

**PUBLIC COASTAL ACCESS EASEMENT
ROCKY INTERTIDAL MARINE BIOLOGICAL RESOURCES
ASSESSMENT AND POTENTIAL PUBLIC USE IMPACTS
7957 PRINCESS STREET, SAN DIEGO, CA 92037**



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1.0 INTRODUCTION

Coastal Resources Management Inc. (CRM) was retained by Hamilton Biological Inc. and the Environmental Center of San Diego (ECOSD) to conduct an intertidal resource reconnaissance survey and an assessment of potential impacts on shoreline and marine biological resources from an expected increase in public use of La Jolla Caves Beach resulting from the proposed removal of an existing locked gate from an existing public access easement, which traverses a private residential yard, and establishing a formal trail to the beach. The purpose of the project was to gain an understanding of the general habitat and biological characteristics of the rocky intertidal zone that could potentially be affected by an increase in public use through the construction and use of a public-accessible walkway to the beach from Princess Street.

This report (a) identifies the existing habitat and intertidal biological resources and sensitive marine species of the low intertidal zone near the public access easement; (b) describes and analyzes potential impacts on intertidal resources resulting from increased public use of the beach and intertidal zone resulting from project implementation; and (c) recommends mitigation measures to avoid or reduce any potentially significant impacts of the project to marine biological resources.

1.1 PROPOSED ACTION

The project site is located at La Jolla Caves Beach, a pocket beach located in the neighborhood of La Jolla in the City of San Diego (the City), San Diego County, California (Figure 1). A public access easement to the beach exists through a coastal residential property at 7957 Princess Street, but the easement lies behind a locked gate and thus does not facilitate public access to the beach below. The proposed action involves removing the gate and establishing a formal public trail through the private residential property to the beach below (Figures 2 and 3).

1.2 PROJECT SETTING AND LOCATION

The coastal access easement leads down to La Jolla Caves Beach, which lies within the Matlahuayl State Marine Reserve (Figure 4), a Marine Protected Area (MPA) covering 1.04 square miles established by the State of California in January 2012 (Title 14, Code of California Regulations, Section 632 (b) (142)). The San Diego-Scripps Coastal State Marine Conservation Area (SMCA) (is located immediately north of the Matlahuayl SMR, extending to Torre Pines State Beach (Figure 4).

The boundaries of the Marine Reserve are defined as: the mean high tide line and straight lines connecting the following points in the order listed:

32° 51.964' N. lat. 117° 15.252' W. long.;

32° 51.964' N. lat. 117° 16.400' W. long.; and

32° 51.067' N. lat. 117° 16.400' W. long.



Figure 1. Project Location

While the pocket beach at the base of Princess Street is currently inaccessible to the public from the steep path, the public can access the beach at low tide by walking south from La Jolla Shores Beach at a low tide.

The pocket beach intertidal zone can also be accessed by snorkelers, kayakers, stand-up paddle boarders, and surfers under various tide conditions.



