CALIFORNIA COASTAL COMMISSION
SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370

April 28, 2017

Th 17d

TO: COMMISSIONERS AND INTERESTED PERSONS

FROM: KARL SCHWING, DEPUTY DIRECTOR, SD COAST DISTRICT
GABRIEL BUHR, COASTAL PROGRAM MANAGER, SD COAST DISTRICT
ERIC STEVENS, COASTAL PROGRAM ANALYST, SD COAST DISTRICT

SUBJECT: STAFF RECOMMENDATION ON CITY OF SOLANA BEACH MAJOR AMENDMENT LCP-6-SOL-16-0020-1 for Commission Meeting of May 11, 2017

SYNOPSIS

The subject land use plan amendment was submitted and filed as complete on April 29, 2016. The Commission granted a one-year time extension on July 13, 2016. As such, the last date for Commission action on this item is July 13, 2017. This staff report addresses the entire submittal.

The subject submittal consists of amendments to only the Land Use Plan portion of the City's LCP. Future certification of an Implementation Plan will be required to fully certify the City's LCP.

SUMMARY OF LUP AMENDMENT

When bluff and shoreline armoring (herein 'bluff retention devices') are built along the coastline, they have impacts on public access and recreation in the form of lost sandy material that would have otherwise contributed to beach formation and the loss of public recreational opportunities that occur through direct and indirect loss of beach area that would have formed as erosion (usually of bluffs) moves inland. The Commission has sought to address these impacts, in part, by charging applicants an in-lieu fee that best captures the monetary costs borne to the public over the period of time the bluff retention device is present and to use those fees in ways that offset the impacts. The method for calculating a fee to offset impacts due to loss of sand has been widely accepted and is not the focus of this amendment. However, the method for calculating a fee for the impact to public recreation (i.e. Public Recreation Fee) varies widely and has required ongoing study. The City of Solana Beach has developed a mitigation methodology, which it is proposing to incorporate into its certified LUP through this amendment.

The Land Use Plan (LUP) Amendment #LCP-6-SOL-16-0020-1 (Public Recreation Fee), as proposed by the City, would amend one policy of Chapter 4 (Hazards and Shoreline/Bluff Development) of the certified LUP and would add a new appendix to the

LUP. In addition, the City's Public Recreation Fee Study and its appendices are proposed to be incorporated by reference.

The City proposes to modify LUP Hazards & Shoreline/Bluff Development Policy 4.50. Policy 4.50 currently requires that applicants provide reasonable and feasible Sand Mitigation Fees and Public Recreation Fees to mitigate for impacts resulting from bluff retention devices, including coastal structures and non-erodible seacave/notch infills. The Policy details the requirements for determining Sand Mitigation Fees and references Appendix A of the LUP, which includes the Commission's Sand Mitigation Fee Formula. In addition, Policy 4.50 explains that the Commission and City are developing a method for calculating a Public Recreation Fee and that until a public recreation mitigation fee method is approved, applicants are required to pay a $1,000 per linear foot interim fee deposit to mitigate impacts to public recreation that result from coastal structures or non-erodible seacave/notch infills. In June of 2007, the City of Solana Beach adopted the interim in-lieu fee program (Ref. Resolution 2007-042, City of Solana Beach). The program was designed as "interim" until the City completes, and the Commission certifies as part of an LUP, an economic study that develops a more long-term way to determine impacts to public access and recreation from shoreline armoring. The Commission and the City began requiring the interim deposits in 2008, and it was included as a part of the City's LUP approved by the Commission in 2012. To date, 20 properties have been subject to the interim deposit and have paid a total of $1,187,500 for a total of 1,187.5 linear ft. of coastal structures and non-erodible seacave/notch infills (Exhibit 1).

