

CALIFORNIA COASTAL COMMISSION

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Th11a

5-19-0345 (OC Parks)

November 5, 2020

EXHIBITS

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Exhibit 1 – Project Location





Exhibit 3 – Sandcube Design

Sandcube Cross Section

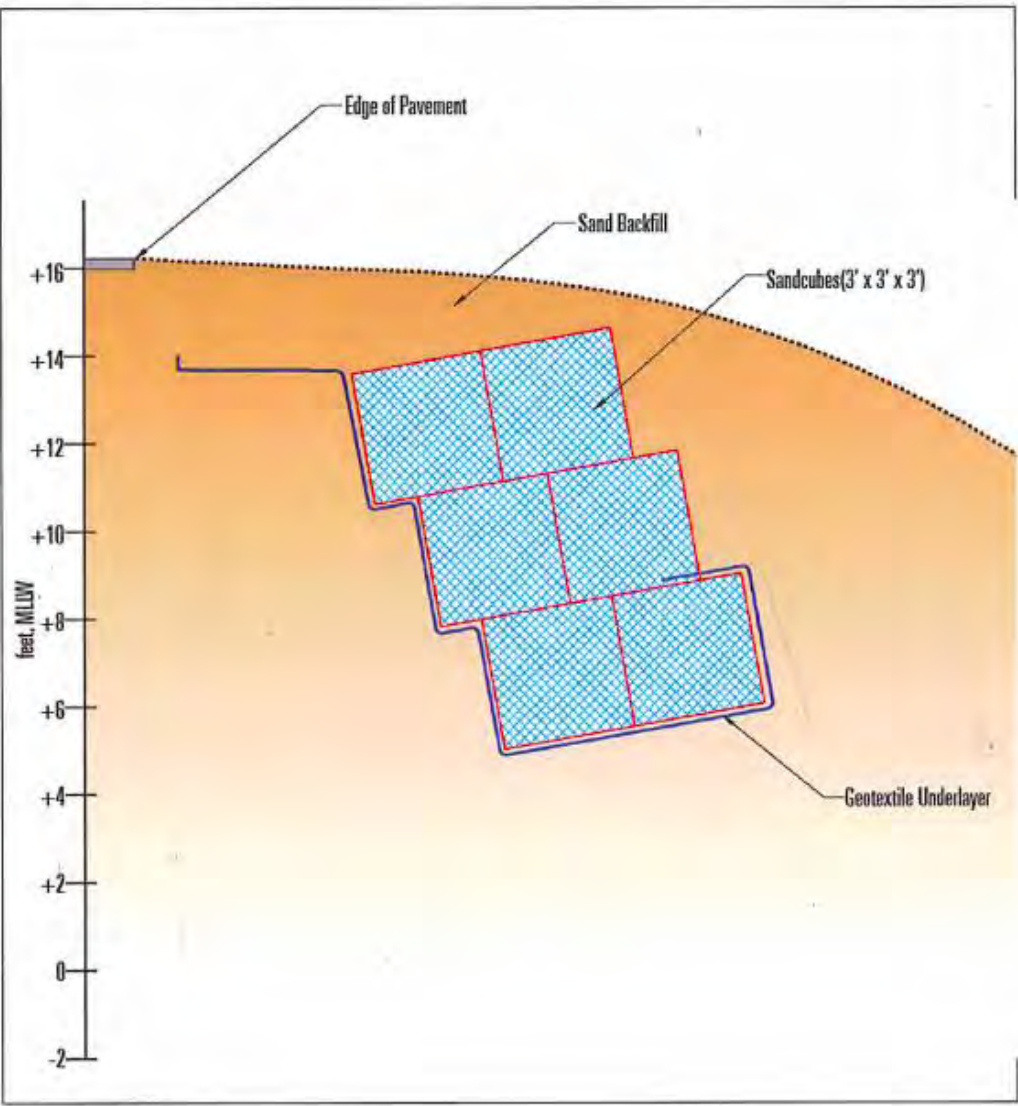


Exhibit 4 – Emergency Permit History*



* This exhibit was provided by OC Parks and may not fully represent the emergency developments.



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Capistrano Beach County Park Sandcubes Monitoring and Maintenance Plan

County of Orange, OC Parks



13042 Old Myford Road
Irvine, CA 92620

September 2020

This monitoring and maintenance plan is to ensure that debris produced by degrading or damaged sandcubes/sandbags along Capistrano Beach does not enter coastal waters. Sandcubes have been installed on an emergency basis to provide shoreline protection of the Capistrano Beach County Park facilities. The sandcubes have been installed at the Park's south end along the public parking lot and north end along the bicycle path (photos below).