Figure 2. Location of Public Easement and Proposed Public Access Trail

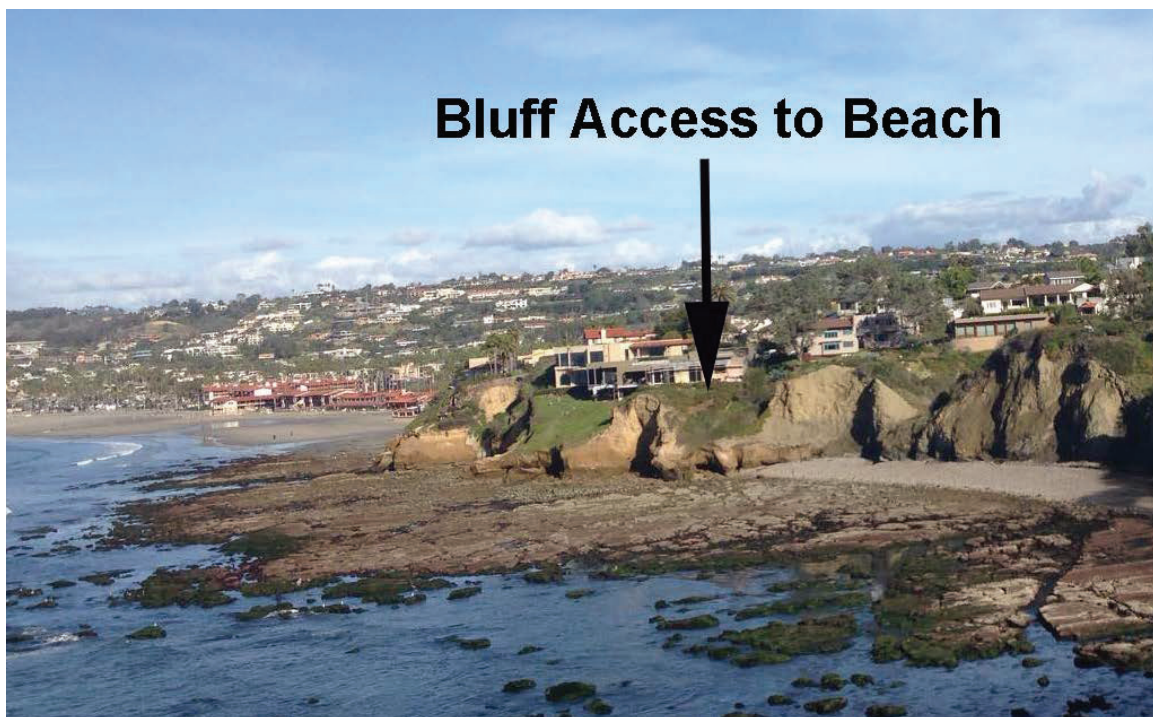


Figure 3. Bluff Access to the Pocket Beach

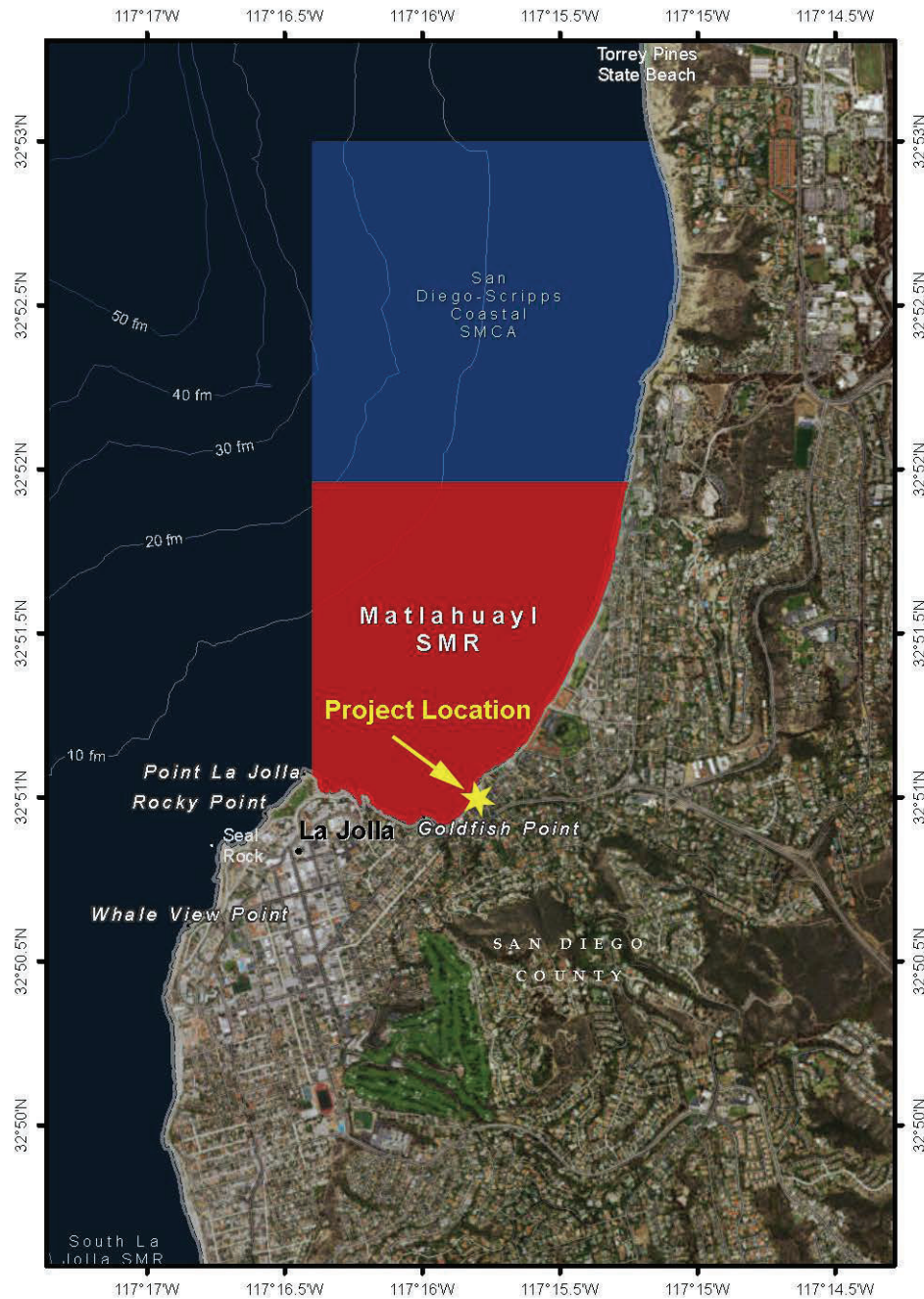


Figure 4. Location of the Project Area within
Matlahuayl State Marine Reserve

1.3 STUDY AREA BOUNDARIES

The intertidal reconnaissance study area and public use impact boundary includes a portion of the La Jolla Bay/Matlahuayl State Marine Reserve and represents the area of potential effect from project construction as well as the anticipated increase in public use of the shoreline as the base of the bluff and the adjacent rocky intertidal habitat (Figure 5). The shoreline project site at the base of the bluff covers approximately 2.32 acres (10,202 square meters). The shoreline study area for the public use effects study is defined as a 100 meter wide band, centered at the base of the proposed trail, extending to the low tide zone.

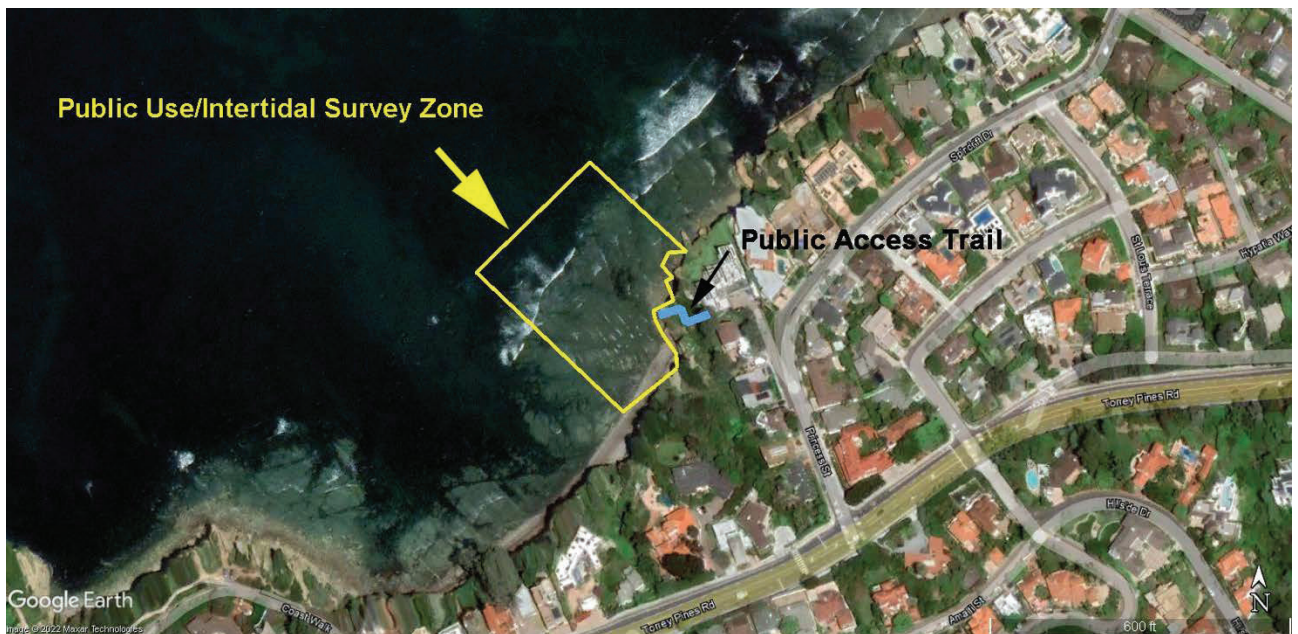


Figure 5. Project Area Boundaries for the Rocky Intertidal Reconnaissance Surveys

2.0 EXISTING CONDITIONS

The existing physical and biological conditions on the pocket beach shoreline were defined through existing literature and from the initial results of a intertidal reconnaissance survey at the project site conducted on June 17th, 2022 by Coastal Resources Management, Inc. Senior Marine Biologist Rick Ware. An updated reconnaissance survey was conducted on January 31st, 2025 by CRM to conform with the City of San Diego Biological Resource Guidelines that states that biological surveys over 24 months would require that the survey and report be updated to reflect the most current conditions affecting the project site. The June 2022 survey was conducted between 0700-1100 hours during a flood tide ranging from -1.1 foot (ft) to +2.5 ft Mean Lower Low Water (MLLW). The weather was overcast during the first portion of the field survey, gradually clearing to sunny skies. Winds were light and less than 5 knots. The January 2025 survey was conducted between 1345 and 1615 hours during an ebb tide ranging from +1 ft to -0.9 ft MLLW. The weather was clear during the field survey. Winds were light and less than 5 knots.

Notes were taken on the algae, invertebrate, and fish species present and their relative abundance along random transects between the low tide zone and the bluff. The various habitat types were documented. In addition, rough counts of the number of visitors observed during the two surveys were obtained along with notes on the activities that visitors to the tidepool displayed.

2.1 HABITAT PHYSICAL FEATURES

The public access easement is located on a sandstone and shale cliff with coastal vegetation (see Hamilton Biological, Inc. 2025). At the lower end of the easement, the backshore is lined with moderate-to-large boulders (Figures 6a and 6b). In January 2025, the pathway appeared less stable and overgrown with vegetation compared to June 2022. Immediately south of the pathway, the shoreline is characterized by an area of variable-sized riverine cobble and pebble, 10 to 15 meters wide, that extends laterally along the shoreline approximately 160 meters downcoast (Figures 7a and 7b). The cobble/boulder shoreline exhibited a greater slope at its west end in the vicinity of the Princess Street public access easement in January 2025 compared to June 2022. This habitat is covered by water only during the higher tides. The cobble/pebble beach transitions into an extensive shale and/or sandstone intertidal habitat, mudstone boulders, and a series of natural dikes (Figures 8a and 8b). These platforms are angled structures of about 45 degrees that form a series of intertidal channels within the survey zone during low and moderate tides. These habitats were similar in nature during both June 2022 and January 2025.

The flat, shale/sandstone and boulder rocky intertidal is the most prevalent formation in the project vicinity, extending 160 meters downcoast, 230 meters upcoast to La Jolla Shores Beach, and approximately 130 meters from the backshore to the -1.0 ft MLLW tide level (Figures 9a, 9b, 10a, 10b, -11a and 11b). This area is punctuated by shallow depressions between the various sized boulders that form the extensive shallow tidepools common throughout this section of shoreline. At moderate-to-high tides, this entire zone

is underwater. Physically, the tidepools and depressions were characterized by a greater amount of sanding in during the January 2025 survey compared to the June 2022 survey.

Immediately north of the public access easement, the cliff is undercut and has been eroded to form a small cave complex that is accessible to the public during low and moderate tides (Figures 12a and 12b). Large boulders and cobble dominate the cave floor, which was similar during both the June 2022 and January 2025 surveys. Graffiti that was present in 2022 was nearly gone in 2025.



Figure 6a. Base of Public Access Easement, 2022. Boulder Backshore Habitat.



Figure 6b. Base of Public Access Easement, 2025. Condition of the boulder backshore habitat appeared generally similar during the 2022 and 2025 surveys.



Figure 7a. Cobble Pocket Beach to the South of the Public Access Easement, 2022. Boulder/basement rock intertidal reef extends from the cobble beach to the shallow subtidal zone.



Figure 7b. Cobble Pocket Beach to the South of the Public Access Easement, 2025. Boulder/basement rock intertidal reef extends from the cobble beach to the shallow subtidal zone. Cobble appears to cover a greater beach width than in 2022.



Figure 8a. Uplifted and Angled Shale Formations and Intertidal Channels, 2022.