As proposed to be modified by the City, LUP Policy 4.50 would require applicants to pay a mitigation fee for public access and recreation impacts caused by bluff retention devices, consistent with the mitigation method proposed in this LUPA and detailed in a new Appendix C to be contained within the LUP. Appendix C, as proposed by the City, summarizes the proposed public recreation mitigation method, and includes a fee schedule to determine the required Public Recreation Fee to mitigate for impacts to public beach access and recreation that are expected to result from the construction of a coastal structure or non-erodible seacave/notch infill over a 20 year mitigation period. The City's public recreation mitigation method was derived using certain economic concepts that primarily depend on 1) choice of a proxy, or 'stand-in', for recreational value of the beach per visitor per day (also called the beach day use value), 2) estimated numbers of beach visitors annually, and 3) the area of beach impacted by shoreline armoring. The day use value was estimated using surveys that assessed the amount of time visitors spent traveling to get to and from the beach and the estimated cost of travel (including time value based on income). The City calculated the seasonal beach day use value per person per day for Solana Beach to be $19.25 (2016 dollars) in the summer and $14.76 (2016 dollars) in the winter. This number was then multiplied by the estimated total number of adult visitors to the beach per year to derive the annual recreational value of the entire beach. The value of the City's Junior Lifeguard Program was then added to obtain the total estimated beach recreation value. Thus, the key variables that the City used to calculate the Solana Beach annual recreational value are day use value and attendance:

Annual Recreational Value ($/yr) = Day Use Value ($/person) x attendance (people/yr) + Jr. Lifeguard Program ($)

Since the City is using this annual recreation value to determine the loss in recreational value associated with loss of beach area, another key variable for the Public Recreation Fee calculations is the size of the beach. Thus, the City's method divides its proxy for the annual recreational value by the size of the beach to get a dollar value per square foot of beach area. This metric allows valuation per square foot of beach lost due to a coastal structure or non-erodible seacave/notch infill.

Annual Recreational Value per sq ft ($/yr per sq ft) = Annual Recreational Value ($/yr) / Area of Solana Beach (sq ft)

The Public Recreation Fee would then be applied in roughly the same manner as the Commission has done in the past in that the mitigation calculation is based on the direct encroachment by the bluff retention device (Encroachment loss) and beach area that would have formed due to passive erosion over a 20 year mitigation period (Passive erosion loss).

Public Recreation Fee ($/20 years) = Encroachment loss ($) + Passive erosion loss ($)

When applying the City's assumptions for recreational value, attendance, and beach area, a standard 2 ft. wide 50 ft. long seawall built in 2016 would result in a Public Recreation Fee (Encroachment loss ($) + Passive Erosion loss ($)) of approximately $21,550 for the bluff retention device's initial 20 year mitigation period.

Exhibit 2 shows the City's proposed changes to LUP Policy 4.50. Exhibit 3 includes the City's proposed new Appendix C. Exhibit 4 includes links to the City's Public Recreation Fee Study and its appendices.

SUMMARY OF STAFF RECOMMENDATION

Staff is recommending the Commission deny the LUP amendment, as proposed, and to approve the LUP amendment with suggested modifications.

The City's LUP, as certified by the Commission, identifies the elements of a comprehensive shoreline management plan for the City of Solana Beach, which must include mitigation for impacts to public access and recreation resulting from the construction of bluff retention devices. The City's LUP amendment, as submitted, relates primarily to bluff retention devices constructed to provide protection for single family homes and condominium buildings along the shoreline in the City of Solana Beach.

In terms of an overview, the following modifications are needed to approve the LUP amendment consistent with the Chapter 3 policies of the Coastal Act. The majority of the suggested modifications are to the new proposed Appendix C (Public Recreation Fee). Appendix C describes how the Public Recreation Fee is calculated and also defines the primary assumptions of the mitigation method. The City's LUP amendment submittal

included their entire Fee Study along with extensive appendices. The City has proposed to incorporate the Fee Study into the LUP by reference. However, rather than modify the City's Fee Study directly to reflect the suggested modifications, staff proposes to introduce the following changes to the Appendix C methodology and instead incorporate the City's Fee Study itself as a substantive file document.

The outstanding issues and concerns are cited here, along with a brief summation of proposed modifications. Suggested Modifications 1-15 are to the new Appendix C. Suggested Modification 16 is to an existing Chapter 4 LUP policy and LUP text.