South-end sandcubes (currently exposed)



North-end sandcubes (currently partially exposed)

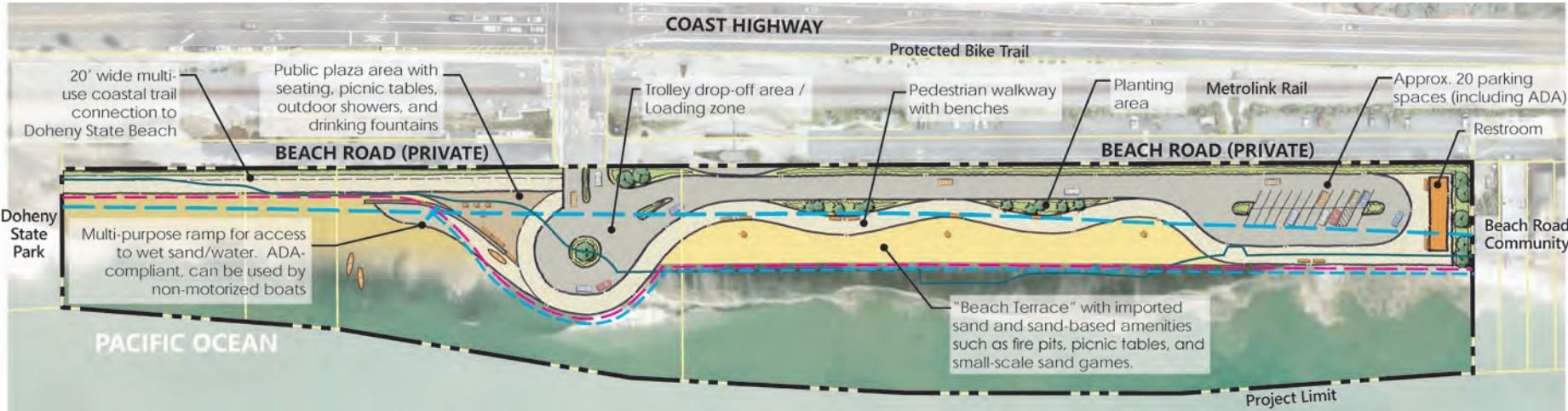
Monitoring and Maintenance Requirements:

- OC Parks ranger staff will inspect the sandcubes no less than once per week.
- OC Parks ranger staff will inspect the sandcubes at both locations.
- OC Parks ranger staff will inspect the sandcubes from both the beach side and landward side.
- OC Parks ranger staff will remove loose sandcubes material which is non-functional and at risk of coming loose. Material will be disposed at proper upland location.
- OC Parks ranger staff will take photographs and immediately notify OC Parks senior coastal engineer staff of sandcubes which are no longer held in place by straps, have become dislodged and/or have tears or holes.
- OC Parks senior coastal engineer will determine if sandcubes replacement is necessary.
- If sandcubes are exposed, material will be pushed up to maintain coverage, or if a suitable sand source becomes available, OC Parks will place sand cover over the sandcubes as per the County's "Sand Compatibility and Use Guidelines" document.