Figure 8b. Uplifted and Angled Shale Formations and Intertidal Channels, 2025. Tidepools in the channels were more sanded in than during the 2022 June survey. Coralline algae exhibited a greater degree of bleaching, and the cover of red turf algae appeared less than in June 2022.



Figure 9a. Rocky Intertidal South of the Public Access Easement, 2022.



Figure 9b. Rocky Intertidal South of the Public Access Easement, 2025. The cover of turf red algae appeared to be reduced and coralline algae exhibited a greater degree of bleaching compared to June 2022.



Figure 10a. Rocky Intertidal Seaward of the Public Access Easement, 2022. This habitat extends approximately 130 meters seaward from the base of the cobble backshore area.



Figure 10b. Rocky Intertidal Seaward of the Public Access Easement, 2025. This habitat extends approximately 130 meters seaward from the base of the cobble backshore area. In January 2025, there was a greater degree of coralline bleaching in this area compared to the June 2022 survey. Healthy stands of surfgrass are visible.



Figure 11a. Rocky Intertidal to the North of the Public Access Easement, 2022. This feature extends northward around the bend to La Jolla Shores Beach.



Figure 11b. Rocky Intertidal to the North of the Public Access Easement, 2025. This feature extends northward around the bend to La Jolla Shores Beach. Bleaching was prevalent in this area, as well.

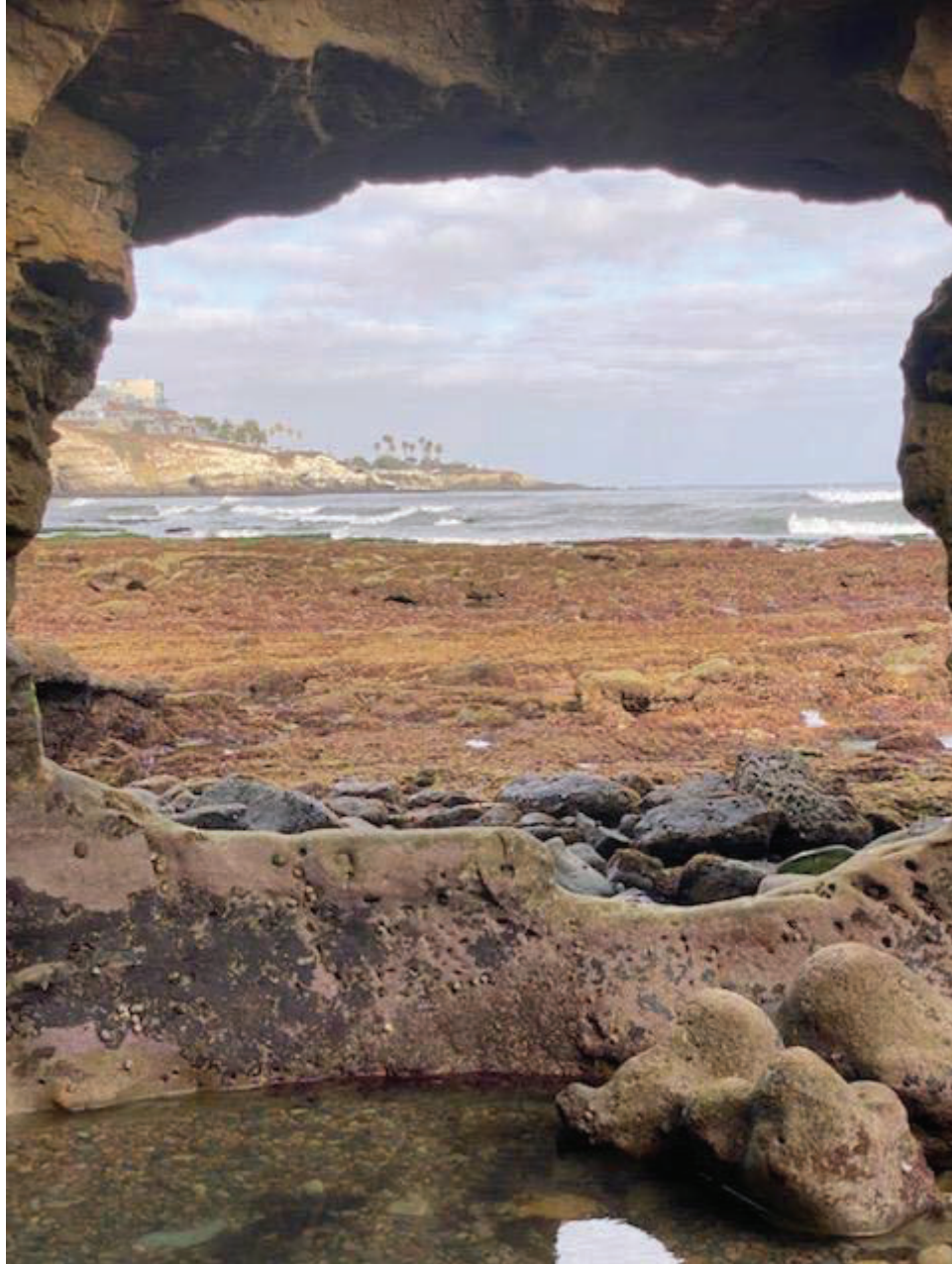


Figure 12a. Undercut and Eroded Section of Cliff, 2022. This forms a small cave complex immediately upcoast of the Public Access Easement.



Figure 12b. Undercut and Eroded Section of Cliff, 2025. Located immediately upcoast of the Public Access Easement.

2.2 BIOLOGICAL ENVIRONMENT

The project area pocket beach is bounded by the cliff and headlands of La Jolla Cove. This habitat, located between the low and high tide zones, is colonized by marine plants, invertebrates, and fishes, the distributions of which are influenced strongly by the rise and the fall of tides on a daily and long-term basis. The most important physical variable to rocky intertidal organisms is tidal height. Tide patterns determine the frequency and duration that organisms remain immersed during high and low tides. In southern California, tides high tides and low tides occur twice a day, but the height of each low tide and each high tide is different; this is called a semi-diurnal mixed tide. Currently, tides normally range between approximately -1.8 and +7 feet below Mean Lower Low Water, a range of roughly 9 feet. Tidal fluctuations affect both feeding times and the duration that immobile organisms remain wet, preventing desiccation.

A partial listing of intertidal plants and animals that occurred during the June 2022 survey, the January 2025 survey, and others that are expected to occur within the rocky intertidal project area is presented in Appendix 1. These organisms are distributed along the tidal gradient in four biotic bands or zones, each associated with a range of tide levels. A total of 45 taxa of marine plants, invertebrates, and fishes were observed during the June 2022 survey and 37 taxa were observed during the January 2025 survey.

Within the project area, common species that are found on the highest surfaces of rocks in the splash, high, and mid zones, and on the higher portions of boulders nearer to the water's edge, include rock lice (*Ligia occidentalis*), barnacles (*Chthamalus fissus/dalli*), lined

shore crabs (*Pachygrapsus crassipes*), littorine snails (*Littorina* spp.), dog winkles (*Nucella emarginata*), limpets (*Lottia scabra*, *Lottia gigantea*, *Lottia digitalis*, *L. limatula*), and turban snails (*Tegula funebris* and *T. gallina*). Observations made of this habitat in June 2022 and January 2025 were similar, with these dominant species observed in both surveys.

Common algae in the high, upper, and mid tide zones included green algae (*Ulva* spp., *Chaetomorpha lineata*) and brown rockweed (*Silvetia fastigata*). *Silvetia* and other algae are particularly susceptible to the effects of trampling and thermal/desiccation stresses. Both can reduce rockweed productivity and the biological diversity of organisms that live underneath its canopy. Rockweed cover did not appear as abundant in January 2025 as during the summer 2002 survey. In 2025, the algae of these zones was generally limited to the opportunistic green algae *Chaetomorpha lineata* and *Ulva* spp. During winter, when visitor use of tidepools is generally low, extreme low-tide events and extended periods of desiccation and exposure may be the main cause of stress, rather than trampling.