Suggested Modification #1:

- The size of the beach is one factor used in the calculation to determine the Public Recreation Fee. There have been at least 19 Light Detection and Ranging (LiDAR)[1] measurements of beach area in Solana Beach since 1997, of which the City has chosen 4 to average to determine beach area. Staff is recommending that beach area be determined based on averaging the entire 17 year/19 point LiDAR dataset, which results in a beach area of 15.2 acres in place of the 18.8 acre beach area as calculated by the City that was based on only two years of LiDAR data. Use of a smaller estimated beach area would increase the Recreation Mitigation Fee. Staff is also recommending that the City update this beach area calculation every ten years in order to determine if the average beach area has changed, and to incorporate any changes as an amendment to Appendix C of the LUP. Beaches are dynamic environments that can change in size in a relatively short period of time. Thus, using only four data points does not provide the best estimate of beach area. Instead, beach area should be determined using as much of the available beach width and beach area data as possible.

Suggested Modification #2:

- Staff is recommending that a 67% wage rate be used to determine the beach day use value in place of the 33% wage rate proposed by the City. The travel cost method assigns a monetary value to the time a person spends traveling to the beach and this is normally based upon a percentage of the person's salary or hourly wage and it is a key factor in calculating the proxy value of a day at the beach. If a 67% wage rate is used, for a typical 2 ft. wide, 50 ft. long seawall, a property owner would be required to pay a Recreation Mitigation Fee of $42,100[2] for the initial 20-year mitigation period. In contrast, if the 33% wage rate

[1] LiDAR, which stands for *Light Detection and Ranging,* is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses—combined with other data recorded by the airborne system - generate precise, three-dimensional information about the shape of the Earth and its surface characteristics. LiDAR has been an accepted method for acquiring topographic data for large areas of land for several decades and both the State of California and NOAA have been supporting the acquisition and archiving of LiDAR data for the San Diego area since 1997.
[2] This amount incorporates the suggested modification in this staff report related to beach width. If the larger beach width proposed by the City is used to calculate the fee, it would be reduced to $34,050.

proposed by the City is used, for typical 2 ft. wide, 50 ft. long seawall, a property owner would be required to pay a Recreation Mitigation Fee of $26,780[3] for the initial 20-year mitigation period. Relying on a lower wage rate has greater potential to underestimate beach value and this is reinforced by comparisons to other economic studies on beach value in Southern California. In the future, this day use value may be required to be updated to reflect current practices or new information.

Suggested Modification #3:

- Staff is recommending that Table 1 in Appendix C, which details the Initial Area Rate and the Bluff Retreat Rate for bluff retention devices constructed between 2016 and 2026, be updated to reflect the Commission's suggested modifications to the beach day use value and to the estimated beach area.

Suggested Modification #4:

- Beach attendance is used to determine the annual recreational value of the beach. The City is not proposing to update beach attendance. Staff is recommending that every ten years, the City shall adjust the beach attendance based on either available population growth estimates or through an updated attendance survey. Staff is also recommending that the City incorporate any changes to the attendance as an amendment to Appendix C of the LUP. Regular updates to beach attendance are necessary in order to ensure that attendance figures continue to accurately reflect beach use in the future.

Suggested Modification #5:

- Staff is recommending that the City update the annual recreational value for the entire beach and annual recreational value per square foot of the beach every ten years if there are changes in attendance or beach area estimates, respectively, and incorporate any changes as an amendment to Appendix C of the LUP.

Suggested Modification #6:

- Staff is recommending that any change to the erosion rate in the future be incorporated as an LUP amendment as it would impact the calculation of the Sand Mitigation Fee and Public Recreation Fee, and that Appendix C be updated accordingly. Policy 4.51 of the certified LUP already requires that the City review the erosion rate at least every ten years and more often if warranted by physical circumstances, including large scale sand replenishment projects and changes in sea level and this suggested modification would memorialize those updates into Appendix C of the LUP.