Summary of Three Alternatives

Alternative 1

Strategy:
PROTECT



Protective Element Sculpted Vertical Seawall

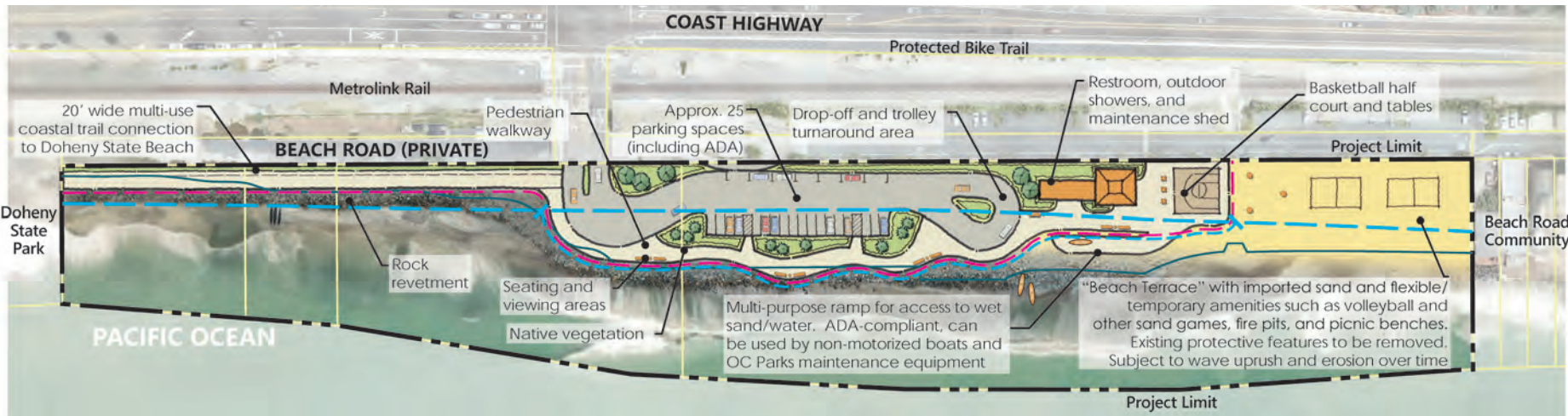
- Vertical wall with sculptural finish to mimic natural bluffs
- Amount of wall exposed will fluctuate with sand levels



Pismo Beach

Alternative 2

Strategy:
PROTECT + RETREAT



Protective Element Rock Revetment

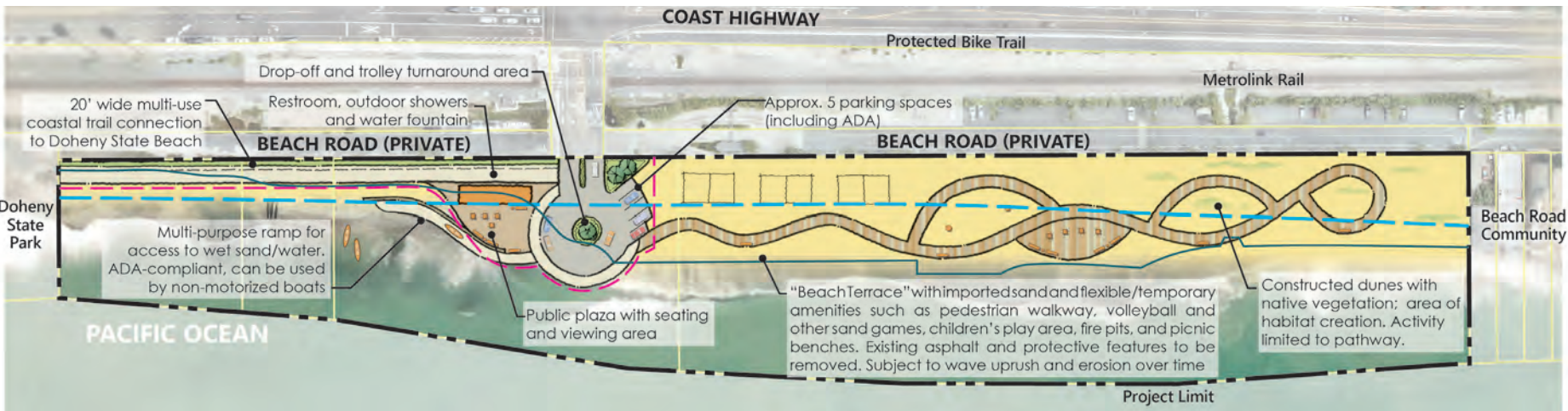
- Revetment crest can be raised as needed for future SLR
- Amount of rock exposed will fluctuate with sand levels



Capistrano Beach

Alternative 3

Strategy:
ACCOMMODATE + RETREAT



Accommodating Element Pile-Supported Structure

- Accommodation strategy
- Pilings support turnaround, plaza, ADA ramp, and bike path as shoreline erodes



Santa Monica

Photo credit: Flickr User MaZannon

Exhibit 7 – Projected Future Shoreline Positions

[Excerpt from Moffat & Nichol April 2019 *Capistrano Beach County Park Coastal Resiliency Study*]...1.6 ft and 3.3 ft [of sea level rise] at Capistrano Beach are shown in Figure 4.11 and Figure 4.12, respectively. Note that the “initial shoreline” position shown in these CoSMoS graphics is significantly seaward of the actual current shoreline position. Based on the current more landward shoreline position (which can be seen in the underlying aerial photograph), the “final shoreline” based on future sea level rise will also be significantly more landward than shown in these graphics.