The cover of turf-forming and foliose red algae, crustose red algae, coralline red algae, and small brown algae (i.e., *Egregia* spp. and *Sargassum muticum*) is higher in tidepools habitats that are exposed to more frequent tidal inundation. Commonly occurring invertebrates observed during the initial June 2022 surveys included sponges, tunicates, solitary green anemones (*Anthopleura xanthogrammica*), aggregating anemones (*Anthopleura elegantissima*), calcareous tube snails, (*Serpulorbis squamigerus*), sand castle tube worms (*Phragmatopoma californica*), sea hares (*Aplysia californica*), wavy top snails (*Lithopoma undosa*), hermit crabs (*Pagurus* spp.), turban snails, and octopus (*Octopus bimaculoides*). To some degree, tidepool fish, such as sculpins, blennies, and gobies are likely present. One sculpin (*Clinocottus analis*) was observed during the field survey in June 2022. These species were common-to-abundant in the near vicinity of the public access easement, as well as the tidepools, throughout the area in June 2022. The common species observed during the January 2025 survey were generally present in January 2022, but they appeared to be less numerous than during the January 2025 surveys. In particular, the densities of hermit crabs, limpets, and chitons appeared to be lower in 2025. Turf-forming algae and foliose red algae were less abundant, and coralline red algae appeared stressed as evidenced by bleaching (See Figures 8b, 9b, 11b).

The wave-swept, low tide zone in the project area is dominated by a significant cover of a sensitive marine angiosperm, surfgrass (*Phyllospadix torreyi*), illustrated in Figure 13a and 13b. The distribution of surfgrass extends subtidally to depths of approximately 20 feet. Surfgrass was extremely lush, green, and extensive during the June 2022 survey (Figure 13a). In January 2025, its distribution was similar in the low tidepools and the outer edges of the intertidal reef, but it also exhibited signs of stress, such as bleaching and browner color (Figure 13b). Surfgrass provides cover and habitat for many marine organisms, including California spiny lobsters (*Panulirus interruptus*). Other low tide horizon indicators that may be present, but that were not observed during the reconnaissance survey, include feather boat kelp (*Egregia menziesii*), sea palm kelp (*Eisenia arborea*), and urchins (*Strongylocentrotus purpuratus*). Although urchins and these larger seaweeds were not observed during the June 2022 survey, they likely are present in the

very low to shallow subtidal areas, along with California spiny lobsters and potentially juveniles of the endangered black abalone (*Haliotis cracherodii*). Better competitors for space are usually found at the lower tide levels, whereas poorer competitors for space, but which can survive long periods without immersion, are found at higher tidal levels. Species richness and biodiversity increase from the higher to lower tidal zones.



Figure 13a. Surfgrass at the Project Site, Low Intertidal Zone, 2022.



Figure 13b. Surfgrass at the Project Site, Low Intertidal Zone, 2025. Some stands of surfgrass appeared bleached and brown (rather than green) and had greater amount of fouling epiflora attached to the blades.

Overall, the most abundant algae in the rocky intertidal areas consisted of a core group of surf and sand-tolerant taxa commonly found throughout southern California. The algal and marine angiosperm association was represented by species that typically experience

a high degree of natural disturbance such as boulder overturning, sanding in, and scour (Sousa 1980, 1979). These species include initial colonizers and short-lived opportunists such as green algae (*Ulva* and *Enteromorpha*); sand resistant perennial species such as crustose brown and red algae, coralline algae turf, and filamentous sand-holding red turf associates, with the angiosperm surfgrass present in the lower intertidal zones. These species undergo seasonal variation in cover based upon the amount of sand inundation and desiccation stress.

Comparisons of the June 2022 and January 2025 Survey Data

The intertidal habitat at the Princess Street, La Jolla Cove site exhibited some degree of physical differences between the two surveys, likely associated with seasonal sand movement that resulted in a greater amount of sand deposition in the tidepools during the January 2025 survey. Cobble habitat was constant along the shoreline to the south of Princess Street. Biologically, the number of taxa observed was slightly lower in January 2025 (37) compared to June 2022 (44). Smaller, foliose red algae was not as abundant, and coralline algae exhibited more signs of desiccation stress during the January 2025 survey, while surfgrass was browner (less green), and there were more patches of surfgrass encrusted with epiflora. The decrease in algae was accompanied by less organic detritus in the tidepools, and a related decrease in the abundance of hermit crabs.

2.3 HUMAN USE OF INTERTIDAL AREAS NEAR URBAN AREAS

Many factors affect the distribution of rocky intertidal organisms, including substrate type and size, substrate disturbances (from wave action), sedimentation, fresh water runoff, cloud cover, and competition for space and food. Following disturbances, many organisms will die, which will then be followed by a period of settlement and recolonization that may take up to 10 years (Cimberg 1975) although most recovery occurs within one to five years (Murray and Littler 1979). Rocky intertidal communities located near urban centers are also subjected to intense human pressure (trampling, collecting, and urban discharges) which have resulted in observable reductions in biodiversity between Santa Barbara and San Diego Counties (Dawson 1965, Thom and Widdowson 1978, Kido and Murray 2003, Smith et. al. 2008, Ambrose and Smith 2005, and Lucas and Smith 2016, and Whitaker et al., 2009). A review of previous visitor use investigations (Lucas and Smith 2016) indicated trampling, collecting, handling, and rock turning can reduce abundances of faunal and floral populations, decrease biodiversity, cause shifts in the size/age structure of populations towards smaller/younger individuals, decrease the reproductive output of populations, and alter normal ecosystem functioning. With increased implementation of tidepool management strategies (the implementation of Marine Managed Areas, public awareness, interpretive programs, signage, and increased enforcement), collecting live organisms and bait collecting by fishermen has generally decreased over the last 20 years, although shell collecting has increased. As the number of visitors to southern California tidepools has increased, along with population increases and tourism trends, trampling of organisms has increased, as visitors unknowingly walk over rocky shore plants and animals. Tidepools located near tourist centers and near coastal resorts have experienced the greatest degree of visitation increases (Lucas and Smith 2016: Coastal Resources Management, Inc.

2009b). In areas where enforcement is limited, fishing and dog-walking continue to be prevalent (Coastal Resources Management, Inc. 2009b, 2013).

Observations of Existing Human Use of La Jolla Caves Beach

Currently, visitor use (number of individuals) of La Jolla Caves Beach and the adjacent nearshore waters is not quantified to any degree. Visitor use studies show that human use of beaches in southern California is greatest during the summer tourist season, especially on weekends. Human use of public-accessible areas may also increase during very low semi-diurnal tides that occur between November and February, when maximum exposure of the rocky shoreline occurs.

Because a locked gate at 7957 Princess Street currently restricts use of the public access easement at the end of Princess Street, members of the public mainly access the La Jolla Caves Beach by walking south from La Jolla Shores Beach at low-to-mid tide levels. Secondly, people can access this area from the nearshore waters via kayaks, paddle boards, surfboards, and by snorkeling. The shoreline is inaccessible during high tides and during high-wave events.

Currently, no signage exists at La Jolla Caves Beach to educate the public about protecting the rocky intertidal ecosystem and State enforcement of Marine Reserve regulations at this location is likely sporadic, at best, due to the difficulty of accessing the beach.

During CRM's four-hour reconnaissance survey on June 17th, 2022, 14 individuals were seen using the La Jolla Caves Beach (mean = 3.5 people/hour). Of these, 11 were observed walking over the rocky intertidal habitat and tidepooling between the low tide to the backshore cobble/boulder habitat (Figures 14 and 15). The other three were snorkelers without spearfishing equipment (Figure 16). Two of the 11 tidepoolers were actively touching and coaxing a small octopus out of its crevice, activating an inking, defensive response. Others were observed crouching, observing, and touching organisms in the tidepools. All 14 individuals walked over both rocky areas colonized by vegetation (algae and surfgrass) and non-vegetated rocky areas colonized by invertebrates. These actions are considered "trampling" even if the individuals were unaware of the effects of trampling (reduction of algae cover, mortality of plants, in particular, soft-bodied and susceptible invertebrates such as sea hares, anemones and crabs). No dogs were observed on the beach.

Overall, the project intertidal in 2022 and 2025 appeared healthy but subject to seasonal variation. The types of plants and animals present in 2022 and 2025 were characteristic of a functioning rocky intertidal community.

Based on our limited observations made at the project site in June 2022 (a mean of 3.2 individuals per hour), January 2025 (a mean of 1.1 individuals per hour), and anecdotal information, it appears that visitor use is currently low and limited by two factors: (1) a lack of public accessible trails and pathways to the beach and (2) tidal height/surf conditions.

