access improvement; habitat restoration	Phase I of this project focused on the relocation and managed retreat of infrastructure vulnerable to coastal erosion. Specifically, a 1,200-foot bike path, 75-space public parking lot, and a 0.5-mile section of Shoreline Drive were relocated inland. The project area was graded, and a cobble mattress was installed, consistent with adjacent river mouth substrates, to stabilize the shoreline. Additionally, approximately 10,000 cubic yards of sand were imported to restore native dune habitat. A 500-foot platform boardwalk was installed and includes interpretive signage to maximize public access while preserving the ecological functionality of the restored dunes.	2010	2011	<a href="#">4-05-148 and A-4-SBV-06-037</a>	30210, 30211, 30230, 30231, 30235, 30240, 30253
Surfer's Point Managed Retreat Phase II	City of Ventura	Relocation; erosion mitigation; flood protection; public access improvement; habitat restoration	Phase II of this project involves extending the cobble berm and vegetated sand dunes approximately 150 feet east to improve shoreline stability and resilience. Public access features, such as new dune access pathways and parking facilities, are being reconfigured and expanded, adding 151 parking spaces, including 12 with EV chargers, 3 surf check spaces, and a new turf picnic area. Approximately 14,800 cubic yards of cobble fill and 17,285 cubic yards of sand are being used to restore native dune habitat and support these improvements. The project also includes enhancements to the drainage system, such as the installation of bioswales, realignment of Shoreline Drive, and the use of permeable surfaces like asphalt to manage water quality and improve flood protection. These measures aim to enhance public access, mitigate erosion, and support ecological restoration.	2021	Est 2026	<a href="#">4-05-148 and A-4-SBV-06-037</a>	30210, 30211, 30230, 30231, 30235, 30240, 30253
Malibu Living Shoreline	City of Malibu	Dune habitat restoration; erosion mitigation; pilot study	This project focuses on restoring 3.26 acres of impacted beach and foredune habitat into a healthy living shoreline at Zuma Beach and Point Dume that will provide rare coastal habitat, ecosystem services, and adaptation measures for coastal storms. The project involves manually removing invasive vegetation while using a combination of native plants and seeds and strategically placed signage, symbolic pathways, wooden slats, and fencing that will build topography and increase elevation across the upper shore to store sand. These measures enhance the dunes' ability to serve as a natural buffer against sea level rise while improving coastal access from parking areas to the beach.	2020	Ongoing	<a href="#">Local CDP Application - permitted through City of Malibu's Certified LCP alongside County of Los Angeles Beaches and Harbors</a>	30210, 30221, 30230, 30231, 30240, 30253
Santa Monica Beach Restoration	City of Santa Monica	Habitat restoration; public access improvement; pilot study	The project uses a phased approach to test and implement nature-based dune restoration on Santa Monica Beach. It aims to evaluate the potential for passive restoration of beach and dune habitats while maintaining public access. Phase 1, permitted in 2016, tested passive restoration techniques including sand fencing and planting of native dune and beach vegetation across approximately 3.6 acres. Phase 2, approved in 2024, expands restoration to roughly 46 acres using a checkerboard approach (one- to two-acre plots at a time) and includes native planting, post-and-rope fencing, ongoing maintenance, community volunteer engagement, and educational components such as signage, guided walks, and school coordination. The second phase is planned for implementation from December 2024 to December 2035.	2016	Ongoing	<a href="#">5-16-0632, 5-16-032-A1</a>	30210, 30211, 30212, 30213, 30220, 30230, 30231, 30240, 30250, 30253