[3] This amount incorporates the suggested modification in this staff report related to beach width. If the larger beach width proposed by the City is used to calculate the fee, it would be reduced to $21,550.

Suggested Modification #7:

- The City is proposing to give a credit to shoreline property owners (i.e. reduce the public recreation fee) where a quantifiable public safety benefit arises from construction of a bluff retention device. Staff is recommending elimination of these mitigation offsets or reductions for bluff retention devices whose primary purpose is the protection of private property, and that Appendix C be updated accordingly. The Commission does not agree that bluff retention devices provide any quantifiable public safety benefit, and therefore, reductions to the required recreation mitigation based on the theory that bluff retention devices reduce the number of beach fatalities is not appropriate. Bluff retention devices could have the opposite effect by creating a more narrow concrete backed beach that that doesn't allow beach users to escape from high tides or large waves resulting in increased hazardous conditions for users.

Suggested Modification #8:

- The City is proposing to monitor the citywide erosion rate every 10 years and to either provide a credit for overpayment if the erosion rate was lower than expected or require additional payment if the erosion rate was higher than expected. Credits or additional payments would be factored into the next mitigation term payment. Staff recommends the Commission prohibit retroactive adjustments to project specific Public Recreation Fees (excluding the $1,000 per linear foot interim fee deposits), and that Appendix C be updated accordingly. After-the-fact adjustments to Public Recreation Fee amounts would increase uncertainty for permittees, the City, and the Commission. Furthermore, erosion estimates are based on long term averages and adjustments and should not be based on a comparatively shorter time scale.

Suggested Modification #9:

- The City is proposing to use the public recreation fees for both coastal and inland projects. Staff is recommending that all projects funded by the Public Recreation Fee be located directly along the coast and that the projects result in direct improvements to public recreation and beach access, and that Appendix C be updated accordingly. Inland projects would not improve public access and recreation at the beach and would therefore not provide an adequate nexus to mitigate for the impacts of shoreline armoring.

Suggested Modification #10:

- The City's proposal requires mitigation if a seawall is built seaward of a seacave that is 8.2 feet deep, or deeper, as this was determined to be 'imminently' threatened by collapse. Staff is recommending that the entire area of any notch or

seacave of any depth located landward of a bluff retention device be included in the Public Recreation Fee calculations, and that Appendix C be updated accordingly. When the lower sea cliff is undercut by one or more feet (i.e. notches/seacaves have formed), it commonly fails in blocks. Thus recreation mitigation for the area of notches/seacaves located landward of proposed bluff retention devices is appropriate as collapse of these voids is how additional public beach area is formed.

Suggested Modification #11:

- The City's proposal does not address whether mitigation is required for existing infilled seacaves or notches. Infills approved over the past 15+ years have been filled with 'erodible concrete', some have paid sand mitigation, but none paid public access mitigation. Staff is recommending that the area of any previously infilled notch or seacave, which was constructed with erodible concrete, located landward of a coastal structure or non-erodible seacave/notch infill be included in the Public Recreation Fee calculations, and that Appendix C be updated accordingly. The Commission has approved numerous erodible concrete notch/seacave infills in Solana Beach and, consistent with the City's certified LUP, did not require payment of the interim recreation mitigation fee because the infills were designed to erode at the same rate as the natural bluff and did not fix the back of the beach. However, if a bluff retention device is proposed to be constructed seaward of an erodible concrete notch/seacave infill, the infill will no longer be subject to erosion and will result in the same impacts to the coastal beach as a non-erodible notch/seacave infill.

Suggested Modification #12:

- Staff is recommending that in situations where a property owner proposes to infill a notch or seacave with non-erodible concrete separate from an associated seawall or other bluff retention device, that the Public Recreation Fee for the area of the infill and expected passive erosion will be required, and that Appendix C be updated accordingly. Requiring recreation mitigation only for the initial encroachment of a non-erodible notch/seacave infill would not adequately mitigate for the public beach access impacts. Thus, mitigation must account for the area of beach that would have otherwise formed in the future due to landward passive erosion were the infill not constructed.