Although the number of visitors to La Jolla Caves Beach is likely low on a daily basis, there is constant, low-level disturbance caused by the visitors who (1) walk on the intertidal algae and surfgrass and/or organisms that cover the rocks, some of which may be under the algae and surfgrass; (2) disturb and/or affect the behaviors of tidepool organisms through handling; and (3) collect organisms, removing them from the ecosystem. The organisms most likely to be targeted by tidepoolers are the largest and most visible ones: crabs, sea hares, turban snails, limpets, and occasional octopuses. However, the more susceptible forms (fucoid algae, turf forming and folios red algae, soft-bodied invertebrates) that are not recognized by the public are also at risk from trampling.

Comparative Studies

During public use studies conducted for the City of Newport Beach in 2007-2008 and again in 2013 (Coastal Resources Management, Inc. 2009b, 2014), low visitor use (numbers per 100 linear meters of shoreline per 10-minute sampling interval) was documented at Morning Canyon (ASBS Site #32), a pocket beach and tidepool area in Corona del Mar. Public use of Morning Canyon was limited primarily to residents of the local community, who could access the beach and tidepools through a locked gate; access for the general public entailed negotiating a treacherous headland. Public use of this site was observed to be substantially lower than at Little Corona, Crystal Cove, and Heisler Park where tidepools were more easily accessed. Despite the lower amount of public use at Morning Canyon, shore fishing from the rocky intertidal was highest and rock-turning and the collection of shells and live animals commonly occurred at levels equal to those recorded at Little Corona and Heisler Park where access was not restricted. Collection of bait and illegal fishing was greater at Morning Canyon than at the Little Corona tidepools, and dog walking (both on the sand and on the rocky shoreline) was the second highest of the four sites monitored. Reduced levels of enforcement/signage and the hidden nature at Morning Canyon likely contributed to greater levels of potentially harmful behaviors compared with the three other nearby sites.



Figure 14. Tidepool Visitors Viewing a Two-spotted Octopus in June 2022.



Figure 15. June 2022. Rocky Intertidal Visitors Walking Over Vegetated Areas.



Figure 16. June 2022. Three Snorkeler who Accessed La Jolla Caves Beach from La Jolla Cove Beach.

2.4 SENSITIVE SPECIES

Sensitive species with potential to occur within the general project vicinity are listed in Table 1 and discussed below. Discussion is limited to those species that may have a moderate-to-high potential to be present in the rocky intertidal project area or immediately offshore of the tide zone.

Table 1. Special Status Species

Scientific Name	Common Name	Federal Status	CDFG Status	Habitat	Potential to Occur
Plants					
<i>Macrocystis pyrifera</i>	giant kelp	Habitat Area of Particular Concern (HAPC) for Fisheries Management Plan (FMP) Species	-	Nearshore rocky subtidal habitat	Does not occur intertidally, but is present on reefs and rocky areas offshore of the La Jolla Caves to depths between 15 ft and 80 ft. offshore from La Jolla Caves Beach.
<i>Phyllospadix torreyi</i>	surfgrass	HAPC for FMP Species	–	Nearshore rocky intertidal/rocky subtidal	Surfgrass is widespread in the low intertidal area.
<i>Zostera marina</i>	eelgrass	HAPC for FMP Species	–	Bays, harbors, shallow nearshore water sediments	None.
Invertebrates					
<i>Haliotis spp.</i>	Black abalone	FE		Rocky intertidal and subtidal reefs	Low potential for occurrence.
<i>Tivela stultorum</i>	Pismo clam	no status	No status, although it is considered a recreational fishery resource	Low intertidal sandy beaches and nearshore sandy sediments at depths to about 80 feet; common in shallow water surf-zone depths	Not present.
Fishes					
<i>Eucyclogobius newberryi</i>	Tidewater goby	FE	–	Shallow marine waters, lower reaches of streams	Not present south of Agua Hedionda Lagoon; extirpated from coastal creeks.
<i>Leuresthes tenuis</i>	California grunion	–	–	Spawns on local open coastal beaches	Low potential due to inhospitable cobble beach shoreline.

<i>Hypsypops rubicundus</i>	California garibaldi	Protected under commercial and sport fish regulations	California State Marine Fish , Assembly Bill AB77, 1995	Subtidal rocky reef habitat; resident and territorial species in shallow subtidal rocky habitats	Low potential in the project area tidepools but occurs in nearshore shallow subtidal rocky habitats
<i>Paralichthys californicus</i>	California halibut	—	—	Shallow coastal waters, open ocean	High potential in the waters offshore of the project area.

Scientific Name	Common Name	Federal Status	CDFG Status	Habitat	Potential to Occur
Reptiles					
<i>Chelonia mydas</i>	Green turtle	FE	—	Nearshore and open ocean waters	Not present in the project area intertidal habitat.
<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	FE	—	Nearshore and open ocean waters	Not present in the project area intertidal habitat
Birds (See Hamilton Biological Inc. (2022))					

Scientific Name	Common Name	USFWS Status or NMFS Status	CDFG Status	Habitat	Potential to Occur
Mammals					
<i>Zalophus californianus</i>	California sea lion	MMA		Nearshore and open ocean waters, occasionally enters bays/harbors	Moderate to high potential to be present in the waters offshore of the project intertidal habitat; low potential to be found in the project area intertidal.
<i>Phoca vitulina</i>	Harbor seal	MMA		Nearshore and open ocean, occasionally enters bays/harbors	Very low potential for individuals to haul out in the project area rocky intertidal. A Federally protected harbor seal haul out area is located on the sandy beach at Children's Beach in Jolla Cove .
<i>Mirounga angustirostris</i>	Northern elephant Sea	FT	FT	Northern elephant seals are found in the North Pacific, ranging from Baja California, Mexico, to the Gulf of Alaska and Aleutian Islands. They breed on offshore islands, such as the Channel Islands, Año Nuevo, Point Reyes and Piedras Blancas. Pelagic most of the year; while on land, they prefer sandy beaches.	Very low potential for individuals to occur in the project area. Occasionally will rest on San Diego County beaches, usually due to injury or sickness.

<i>Tursiops truncatus</i>	Bottlenose dolphin	MMA		Nearshore and open ocean waters; may enter bays/harbors	Moderate potential for individuals to be present offshore of the project rocky intertidal areas.
<i>Eschrichtius robustus</i>	California gray whale	FDR		Nearshore and open ocean waters; may enter bays/harbors	Moderate to high potential to be present in nearshore waters between December and May each year while migrating between Alaska and Baja California.
FE – Federal Endangered; FT – Federal Threatened; MMA – Protected under Marine Mammal Act; FDR-Federally Delisted California Department of Fish and Game SDR-State Delisted Species CE – California Endangered SSC – Species of Special Concern Habitat Areas of Particular Concern (HAPC) are subsets of Essential Fish Habitat (EFH), which are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under the Magnuson Stevens Fishery Conservation and Management Act (MSA); however, federally permitted projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process.					

Surfgrass (*Phyllospadix torreyi*)

Surfgrass is a major constituent of the project area low intertidal and shallow subtidal zone (Figure 13a and 13b). Surfgrass is a sensitive marine resource that occurs in rocky shoreline and rocky subtidal habitats at depths to approximately 20 feet. Its sensitivity is related to its use by invertebrates and fishes as nursery habitat and its susceptibility to long-term damage because it is a very slow growing species. Revegetation occurs very slowly through initial seeding and eventually the spreading of roots and rhizomes over surfaces of rocks. Surfgrass is considered to be a Habitat of Particular Concern by the National Marine Fisheries Service, because juvenile rockfish groundfish species utilize surfgrass beds as nursery habitat. Surfgrass is also an extremely important nursery habitat for juvenile lobsters. It occurred in both the 2022 and 2025 surveys.

Giant Kelp (*Macrocystis pyrifera*)

Giant kelp is present offshore of the project area rocky intertidal area, but it does not grow intertidally. The size of the kelp bed has decreased in recent years (MBC Applied Environmental Sciences, 2021), from 1.227 km² in 2019 to 1.094 km² in 2020. The canopy area in 2020 was 23% of the maximum recorded in 1989.

Invertebrates

Black Abalone (*Haliotis cracherodii*). In 1998, the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) added black abalone to the candidate species list for possible listing under the federal ESA, and on January 14th, 2009, NMFS listed the species as endangered (Federal Register / Vol. 74, No. 9 / Wednesday, January 14th, 2009 / Rules and Regulations). Black abalones usually inhabit surf-battered rocks and crevices from the intertidal zone and shallow subtidal zone down to a depth of 20 ft (6 m). It is a long-lived species, attaining an age of 25 years or more. Now a rare species, the black abalone was abundant in California until the mid-1980s. This species has a low potential to be present in low intertidal zone and shallow subtidal habitats offshore of the project area. Black abalone were not observed in 2022 or in 2025.