FIGURE 4.11. CoSMoS 3.0 PHASE 2 SHORELINE PROJECTIONS WITH 1.6FT SEA LEVEL RISE FOR THE NO NOURISHMENT, NO HOLD-THE-LINE SCENARIO



FIGURE 4.12. CoSMoS 3.0 PHASE 2 SHORELINE PROJECTIONS WITH 3.3FT SEA LEVEL RISE FOR THE NO NOURISHMENT, NO HOLD-THE-LINE SCENARIO

Exhibit 8 – OC Parks' Short-Term Alternatives Analysis

CAPISTRANO BEACH SHORT-TERM ALTERNATIVES ANALYSIS

In 2015-2016 and again in 2018-2019 and 2020, Capistrano Beach County Park facilities incurred significant damage due to storm waves coupled with high tides, resulting in the immediate need for emergency response shoreline protection methods. High and persistent water levels and wave action caused scouring, which undermined the structural integrity of the facilities at the County Park and City stormwater infrastructure. In response, damaged and threatened park infrastructure was removed and sandcubes were installed along approximately 450 linear feet of park shoreline and armor rock was placed along approximately 120 linear feet of shoreline fronting the remaining basketball court area.

In order to continue to protect public recreational and stormwater treatment facilities, the County of Orange and City of Dana Point are requesting authorization for the sandcubes and armor rock to remain in place until the County's Master Plan and longer-term solutions are developed and implemented within an approximate 5-year timeframe. The CDP application also requests approval to install sandbags in the future as necessary along approximately 420 linear feet of a currently unprotected segment of the bicycle path.

In response to Coastal Commission request, the County has identified other potential alternatives for short-term implementation:

- A. Remove all sandbags and armor rock along the entire County Park shoreline (retreat);
- B. Remove all sandbags and armor rock along the entire County Park shoreline and import and place sand along Capistrano Beach;
- C. Remove all sandbags and armor rock and construct vegetated dunes (living shoreline);
- D. Replace all sandbags with armor rock along the entire County Park shoreline.
- E. Replace armor rock with sandbags along the entire County Park shoreline.
- F. Replace armor rock and/or sandbags with buried cobble berm along some or all of the County Park shoreline.

The pros and cons of each of these alternatives, as well as the proposed alternative, is discussed in the following sections. The feasibility of each alternative will be determined by the degree to which they satisfy the following project objectives:

- Continue to provide public beach access and parking over the next 5 years while the Master Plan long-term solution is developed;
- Continue to protect the bicycle path which provides an important link in the Coastal Trail;
- Protect the City stormwater treatment infrastructure over the next 5-years while a long-term solution is developed;
- Provide a cost-effective and immediate solution in response to emergency conditions; and
- Do not implement actions which will further increase future impacts and costs for implementation of the Master Plan.

Per CCC request, this alternatives analysis also reviews alternative public transit opportunities and alternative parking configurations.

Proposed Alternative – All sandbags and armor rock to remain in place until Master Plan implemented

Alternative Description

This is the proposed alternative as described in the CDP application, i.e. retention of the emergency sandcubes and armor rock along the Capistrano Beach shoreline, until the County's Master Plan is implemented. The CDP application also requests approval to install sandbags in the future as necessary along approximately 420 linear feet of a currently unprotected segment of the bicycle path, as well as to place armor rock in the currently unprotected segment where the damaged wooden seawall was removed. The County will continue to implement maintenance measures after storm events such as installing safety barricades (k-rail) and safety fencing as necessary to protect the public, removing cobble/rock and sand deposited from storms in the parking lot and bicycle path, removing trash/debris deposited from storms along the County Park, and inspecting the sandcubes for damage.

Pros

- Allows for continued beach access by protecting public parking and bicycle path
- Protects the City's stormwater treatment facility and thus protects ocean water quality
- Minimizes the need for future storm damage repair and maintenance actions
- Does not require further expenditure of public funds for additional actions (other alternatives)
- Avoids impacts to beach access and beach habitat from additional construction activities which would be required for other alternatives

Cons

- Potential degradation of sandcubes (see below for mitigation)

Analysis of Proposed Alternative

As further described in the CDP application, the proposed alternative provides necessary protection of public access amenities until the Master Plan can be developed and implemented. The sandcubes will be regularly inspected for damage/degradation to prevent sandbag material from being discharged onto the beach. When/if sandcube degradation is significant and unrepairable in-situ, the damaged sandcube will be removed and replaced with a new sandcube (using the sand from the original sandcube). Additionally, the CDP application requests approval for periodic import and placement of sand on top of the sandcubes to improve beach access and durability of the sandbags.