Los Angeles Living Shoreline	City of Los Angeles	Habitat restoration; erosion mitigation; pilot study; community engagement	This project focuses on restoring approximately 3 acres of sandy coastal strand beach and dune habitat at Dockweiler State Beach. The project also incorporated a pilot effort to establish 1 acre of offshore eelgrass habitat and restored 0.6 acres of coastal bluff habitat. The project aims to enhance ecological resilience, protect endangered species, and reduce erosion impacts in an area that provides coastal access close to surrounding communities. The main goal of the project is to increase the resilience of the sites to sea level rise by restoring natural habitat morphology and function. By improving biodiversity and various safeguarding coastal habitats, the project aims to mitigate erosion in a location important to local communities.	2021	Ongoing	<a href="#">5-21-0495-W</a>	30210, 30221, 30230, 30231, 30240, 30253
Doheny and Capistrano Beach Park Living Shoreline Pilot	City of Dana Point	Erosion mitigation; habitat restoration; public access improvement	This project implements a nature-based adaptation pilot to protect public park infrastructure at Doheny and Capistrano Beach Parks. The original permit (CDP No. 5-19-0345) authorized the removal of damaged public amenities (boardwalk, restrooms, stairs, parking, etc.), retention of sand cubes and armor rock, and creation of an elevated sandy terrace with benches and picnic tables for temporary public use. A brief extension was later approved. A brief extension followed (CDP No. 5-19-0345-A1). The most recent amendment (CDP No. 5-19-0345-A2) authorizes construction of a temporary 1,150-foot buried cobble berm (20 ft high, 125 ft wide) and vegetated sand dunes (5 ft high, 80 ft wide) located seaward of the coastal trail. The project involves cutting and importing cobble and sand fill. It also includes the replacement of ~1,000 feet of sand cubes with armor rock. These efforts were implemented as part of a strategy to protect infrastructure and public access from short-term coastal hazards while planning for long-term nature-based adaptation solutions that will be implemented into the City's Master Plan.	2020	Delayed due to inadequate funding	<a href="#">5-19-0345</a> , <a href="#">5-19-0345-A1</a> , <a href="#">5-19-0345-A2</a>	30210, 30211, 30212, 30220, 30221, 30223, 30230, 30231, 30232, 30233, 30235, 30240, 30250, 30251, 30252, 30253, 30270
Talbert Marsh Living Shoreline	City of Huntington Beach	Erosion mitigation; habitat restoration; infrastructure protection	This project aims to stabilize the eroded shoreline at Talbert Marsh by addressing erosion at two key areas: the western marsh edge near power lines and the 'south island', a critical habitat for shorebirds. In the western area cobble will be buried by mud and planted with marsh vegetation, while the south island's shoreline will be stabilized using cobble anchored by coir logs. These efforts aim to enhance habitat quality, bolster natural defenses against sea level rise, and protect nearby infrastructure, including utility lines.	2021, 2024	Ongoing	<a href="#">5-20-0348</a> , <a href="#">5-23-0409</a>	30210, 30211, 30212, 30233, 30240, 30250, 30253
Upper Newport Bay Living Shoreline	City of Newport Beach	Habitat restoration; erosion mitigation; water quality improvement; sediment stabilization; pilot study	This multi-habitat restoration project utilized natural materials and community volunteers to build a nature-based adaptation project to test the ecological functions and resilience of restored oyster and eelgrass habitats, both individually and in combination. It restored 1,280 square meters of native eelgrass habitat and 240 square meters of native oyster habitat, totaling 0.4 acres. Eelgrass coverage expanded to over 13 times its original extent, with a significant increase in native oyster populations, thereby enhancing ecological resiliency.	2016	2017	<a href="#">9-16-0254-W</a>	30210, 30221, 30230, 30231, 30240, 30253

Cardiff Living Shoreline	City of Encinitas	Flood protection; erosion mitigation; habitat restoration; public access improvement; pilot study	This project consisted of an engineered dune system and cobble toe on top of a buried revetment along Highway 101. Native sand was obtained from routine dredging of nearby San Elijo Lagoon. The dunes were planted with native and endangered dune species to test a hybrid living shoreline approach for protecting this vulnerable stretch of coastline and Highway 101. The project also included improved public access opportunities including the construction of a new pedestrian and bike path. The project improved coastal resilience by safeguarding critical infrastructure, fostering habitats for sensitive species, and enhancing public access and recreational opportunities. This project was identified as a Top Restored Beach by the American Shore and Beach Preservation Association in 2020 for its use of dune restoration, cobblestone, and native vegetation to enhance coastal resilience and protect Highway 101.	2018	2019	<a href="#">6-17-0596</a>	30210, 30212, 30230, 30231, 30233(b), 30235, 30240, 30251, 30253
South Carlsbad State Beach Dune Creation Pilot	City of Carlsbad	Habitat protection & creation; pilot study	This project involved installing three sandy dune test areas, each approximately 50 by 200 feet, covering 0.6 acres of sandy beach. These areas tested various passive dune creation techniques, including configurations of shims, sand fencing, native vegetation, and interpretive signage. This project aimed to evaluate the efficacy of dune restoration in providing storm protection over a four-year trial period.	2022	2022	<a href="#">6-21-0674-W</a>	30210, 30221, 30230, 30231, 30240, 30253
San Diego Bay Oyster Reef Living Shoreline	City of Chula Vista	Erosion mitigation; habitat enhancement; water quality improvement; sediment stabilization; pilot study	This project focused on testing the effectiveness of artificial reef balls in mitigating shoreline erosion while enhancing native Olympia oyster habitats in a wetland area with historical erosion issues. Located on an intertidal mudflat, the project features 360 reef balls made from baycrete (a composite of concrete, sand, and oyster shell aggregate), placed over a total area of 5,760 square feet. The reef balls aimed to mitigate erosion, support biodiversity, and restore critical native oyster habitats, offering a hybrid living shoreline solution that balances ecological and shoreline protection goals.	2021	2022	<a href="#">PMP-6-PSD-20-0001-01</a>	30230, 30231, 30233

Coastal Act Theme	Description	Coastal Act Sections
Public Access	Ensures maximum public access to and along the coastline, consistent with public safety, protection of natural resources, and private property	<b>30210, 30211, 30212, 30212.5, 30214</b>
Recreation	Promotes recreational opportunities along the coast	<b>30220, 30221, 30222, 30223, 30224</b>
Marine Environment	Protects marine resources, habitats, and biodiversity; includes regulation of diking, dredging, fishing, shoreline construction, and water management	<b>30230, 30231, 30232, 30233, 30234, 30234.5, 30235, 30236</b>
Land Resources	Safeguards terrestrial habitats, agriculture, and archaeological or paleontological resources	<b>30240, 30241, 30241.5, 30242, 30243, 30244</b>
Development	Guides sustainable and compatible development practices such as community character, height limits, scenic views, and hazard minimization	<b>30250, 30251, 30252, 30253, 30254, 30254.5, 30255</b>
Industrial Development	Regulates coastal-dependent industrial uses and facilities	<b>30260, 30261, 30262, 30263</b>
Sea Level Rise	Plans for and mitigates impacts of rising sea levels	<b>30270</b>