Fishes

California Grunion (*Leuresthes tenuis*). The California grunion is a fish that uses the high intertidal sandy beach habitat of many southern California beaches as spawning habitat (Walker, 1952). They normally occur from Point Conception, California, south to Point Abreojos, Baja California. Occasionally, they are found farther north to Monterey Bay, California and south to San Juanico Bay, Baja California. They inhabit the nearshore waters from the surf to a depth of 60 feet. The grunion is a non-migratory species. Grunion use the energy of waves to strand themselves onto sandy beaches generally over a 3–4-night period following the highest semi lunar tides. Typically, grunion “runs” last about 1 to 2 hours (Walker, 1952). Females dig themselves tail-first into wet sand. The males then curl around the females and deposit milt. Normally, the eggs develop above the water line buried in moist sands and are triggered to hatch in nine days at the high tide of the next

new or full moon by waves that reach high enough on shore to wash out the sand and carry the eggs into the ocean (Walker, 1952; Middaugh et al., 1983 in Darken et al., 1998). If the eggs are washed out to sea during the next high tides, they hatch rapidly into free-swimming larvae (Walker, 1952). If the waves do not reach the eggs, as happens frequently along the southern California coast, the eggs are able to remain viable for at least two more weeks (Walker, 1952) and up to 35 days (Darken et al., 1998). This period encompasses the next two highest semi lunar tides. However, hatching success decreases over time (Darken et al., 1998).

Spawning occurs from March through August, and occasionally in February and September. Peak spawning period is between late March and early June. After July, spawning is erratic, and the number of fish observed in a grunion run greatly decreases. (Walker, 1952).

The California grunion is not a formally listed federal-or-state rare, threatened, or endangered species, but grunion spawning habitat (sandy beaches) is considered “sensitive” because of the overlap between beach spawning activity and shoreline management activities such as (1) the removal of debris and grooming beaches by mechanical means that rake, remove, or crush eggs (2) beach erosion; 3) harbor construction; (4) pollution (Martin, 2002), as well as beach nourishment activities.

Grunion are not likely to spawn in the La Jolla Caves Beach area, due to a lack of suitable habitat. The nearest spawning area is the La Jolla Shores Beach.

California halibut (*Paralichthys californicus*). The California halibut does not have a formal special species status, but it is considered a sensitive species by resource agencies because of its commercial value and a continued region-wide reduction of its nursery habitat in bays and wetlands. Juvenile and adult halibut have a moderate-to-high potential to occur in the sandy bottom habitat offshore of the of the project area. None will be present in the rocky intertidal project area.

Garibaldi (*Hypsypops rubicundus*). The garibaldi is the largest of the damselfish family (Pomacentridae); adults, orange in color, typically reach 14 inches in length. It is found in shallow waters off the Southern California coast and Mexico (California Department of Fish and Game, 2001). Males build the nests, the female enters several of them and then makes her decision. The garibaldi is one of the few fish to use the same nesting site every year. In 1995 the California Legislature designated the Garibaldi as the Official State Marine Fish and banned any further commercial take. Garibaldi populations have rebounded from the local effects of commercial take and are in good condition throughout their range in southern California. Sports fishing take of this species is also prohibited (Cal. Code Regs. Tit. 14, § 28.05” Cal. Code Regs. Title. 14 § 28.05).

Garibaldi occur along the shoreline in rocky subtidal areas. Generally low potential for occurrence in the project area’s shallow intertidal tidepools, although individuals may occasionally be present in the very low intertidal zone tidepools.

Marine Reptiles

Marine reptiles do not utilize the local marine waters as a permanent breeding or foraging habitat. The green turtle (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) will occasionally occur in the nearshore environment offshore of the La Jolla Caves Beach. There is a very low potential for a green sea turtle to be present within the project site, but only if and injured or sick individual washes up on the shoreline. Green sea turtles were not observed offshore of the intertidal area during the 2022 or 2025 site surveys.

2.5 INVASIVE SPECIES

Invasive Algae (*Caulerpa taxifolia*)

Non-native and invasive species of algae belonging to the genus *Caulerpa* (Figure 18) have potential to cause ecosystem-level impacts on California's bays and nearshore systems due to their ability to out-compete other algae and seagrasses. When introduced into a novel marine habitat, *Caulerpa taxifolia*, a tropical-subtropical species used in aquariums, can grow as a dense smothering blanket, covering and killing all native aquatic vegetation in its path. Fish, invertebrates, marine mammals, and sea birds dependent on native marine vegetation have been displaced from or have died off in areas where they once thrived. It was introduced into southern California in 2000 (Agua Hedionda Lagoon and Huntington Harbour), likely by individuals dumping their aquaria waters into storm drains or directly into lagoons. Recent infestations of another species (*C. prolifera*) occurred in Newport Bay in 2021; efforts to eradicate this species are now underway. While outbreaks have been contained, the Water Resources Board, through the National Marine Fisheries Service and the California Department of Fish and Wildlife require that projects with potential to spread this species through dredging and bottom-disturbing activities conduct pre-construction surveys to determine if this species is present. The surveys are conducted by field surveyors certified by the National Marine Fisheries Service and California Department of Fish and Wildlife using standard, agency-approved protocols. *Caulerpa* has never been observed in the La Jolla Caves project area, or specifically in the 2022 and 2025 CRM surveys.



Figure 17. Invasive (Noxious) algae, *Caulerpa taxifolia*.

***Sargassum muticum* (Brown Algae)**

This large, yellowish-brown or olive-brown seaweed can be distinguished from most other Pacific coast seaweeds by its small, spherical float bladders. A stout, spongy holdfast attaches it to rocks, shells or other hard objects. Plants grow up to about 2 m long in northern Washington and British Columbia, but in southern California a large plant can be 3-4 m long and plants up to 10 m long have been reported. It is commonly found in harbors, marinas, and bays on boat floats, rip rap, jetties, and breakwaters, as well as in the low intertidal and on shallow, subtidal reefs. *S. muticum* is present-to-common throughout southern California coastal waters. In southern California, it is abundant intertidally at 4-8 meter depths, and has been found as deep as 24 meters. There are many reports of *S. muticum* competing with and displacing native species of seaweeds and seagrasses at least in part by shading and reduction of light levels. *Sargassum* was observed in both the 2022 and 2025 surveys.

http://www.exoticsguide.org/species_pages/s_muticum.html.

This species is present in the rocky intertidal and rocky subtidal nearshore habitat.

***Sargassum hornerii* (Brown Algae)**

The brown seaweed *Sargassum hornerii* is native to Asia (Japan, Korea, China, and Viet Nam). This species was spotted in Long Beach Harbor in October 2003. On Catalina Island in April 2006, it was found near the Wrigley Marine Science Center, Cherry Cove, and Emerald Bay, Bird Rock, Isthmus Reef, Pumpernickel Cove and Big Geiger Cove in the Isthmus area, as well as Hen Rock, east of Long Point; it was subsequently found at Descanso Beach (Coastal Resources Management, Inc. 2009a). It was found at Point Loma, California in September 2006. The plant is golden-brown. Its branching is radial around the upright, tough stipe; each frond is flat and very symmetrical (fern-like) with a notched tip.

This species was not observed in the project intertidal area during the June 2022 or January 2025 surveys.

***Sargassum hornerii* (Brown Algae)**

The brown seaweed *Sargassum hornerii* is native to Asia (Japan, Korea, China, and Viet Nam). This species was spotted in Long Beach Harbor in October 2003. On Catalina Island in April 2006, it was found near the Wrigley Marine Science Center, Cherry Cove, and Emerald Bay, Bird Rock, Isthmus Reef, Pumpernickel Cove and Big Geiger Cove in the Isthmus area, as well as Hen Rock, east of Long Point; it was subsequently found at Descanso Beach (Coastal Resources Management, Inc. 2009a). It was found at Point Loma, California in September 2006. The plant is golden-brown. Its branching is radial around the upright, tough stipe; each frond is flat and very symmetrical (fern-like) with a notched tip.

This species was not observed in the project intertidal area during the June 2022 survey or January 2025 surveys but it has a low-to-moderate potential to be present in the project area.

2.6 ESSENTIAL FISH HABITAT

The proposed project is located within an area designated as Essential Fish Habitat (EFH) for the Coastal Pelagic Species (PFMC 2016a) and Pacific Groundfish (PFMC 2016b). EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity”. The waters offshore of La Jolla Cove Beach are located in a region designated as EFH in the Coastal Pelagic Species Fishery Management Plan (PFMC 2016a) and the Pacific Coast Groundfish Fishery Management Plan (PFMC 2016b).