Alternative A – Remove all sandbags and armor rock along the entire County Park shoreline (including armor rock placed prior to the most recent emergency actions)

Alternative Description

This alternative would leave the entire County Park shoreline and City stormwater facility unprotected and exposed to wave action. After storm events, Park staff would clean up sand, cobble, and debris from the parking lot and bicycle path and repair damage to the extent practical. As infrastructure is damaged, it would be removed and areas of the park would be closed to the public for safety. The graphic on the following page shows the likely landward movement of the shoreline over the next five years. The red projection "swath" is based on a range of erosion rates of between 5 and 14 feet per year (discussed in previous incomplete application submittal). As can be seen from this graphic, the projected shoreline in just five years is well into the parking lot and bicycle path.

Pros

- Allows for natural retreat of shoreline
- Lower initial cost than proposed plan or alternatives

Cons

- Likely loss of public parking, bicycle path, and access to beach within next five years (i.e. likely park closure)
- Potential loss of Beach Road entrance and thus loss of access for Beach Road homeowners
- Potential loss of City stormwater treatment facility (potential impact to ocean water quality)
- Impacts public access when sandcubes and armor rock is being removed (sections of the park will need to be closed over construction period for public safety)
- Potential discharge of damaged infrastructure debris into ocean after storm events
- Cost of frequent maintenance actions after storm events
- Cost to remove rock and haul offsite, which might otherwise be re-purposed for the long-term Master Plan solution.



Analysis of Alternative A

Alternative A fails to meet the primary project objectives of maintaining public beach access and parking while a longer-term solution is developed. Public access to the beach would be difficult due to lack of parking. This segment of beach would be accessible from the bicycle path for a period of time, but the path would likely experience failure from ongoing erosion, or during storm events. This alternative would also likely result in damage to the City's stormwater treatment system resulting in adverse impacts to nearshore water quality.

Alternative B - Remove all sandbags and armor rock along the entire County Park shoreline (including armor rock placed prior to the most recent emergency actions) and import and place sand along Capistrano Beach

Alternative Description

Based on an assumed sand import volume of 100,000 cubic yards, Capistrano Beach could be widened initially by up to 40 feet (based on a rule-of-thumb of 1.5 cubic yards per foot of beach width per linear foot of shoreline). Approximately 1,150 cubic yards of sand is available from emptying the sandcubes. Some of the imported sand would replace the volume currently occupied by armor rock. The beach nourishment will provide short term protection; however natural wave action, as well as storm events, will cause this sand to move offshore and downcoast. With no sand coming from upcoast or from further nourishments, it is likely that this volume of sand will disappear within a five-year period, leaving the shoreline unprotected. Although the projected future shoreline would not be as far landward as in Alternative A, there would still be significant damage to the parking lot and bicycle path when the imported sand is eroding. The renourishment frequency would be dependent upon the initial nourishment volume and storm intensity and frequency over the five-year period. With an initial nourishment volume of 100,000 cubic yards, it is likely that renourishment would be necessary at least every two years.

Pros

- Natural shoreline protection solution
- Allows for natural retreat of shoreline

Cons

- Extreme difficulty in immediately finding sand source and obtaining regulatory approvals
- Difficulty in finding reliable sand source for re-nourishment events
- High cost for importing sand
- Likely partial loss of public parking and access to beach within next five years
- Potential loss of public bicycle path within next five years
- Potential loss of City stormwater treatment facility (potential impact to ocean water quality)
- Impacts public access when sandcubes and armor rock is being removed (sections of the park will need to be closed over construction period for public safety)
- Potential discharge of damaged infrastructure debris into ocean after storm events
- Cost of frequent maintenance actions after storm events
- Cost to remove rock and haul offsite which might otherwise be re-purposed for the long-term Master Plan solution.

Analysis of Alternative B

Beach nourishment would be a logical response to the ongoing erosion challenges at the project site. However, the scale of nourishment needed to meet the historic levels and project objectives would result in a lengthy regulatory process and high construction cost. Although beach nourishment could be an effective regional solution over the long term, this alternative is not feasible for a temporary emergency response due to the lengthy regulatory process (for both the sand source site and Capistrano Beach placement site) and high construction cost.