Suggested Modification #13:

- Staff is recommending that the Public Recreation Fee be calculated by the decision making entity (either the City or the Commission) for the Coastal Development Permit at the time of that action, and that Appendix C be updated accordingly. Until such time that the Commission certifies the City's Implementation Plan, the Commission will continue to issue all of the Coastal

Development Permits for bluff retention devices in Solana Beach. Once a LCP is certified, the City will take over permitting for bluff retention devices located landward of the mean high tide line, while the Commission will retain permitting authority for any development proposed to be located seaward of the mean high tide.

Suggested Modification #14:

- The City is proposing to allow mitigation fees to be paid over time through a payment plan. Staff is recommending that the Public Recreation Fee be paid in full prior to issuance of the Coastal Development Permit that approved the bluff retention device and that the mitigation period begin at the building permit completion date, and that Appendix C be updated accordingly. Payment of Public Recreation Fees prior to issuance of the Coastal Development Permit rather than on a payment plan will simplify the mitigation calculation, will reduce potential enforcement issues, and will result in Public Recreation Fees being available sooner to fund beach access and recreation projects. Commencing the mitigation period from the building permit completion date is consistent with the policies of the LUP.

Suggested Modification #15:

- Staff is recommending that language be included to clarify that Public Recreation mitigation continues for subsequent mitigation periods, and that Appendix C be updated accordingly. The City's certified LUP requires that mitigation for impacts to public access and recreation resulting from the construction of a bluff retention device be assessed in 20-year increments. It includes fees for the total loss of beach area that would otherwise have been available as public beach area during the initial mitigation period. Recreation Mitigation is based on the value of beach per year that would otherwise be available to the public through natural erosion processes, and these impacts continue to occur for as long as a bluff retention device remains in place. As an example, during the first 20 year mitigation period, the impacted area subject to mitigation includes the area beneath and landward of the bluff retention device that would have formed as public beach through erosion over the first 20 years. During the second 20 year mitigation period, the impacted area subject to mitigation includes the area beneath and landward of the bluff retention device that would have been available as public beach through erosion over the first 40 years. The requirement for ongoing mitigation will continue until the bluff retention device has been removed.

Suggested Modification #16:

- Staff suggests that Policy 4.50, as proposed by the City, be modified to remove reference to specific mitigation amounts from Table 1 of Appendix C, as the table

is proposed to be changed through suggested modifications by staff and also because Table 1 will be updated over time, which would necessitate further changes to Policy 4.50 in the future. In addition, staff suggests that Policy 4.50 not reference the City's Recreation Fee Study, as suggested modifications by staff recommend that the Fee Study not be incorporated into the LUP and instead that the Fee Study be a substantive file document. Staff also suggests that references to the continued use of the interim recreation mitigation program and the 18 month deadline to complete the recreation mitigation methodology be deleted, as neither issue will be applicable following approval of the subject LUP amendment.

Staff suggests that pages 15 and 16 of Chapter 4 of the LUP be modified to remove similar references to the 2010 draft recreation mitigation methodology fee study, the interim recreation mitigation program, and the 18 month deadline to complete the recreation mitigation methodology. In addition, staff suggests that language be added to clarify that mitigation for impacts to ecological and other relevant coastal resources that result from the construction of bluff retention devices are not included in the recreation mitigation fee and identify that the City's LUP shall be updated once an accepted approach on how to calculate these fees has been developed by the Commission. Staff also suggests that the language related to the need for an encroachment agreement be updated to clarify that encroachment agreements are only required for bluff retention devices constructed on public land owned by the City.

The suggested modifications by staff do not fundamentally change the process proposed by the City for determining the recreation mitigation, and instead are intended to provide added clarity for determining mitigation fees. If all the suggested modifications are approved by the Commission and adopted by the City, for a standard 2 ft. wide 50 ft. long seawall, the resulting mitigation fee (Encroachment loss ($) and Passive Erosion loss ($)) for a seawall built in 2016 would be $42,100 for the coastal structure's initial 20 year mitigation period, compared to the $21,550 fee that would be calculated as originally proposed by the City. This new figure is based on a beach value that is on the very low end, but still much closer to the values calculated for beach use at other southern California beaches. This fee would be in addition to the fee required to offset impacts resulting from sand loss, which is separately assessed.