2.7 HABITAT AREAS OF PARTICULAR CONCERN

Habitat Areas of Particular Concern (HAPCs), described in the regulations as subsets of EFH, are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area (National Marine Fisheries Service 2005). HAPCs include estuaries, seagrass beds (surfgrass, eelgrass, and widgeon grass), sand bottoms, kelp canopy, rocky reefs, and submarine canyons. The project area contains HAPC rocky intertidal and seagrass habitat for federally managed fish species within the Pacific Groundfish FMP, (i.e., rockfishes). In the project vicinity, HAPC subtidal reef and kelp beds are located along the La Jolla Cove shoreline, and Scripps Canyon and La Jolla Submarine Canyon are also considered HAPCs.

2.8 FISHERIES MANAGEMENT PLAN SPECIES

There are no Coastal Pelagic FMP species in the project area’s rocky intertidal habitat but they do occur in the nearshore waters of La Jolla Cove.

Groundfish, such as rockfish, are also present in the waters of La Jolla Cove, but not within the project area rocky intertidal habitats.

3.0 REGULATORY CONTEXT

Per the Code of California Regulations, Title 14, Section 632(b)(142), La Jolla Caves Beach lies within the Matlahuayl State Marine Reserve, a Marine Protected Area (MPA). Per Section 632(a)(1)(A), “it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a scientific collecting permit issued by the department pursuant to Section 650 or specific authorization from the commission for research, restoration, or monitoring purposes.” Per Section 632(b)(142)(C), “Boats may be launched and retrieved only in designated areas and may be anchored within the reserve only during daylight hours.” Non-consumptive activities, restoration, and permitted scientific research are allowed.

4.0 PROJECT IMPACTS

4.1 CONSTRUCTION IMPACTS

The terminus of the public access easement will be at the base of the bluff, on the backshore boulder and/or cobble shoreline. This area is colonized by a low diversity of invertebrates (i.e., barnacles, limpets, snails, and crabs that frequent the higher and more stable rock surfaces. Few animals are found in the extensive cobble habitat, which is sensitive to seasonal sand inundation. Higher cover of algae and densities of invertebrates occur on the reef platform and tidepools. To avoid any potential loss of marine organisms and alternation of rocky intertidal habitat, no construction activity will occur in the marine intertidal habitat. In the absence of construction activity in this area, there will be no impacts to marine habitats or marine life, sensitive species, invasive species, Essential Fish Habitat, Habitats of Particular Concern, or Fisheries Management Plan species. Mitigation measures are not required. Appropriate Best Management Practices (BMPs) will be implemented as applicable by regulatory requirements.

4.2 USER IMPACTS

Project implementation will increase public access to La Jolla Caves Beach within the Matlahuayl State Marine Reserve, a Marine Protected Area where public access is allowed but biological resources are highly protected (see Section 3.0). It is expected that most users of the beach will be local residents, and that the magnitude of the increase in use will be moderated by the general scarcity of available parking on Princess Street and Spindrift Drive (Source: Pam Heatherington, ECOSD). Authorized activities expected to increase due to project implementation include beach walking and enjoyment; ocean-recreational activities (e.g., surfing, stand-up paddle boarding, snorkeling, swimming, birding, tidepooling); education; and scientific research. The increase of authorized public use will result in impacts to biological resources associated with cobble/sand, boulder field, shale platform habitats, shallow tidal channels, and surfgrass meadows. Impacts to biological resources are expected to include trampling, handling, and removing organisms. Because (a) the number of users is expected to increase only moderately due to project implementation; (b) no species listed as threatened or endangered is expected to regularly occur in the project area; and (c) surfgrass and other sensitive marine resources are difficult to access due to their low-and-subtidal habitat occurrence, impacts to biological resources associated with increased human use will be less than significant.

Increased public access has potential to increase the number of dogs brought to La Jolla Cove Beach, where they could disturb birds and marine mammals on the beach and defecate on the shore and in the water. Research has shown that only a small number of dogs can greatly reduce both wildlife use of beaches and water quality, including the potential to infect marine mammals with canine distemper or other canid diseases (e.g., Lafferty 2001, Hickey et al. 2003, Holderness-Roddam 2011, Orange County Coastkeeper 2024). For these reasons, an increase in dog use is identified as a potential violation of Code of California Regulations, Title 14, Section 632(a)(1)(A), and thus a potentially significant impact. To avoid any potentially significant impacts to biological resources

resulting from an increase in the presence of dogs in the Matlahuayl State Marine Reserve associated with increased public access resulting from project implementation, the project will include a prominent “NO DOGS” sign at the top of the stairway.

One invasive species, *Sargassum muticum*, which is a common component of the intertidal community in the project area, may be trampled by visitors walking on the rocky intertidal habitat. However, it is not likely to substantially spread as a result of any trampling or disturbance. Therefore, project implementation will not have a significant impact involving the potential spread of this or other invasive species.

The project will not impact any species identified in a Fisheries Management Plan (FMP), none of which occurs within the project area. As discussed previously, the project will not significantly impact surfgrass, a Habitat Area of Particular Concern (HAPC).

5.0 LITERATURE CITED

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APPENDIX 1

Partial Listing of Observed or Expected Marine Plants and Animals		Observed June 2022	Observed Jan 2025
Scientific Name	Common Name		
Colpomenia sinuosa	brown algae	x	
Egregia menziesii	brown algae		
Endarachne binghamae	brown algae	x	
Ralfsia sp.	brown encrusting algae	x	x
Sargassum agardhianum	brown algae		
Sargassum muticum	brown algae	x	x
Selvetia compressa	brown algae	x	x
Chaetomorpha lineata	green algae	x	x
Ulva intestinalis	green algae		
Ulva latuca	green algae	x	
Caulacanthus spp.	turf red algae	x	x
Corallina pinnatifolia	articulated red algae	x	
Corallina vancouverensis	articulated red algae	x	x
Crustose red algae	articulated red algae	x	x
Gastroclonium sp.	red turf algae		
Gelidium sp.	turf red algae	x	x
Lithothrix aspergillum	articulated red algae	x	x
Red turf algae	many species	x	x
Surfgrass	Phyllospadix torreyi	x	x
Haliclona spp.	Sponges	x	x
Anthopleura elegantissima	aggregating anemone	x	x
Anthopleura xanthogrammica	green anemone	x	x
Phragmatopoma californica	Sand castle tube worm	x	x
Serpulid polychaete, unid.	colonial worm	x	x
Balanus glandula	acorn barnacle	x	x
Chthamalus fissus/dalli	barnacle	x	x
Pachygrapsus crassipes	lined shore crab	x	
Pagurus samuelis	hermit crab	x	x
Pagurus spp.	hermit crab (more than one spp.)		x
Pollicipes polymerus	goose-neck barnacle	x	x
Tetraclita squamosa	green volcano barnacle		x
Mytilus californianus	California mussel		
Acanthina spirata	unicorn snail	x	x
Aplysia californica	California sea hare	x	x
Chlorostoma (Tegula) gallina	speckled turban snail	x	x
Chlorostoma (Tegula) funebris	black turban snail	x	x

Fissurella volcano	volcano limpet	x	x
Lithopoma undosa	wavy top snail	x	
Littorina spp.	periwinkle		x
Lottia digitalis	finger limpet	x	x
Lottia scabra	rough limpet	x	x
Lottia spp.	limpets		
Megathura crenulata	giant keyhole limpet	x	
Mopalia mucosa	mossy chiton	x	x
Nucella emarginata	predatory whelk	x	x
Nuttalina fluxa	chiton	x	x
Octopus bimaculoides	two-spot octopus	x	
Pteropurpura festiva	festive murex		
Serpulorbis squamigerus	scaly tube snail	x	x
Pisaster ochraceus	ochre sea star		
Strongylocentrotus purpuratus	purple sea urchin	x	
Tunicate, unid.	colonial tunicates	x	x
Styela montereyensis	solitary tunicate		
Clavelina huntsmanii	light bulb tunicate	x	x
Clinocottus analis	tide pool sculpin	x	
Girella nigricans	opaleye perch		
Hypsoblennius spp.	tide pool blenny	x	x
Number of Taxa Observed During the 2022 and 2025 Surveys		44	37

Sources:

CRM 2022 Princess Street Intertidal Survey

CRM 2025 Princess Street Intertidal Survey

California State Water Resources Control Board San Diego-Areas of Special Biological
Significance Reconnaissance Survey Report-San Diego-La Jolla Ecological Reserve
(1979)

APPENDIX 2

RESUME OF PREPARER RICK WARE SENIOR MARINE BIOLOGIST/PRESIDENT COASTAL RESOURCES MANAGEMENT, INC.