Alternative C - Remove all sandbags and armor rock and construct vegetated dunes (living shoreline) along the entire County Park shoreline

Alternative Description

This alternative would require import of sand (similar to Alternative B) and the sand would be sculpted into dune formations and planted with vegetation. Cobble would be imported and placed underneath and along the toe of the dune. The beach nourishment will provide short term protection; however natural wave action, as well as storm events, will cause this sand to move offshore and downcoast. Typically, sustainable vegetated dunes require a foreshore beach berm of at least 50 feet to buffer the dunes from seasonal erosion and storm events. This type of buffer would require an additional significant volume of initial nourishment (i.e. more than 100,000 cy) and follow up nourishments to offset the sediment deficit. Without a beach berm of 50 feet or greater and based on the wave conditions typical at Capistrano Beach, the vegetated dune alone would not be expected to protect/hold the sand in place during storm events. With no sand coming from upcoast or from further nourishments, it is likely that this volume of sand will disappear within a five-year period, leaving the shoreline unprotected. Although the projected future shoreline would not be as far landward as in Alternative A, there would still be significant damage to the parking lot and bicycle path when the imported sand is lost.

Pros

- Natural shoreline protection solution
- Allows for natural retreat of shoreline

Cons

- Extreme difficulty in immediately finding sand source and obtaining regulatory approvals
- High cost for importing sand and cobble
- Dune vegetation will not have sufficient time to establish
- Likely partial loss of public parking and access to beach within next five years
- Potential loss of public bicycle path within next five years
- Potential loss of City stormwater treatment facility (potential impact to ocean water quality)
- Potential dispersion of cobble to offshore area with impact to subtidal habitat
- Potential discharge of damaged infrastructure debris into ocean after storm events
- Cost of frequent maintenance actions after storm events
- Cost to remove rock and haul offsite which might otherwise be re-purposed for the long-term Master Plan solution.

Analysis of Alternative C

Similar to Alternative B, the scale of nourishment needed to provide an adequate buffer for establishment of the living shoreline (vegetated dune) would result in a lengthy regulatory process and high construction cost. A living shoreline could be an effective regional solution over the long term if coupled with a regular nourishment program and potentially sand retention structures. However, this alternative is not feasible for a temporary emergency response due to the lengthy regulatory process and high construction cost.

Alternative D – Replace all sandbags with armor rock along the entire County Park shoreline

Alternative Description

This alternative would replace the 450 linear feet of emergency sandbags with armor rock. The rock volume needed is estimated to be approximately 2,000 tons (based on a rock revetment section design similar to the previously installed emergency protection seaward of the remaining basketball court area). Approximately 420 linear feet of shoreline would be left unprotected. The armor rock would provide more durable protection over a longer period than the sandbags.

Pros

- Durable proven shoreline protection
- Consistent contiguous shoreline protection method along County Park shoreline (except for currently unprotected area long east end of bicycle path)

Cons

- Cost of importing and placing rock
- Difficulty in immediately obtaining all regulatory approvals
- Periodic maintenance actions after storm events from wave overtopping (assumes armor rock revetment section not sized for long-term protection).
- Potential need and cost to remove the additional armor rock and haul offsite if not used in the long-term Master Plan solution

Analysis of Alternative D

Alternative D would provide a more durable shoreline protection option, but this comes with a higher project cost and potential delays in the regulatory process. Since the project objectives require only temporary protection, over an estimated duration of 5 years, the minor benefits associated with a more durable material do not outweigh the additional cost and delays that would be required for this alternative.

Alternative E - Replace armor rock with sandbags along the entire County Park shoreline

Alternative Description

This alternative would replace the 520 linear feet of existing rock revetment with sandcubes, as well as placing sandcubes in the remaining currently unprotected (~680 linear feet) sections of the County Park shoreline. Up to 6,000 sandcubes and 6,000 cubic yards of sand would be required. The existing armor rock would be hauled offsite as there is not space on-site, without affecting public parking, to store the rock for potential future use. Similar to the existing sandcubes, there is still the potential for wave overtopping and damage to park infrastructure and clean-up/maintenance of the parking lot and replacement of the

sandcubes would likely be required over time. In order to reduce overtopping, an equivalent cross section of sand cubes would require 5 sandcubes high.