The appropriate resolutions and motions begin on page XX. The suggested modifications begin on page XX. The findings for denial of the Land Use Plan Amendment as submitted begin on page XX. The findings for approval of the Land Use Plan Amendment if modified begin on page XX.

ADDITIONAL INFORMATION

Further information on the Solana Beach Public Recreation Fee LUP amendment LCP-6-SOL-16-0020-1 may be obtained from Eric Stevens Coastal Planner, at (619) 767-2370.

PART I. OVERVIEW

A. LCP HISTORY AND SUBMITTAL

The City of Solana Beach is within the area that was originally covered by the County of San Diego, which included the north central coast areas of Solana Beach, Leucadia, Encinitas, Cardiff, and other unincorporated communities.

The County LCP Land Use Plan, which comprised approximately 11,000 acres, was approved by the San Diego Regional Coast Commission on March 13, 1981. Subsequently, on May 21, 1981, the State Commission certified the LUP with suggested modifications. After three resubmittals, the Commission certified the LUP on August 23, 1984. On September 26, 1984, the Commission certified, with suggested modifications, the Implementation Plan portion of the County's LCP. Subsequently, the County resubmitted for Commission review the Implementation Plan incorporating the Commission's previously suggested modifications, with the exception of that portion of the plan dealing with the coastal bluff areas. On November 22, 1985, the Commission voted to certify the Implementation Plan for the County, except for coastal bluff lots affected by the Coastal Development Area Regulations, where certification was deferred.

On July 1, 1986 and October 1, 1986, the Cities of Solana Beach and Encinitas incorporated, reducing the remaining incorporated area of the County within the coastal zone to less than 2,000 acres. Because of these incorporations, the County indicated that it did not plan to assume coastal permit-issuing authority for the remaining acreage, and the County LCP never became "effectively certified." However, the County LCP (LCP-6-SDC-17-0015-1) is scheduled to be considered by the Commission in May 2017.

The Commission, Commission staff, and the City of Solana Beach then collaborated to develop a Land Use plan for over a decade. At the Commission meeting of March 7, 2012, the Commission reviewed the City of Solana Beach LUP. In its action, the Commission denied as submitted, then approved the land use plan with suggested modifications that cover a broad range of topics, and include such things as standards for bluff top development, additional definitions, clarifications in language to ensure protection for visitor-serving commercial uses, overnight accommodations, environmentally sensitive habitat, visual resources, water quality, and shoreline sand supply. The LUP includes a comprehensive set of policies that address proposals for improvements to and redevelopment of the existing homes located along the blufftop, including long-term shoreline and blufftop development standards that deter the complete armoring and hardening of the City's bluffs, require alternatives analysis and site reassessment when considering any approval or reauthorization of lower, mid or upper bluff retention devices; restrict additions and improvements to non-conforming structures that perpetuate an inappropriate line of development in a hazardous location; and clarify what legitimate repair/maintenance activities can continue on non-conforming blufftop residences. Revised findings were adopted by the Commission on June 14, 2012.

The Land Use Plan was subsequently adopted by the Solana Beach City Council on February 27, 2013 with all of the suggested modifications approved by the Commission.

The Solana Beach City Council then approved an amendment to the Land Use Plan at a hearing on May 22, 2013, which was then approved by the Commission with modifications on January 9, 2014 (Ref: LCPA SOL-MAJ-1-13). The Land Use Plan amendment was subsequently adopted by the Solana Beach City Council on June 11, 2014 with all of the suggested modifications approved by the Commission.

The current submittal is entitled Submittal of the Public Recreation and Impact Fee Study and Local Coastal Program Land Use Plan Amendment per CCC LCP Planning Grant #13-11, and dated April 29, 2016.