Mr. Ware is the senior marine biologist and president of Coastal Resources Management, Inc. (CRM), located in Laguna Niguel, CA California. He has 47 years of experience conducting marine biological resource surveys and evaluating the impacts of coastal development on marine communities in California, Alaska, and the Pacific Basin. He is familiar with both federal (NEPA) and State of California (CEQA) guidelines and regulations and has managed and/or participated in the preparation of numerous state and federal-mandated environmental documents.

Mr. Ware has conducted numerous types of field studies, including intertidal, soft-bottom and hard-bottom dive surveys, nearshore and bay/harbor habitat mapping; biological sampling and analysis for wetlands, bays, harbors, and open coastal environments; water quality sampling, Remotely Operated Video (ROV) surveys, sidescan and downlooking sonar surveys for physical and biological habitat mapping; and has prepared numerous environmental impact assessments, mitigation planning and monitoring reports since 1992. He is well versed in the taxonomy of Pacific Coast marine plants and animals, the ecology of coastal marine communities, the environmental impacts of development, and the restoration and monitoring of coastal resources. He works regularly on projects that require permits from the California Coastal Commission, the State Regional Water Quality Control Board, EPA, and the U.S Army Corps of Engineers and is very familiar with the environmental permitting process.

A certified diver for 55 years, Mr. Ware has performed subtidal diving surveys, sample collection, still photography, and underwater video documentation to depths of 150 ft. He has accumulated over 2,400 hours of dive time investigating subtidal communities of California, Alaska, the Caribbean, and the Pacific Basin.

Education

M.A., Biology, California State University, Long Beach (1979) Thesis: *Food habits of the white croaker, Genyonemus lineatus and a benthic infaunal analysis near areas of waste discharges in Outer Los Angeles Harbor.* (Donald J. Reish, major professor)

B.S., Zoology, California State University, Long Beach (1976)

A.A., Orange Coast College, 1973. Marine Technology Certificate

Professional History

- Coastal Resources Management, Inc. Laguna Niguel, Ca.-Principal/Marine Biologist 1992-present.
- EIP Associates, Pasadena, CA. -Senior Associate/Director of Resources Management-1991.
- Dames & Moore, Inc., Santa Ana, Ca. -Consulting Marine Biologist 1989-1995.

- Michael Brandman Associates, Inc., Santa Ana, CA. -Project Manager/Marine Ecologist 1989-1991.
- MBC Applied Environmental Sciences, Costa Mesa, CA -Marine Technician 1972; Marine Biologist 1978-1988.
- Orange Coast College-Research Grant Coordinator 1977-1978.
- Allan Hancock Foundation, University of Southern CA. -Marine Technician and Biologist 1974-1977.

Professional Affiliations

- Southern California Academy of Sciences
- American Fisheries Society
- Scientific Technical Advisory Committee, Newport Bay Conservancy
- Certified SCUBA Diver (NAUI, 1970); American Academy of Underwater Sciences (AAUS) CPR/First Aid Certified/Oxygen Training Certified
- National Marine Fisheries Service Certified *Caulerpa taxifolia* surveyor

Teaching Credentials

- State of California Community Colleges, Natural Sciences

Focused Project Resume

- Principal Investigator. Topanga State Park Sediment Reuse Project for Topanga Lagoon. Marine Biological Surveys. 2023 intertidal surveys, dive surveys, and sidescan sonar surveys. Under contract to the Resources Management District of the Santa Monica Mountains. June-August 2023.
- Principal Investigator. Topanga State Park Sediment Reuse Project for Topanga Lagoon. Marine Biological Surveys. 2022 intertidal surveys, dive surveys, and sidescan sonar surveys. Under contract to the Resources Management District of the Santa Monica Mountains. June-August 2022.
- Principal Investigator. Maine Biological Resources. Port of Long Beach Security Operations Facilities Project Mitigated Neg Dec. Under contract to LSA Associates, CRM conducted intertidal and subtidal dive surveys and prepared a marine biological technical appendix for a CEQA Mitigated Neg Dec in association with the construction of a new Port Security Facilities complex on Pier F in the Port of Long Beach. 2015.
- Principal Investigator, Exxon Mobile Power Cable Pre and Post Construction Marine Biological and Focused Abalone Surveys. Under contract to Padre Associates and ExxonMobil, Mr. Ware was the principal scientist for pre-and-post construction marine biological surveys and impact assessments for a proposed power cable repair project offshore of Las Flores Canyon, Santa Barbara County. 2015.

- Principal Investigator. 2013 Public Use Surveys. Robert C Badham, Irvine Coast, and Heisler Park Area of Special Biological Significance. Under contract to Weston Solutions and the City of Newport Beach. August-November 2013.
- Principal Investigator. City of Avalon Bluewater Grill Seawall Repair Project-Marine Biological Survey and Assessment of Potential Project Effects on Marine Life. Under contract to the City of Avalon. 2012.
- Principal Investigator, Public Use Impact Studies for Central Orange County Area of Special Biological Significance (ASBS) Public Use Investigations at Robert C Badham, ASBS and Crystal Cove ASBS for the City of Newport Beach under contract to Weston Solutions, Inc. January 2007-January 2008 surveys.
- Principal Investigator, Marine Biological Resources. Dana Point Harbor Revitalization Studies, under contract to LSA Associates, Inc. to prepare a marine biological resources impact assessment for Waterside Improvement Draft Subsequent EIR. CRM conducted habitat and species surveys within Dana Point Harbor in February/March, October/November 2007 and June 2010 and prepared the Marine Biological Technical Appendix for the Project EIR and its update in 2010.
- Principal Investigator, Marine Resources. Seal Beach Pier Groin Re-Construction Project. Moffatt & Nichol Engineers and the City of Seal Beach. Conducted intertidal surveys and subtidal marine biological surveys and prepared marine biological environmental assessment for the Seal Beach Pier Groin Re-Construction Project Negative Declaration. 2005-2006; and pre and post grunion (*Leuresthes tenuis*) monitoring surveys between February and May, 2008.
- Principal Investigator, Marine Biological Resources for the Treasure Island Resort Project. Under contract to the City of Laguna Beach and the Athens Group. Preparation of environmental assessment, marine resources monitoring plan, application to nominate Treasure Island as a State Marine Park, and the conduct of a 5-year field monitoring program for rocky intertidal, subtidal reefs, and visitor use (plants, benthic invertebrates, and fishes). 1997-2009. Studies completed and submitted to the City in June 2009.
- Principal Investigator in Association with M-REP. Agua Hedionda Lagoon Jetty Restoration Project-marine biological dive surveys, sonar surveys, and project impact assessment report. 2000-2001.
- Principal Investigator (Intertidal and Subtidal Marine Resources) for the Community of Cambia, CA Desalination Facility Project EIR under contract to Robert Bein, William Frost Associates to assess the short-term and long-term environmental impacts of a coastal desalination plant on rocky intertidal and subtidal benthic communities in the vicinity of the proposed outfall and intake structures. 1994-1997.

- Principal Investigator for a U.S. Navy San Clemente Island marine biological inventory of intertidal and subtidal environments in the vicinity of Wilson's Cove and impact assessment of the effects of sewage discharge on marine communities under contract to USNSWD. 1997.
- Principal Investigator for California Department of Transportation (Cal Trans) District 7 Marine Biological Surveys and Pre-Post Impact Analysis and Mitigation Monitoring Program to assess the effects of sediment disposal on intertidal and subtidal resources along Pacific Coast Highway in Malibu. 1994-1998.
- Principal Investigation. US Navy Southwest Division San Diego California Marine Biological Mitigation Monitoring (Kelp Bed and Benthic Habitats) at Imperial Beach, Point Loma, South Oceanside, Solana Beach, and Encinitas for P-207 Channel Dredging, Naval Air Station, North Island, Coronado, CA and San Diego County Beach Nourishment Projects. Under Contract to Tierra Data Systems and USNAV Southwest Div. 1997-1999.
- Project Biologist for Exxon U.S.A. intertidal and subtidal Surf Grass Restoration Project Pilot Study, Santa Ynez Unit Pipeline Project to determine the potential for transplanting surfgrass as a mitigation measure due to oil and gas pipeline construction activities in Santa Barbara County. 1989-1995.