Pros

- Sandcubes may be considered more temporary shoreline protection solution than armor rock
- Relatively easy to remove for implementation of Master Plan alternative and sand can be re-used on beach
- Provides protection of park infrastructure (although not as much protection as armor rock)

Cons

- Not aesthetically appealing
- Difficulty in immediately finding sand source
- Cost for importing sand
- Cost for removing rock and hauling off site
- Potential for damaged sandcubes material debris to discharge onto beach
- Potential for wave overtopping and damage to park infrastructure, similar to that observed along park sections currently lined with sand cubes
- High cost of maintenance

Analysis of Alternative E

The sandcubes in Alternative E would provide protection for park infrastructure, but not as much protection as the armor rock would provide. Additionally, the sandcubes are subject to damage and require maintenance/replacement to minimize debris discharge onto the beach. The sandcubes have proven to be effective in minimizing, but not eliminating, loss of County Park infrastructure and the City's stormwater treatment infrastructure. Implementation of sandcubes for currently unprotected segments is a proposed solution but the cost and inefficiency of removing the existing armor rock and placing sandcubes instead does not make sense at this time.

Alternative F - Replace armor rock and/or sandbags with buried cobble berm along some or all of the County Park shoreline

Alternative Description

This alternative would replace either the emergency sandbags or emergency armor rock with a sand-buried cobble berm. (Note: a cobble berm living shoreline alternative was also included in the previously-provided *Capistrano Beach County Park Coastal Resilience Study* (Moffatt & Nichol, 2019)). This alternative would require import of cobble, which would be placed into a berm formation. The cobble would then be covered with imported sand. A cobble berm is an efficient method for shoreline protection for three key reasons: 1) its ability to withstand erosion in the face of waves and currents (as compared to sand); 2) its high permeability and porosity which enhances wave energy dissipation and groundwater recharge; and 3) its tendency to increase in elevation and steepness in the face of storm waves which enhances wave energy reflection (Everts, 2002). The cobble berm would provide last-line-of-defense protection; however without a sufficient sandy beach buffer, regular wave action and storm events would likely displace the cobble and cause some of it to move across the beach profile and downcoast, reducing its ability to protect the County

Park. Maintenance and additional import of cobble and sand would likely be required. The cobble berm may reduce the amount of landward erosion of the park shoreline, however it is likely there would still be damage to the parking lot and bicycle path during high swell and storm events.

The County is interested in pursuing a cobble berm pilot project either at the far south end of the park where sandcubes are located and/or at the south end of the bicycle path where no protection currently exists. The County will be further developing and analyzing the feasibility of this pilot project over the next several months and if it is viable, will submit an amended CDP application to CCC for near-term implementation.

Pros

- Natural shoreline protection solution
- Allows for a natural response of the shoreline during storm events
- A cobble underlayer exists naturally on Capistrano Beach

Cons

- Potential dispersion of cobble outside of the direct placement area-
- Potential for cobble to become airborne during storm wave events and damage park infrastructure or become hazardous to the public
- Should sand erode offshore from a storm, the remaining cobble beach is not as conducive to passive recreation
- High cost for importing cobble and sand
- Difficulty in immediately finding sand and cobble source
- Difficulty in finding reliable sand source for re-nourishment events
- Difficulty in immediately obtaining regulatory approvals
- Cost of frequent maintenance actions after storm events
- Difficulty and cost to remove/retrieve cobble and haul offsite if cobble berm not part of long-term Master Plan solution.

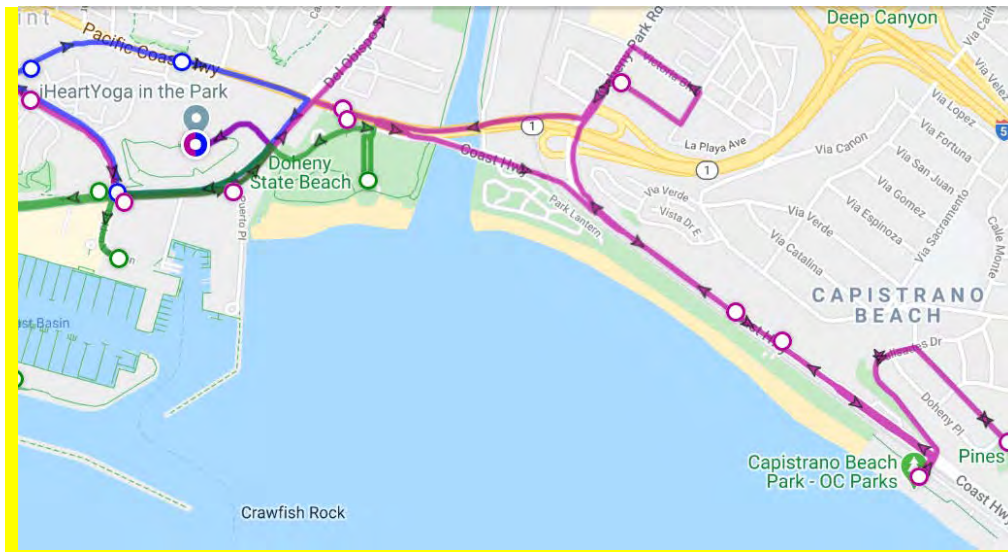
Analysis of Alternative F

Similar to several of the previous alternatives, the amount of required sand and cobble import along the park's entire shoreline would result in a lengthy regulatory process and high construction cost, while still with the risk of loss of County and City infrastructure. A cobble berm/ living shoreline could be an effective regional solution over the long term if coupled with a regular nourishment program and the County is interested in potential implementation of a cobble berm pilot project in one or two limited locations. However, this alternative is not feasible as a replacement for all sandbags and armor rock due to the lengthy regulatory process and high construction cost.

Alternative public transit opportunities

Based on the Dana Point Trolley website (dptrolley.com), the trolley route does include a stop at Capo Beach during the summertime (early June through Labor Day) – see screenshot on following page. (Currently though, the trolley is not running due to COVID restrictions). There are several pick-up and drop-off stops along the trolley route; while this may be good from the perspective of providing multiple options for people in different areas of the City, it would not be effective for supporting beach access for inland communities, individuals or families with recreational and/or other day use equipment, or local people looking to visit Capo Beach for just a short reprieve and who may not want to spend this extra time on the trolley. It should also be noted that most people will still have to drive to get to a trolley pick-up site and the geographic extent of the trolley route is limited to within the City of Dana Point.

It is not likely that expanding the trolley route beyond the City of Dana Point and/or during all times of years would be financially practical. Even with expanded use, increased availability throughout year or a designated inland parking area, trolley service has inherent use limitations and simply cannot support all the various user groups of Capo Beach. It is recognized that an improved/expanded transit system can provide additional visitor opportunities and is an important access element to be fully considered and vetted through the long-term planning process, however public transportation is likely to not be a preferred or convenient alternative for most park users and those park users simply will not visit Capo Beach if the public parking does not exist there. Capo Beach is one of the only free public parking areas along this stretch of the coastline.



Alternative parking configurations.

It is acknowledged that alternative parking configurations are possible and these are being studied as part of the Master Plan/Public Works Plan. The parking lot must be of sufficient width to allow for parking as well as ingress and egress to/from the parking spots and the parking lot entrance must be safe, especially related to the train tracks (Fire Department concern). Even if the parking lot can be re-configured to convert existing parking to sandy beach, it is likely that there will still be the need for some type of shoreline protection for the remaining parking area (or ultimately for the Beach Road homeowners single accessway and train tracks). As seen in the previous figure, erosion of the unprotected shoreline would

likely be well into the parking lot in just five years and thus all parking would be lost. Given this need for shoreline protection even with an alternative parking configuration, it will be least impactful to implement parking lot re-configurations as part of the Master Plan/Public Works Plan in a thoughtful manner with public input rather than a short-term alternative with potential long-term implications.

Summary

It is clear from the analysis above that these other alternatives are not practical for short-term implementation and the cons outweigh the pros. Some of the alternatives may however be suitable as long-term solutions and the County is studying one alternative in particular (cobble berm living shoreline) as a potential pilot project, to be implemented in the short-term if determined feasible, to evaluate the effectiveness for long-term implementation. The sandcubes and armor rock are the best possible short-term solutions until the long-term Master Plan/Public Works Plan is implemented. It should be noted that the County has already implemented managed retreat components (removal of restroom, boardwalk, beach access stairway, basketball court, and sections of the parking lot). It should also be noted that it is not practical to re-route the bicycle path to the area landward of the existing path because that area is private property owned by a community service district. In addition, it would require replacement of the stormwater treatment facility. Likewise, it is not feasible to re-route the bike path along PCH because there is no upcoast bicycle access back to the Doheny Beach path from PCH (due to the train tracks).