The City has been working to develop a method to mitigate for the impacts that coastal structures and non-erodible seacave/notch infills have on public access and recreation since 2007. In 2010, the City released a draft Fee Study for public review and comment. Commission staff and various other stakeholders provided comments on this 2010 report. However, at that time, the City chose to put further development of the Fee Study on hold in order to focus on completion of the LUP. Policy 4.50 of the LUP required that the City complete a methodology to mitigate for the impacts that coastal structures and non-erodible seacave/notch infills have on public access within 18 months of certification of the LUP.

In January 2014, the Commission awarded the City a $120,000 grant to complete the mitigation method, which required that the City submit an updated Fee Study and an LUP amendment to the Commission. The grant required that the City review, and update as necessary, the methodology for calculating recreation mitigation fees for bluff retention devices the draft Fee Study that was prepared in 2010. In addition, the grant required that the City coordinate with Commission staff and other stakeholders. Commission staff provided multiple comment letters during the review period, which are included as Exhibit 5.

On February 24, 2016 the City held a public workshop on the Fee Study and the City Council released the updated draft Fee Study for public comment. On April 13, 2016, the City Council approved the Fee Study and an associated LUP amendment with no substantive changes from the February 2016 version (Ref: Resolution 2016-039, Exhibit 6). On April 29, 2016, the City of Solana Beach Local Coastal Program (LCP) Amendment No. LCP-6-SOL-16-0020-1 was filed in the San Diego District office. On July 13, 2016, the Commission approved a one-year time extension to allow sufficient time to adequately review the amendment and prepare a recommendation. Given the complexity and statewide significance of this beach recreation valuation effort, additional time was necessary to prepare a thorough analysis. The Commission must take action on this LUP amendment prior to July 13, 2017.

B. STANDARD OF REVIEW

The standard of review for land use plans, or their amendments, is found in Section 30512 of the Coastal Act. This section requires the Commission to certify an LUP or LUP amendment if it finds that it meets the requirements of Chapter 3 of the Coastal Act. Specifically, it states:

Section 30512

(c) The Commission shall certify a land use plan, or any amendments thereto, if it finds that a land use plan meets the requirements of, and is in conformity with, the policies of Chapter 3 (commencing with Section 30200). Except as provided in paragraph (1) of subdivision (a), a decision to certify shall require a majority vote of the appointed membership of the Commission.

C. PUBLIC PARTICIPATION

The City has held Planning Commission and City Council meetings with regard to the subject amendment request. All of those local hearings were duly noticed to the public. Notice of the subject amendment has been distributed to all known interested parties.

PART II. LOCAL COASTAL PROGRAM SUBMITTAL - RESOLUTIONS

Following a public hearing, staff recommends the Commission adopt the following resolutions and findings. The appropriate motion to introduce the resolution and a staff recommendation are provided just prior to each resolution.

I. MOTION: ***I move that the Commission certify the Land Use Plan Amendment LCP-6-SOL-16-0020-1 for the City of Solana Beach as submitted.***

STAFF RECOMMENDATION OF DENIAL OF CERTIFICATION:

Staff recommends a **NO** vote on the motion. Failure of this motion will result in denial of the land use plan amendment as resubmitted and adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the appointed Commissioners.

RESOLUTION TO DENY CERTIFICATION OF LAND USE PLAN AMENDMENT AS SUBMITTED:

The Commission hereby denies certification of the Land Use Plan Amendment for the City of Solana Beach as submitted and finds for the reasons discussed below that the submitted Land Use Plan Amendment fails to meet the requirements of and does not conform to the policies of Chapter 3 of the California Coastal Act. Certification of the

plan would not comply with the California Environmental Quality Act because there are feasible alternatives or mitigation measures that would substantially lessen any significant adverse impact which the Land Use Plan Amendment may have on the environment.

II. MOTION: ***I move that the Commission certify the Land Use Plan Amendment LCP-6-SOL-16-0020-1 for the City of Solana Beach if modified in accordance with the suggested modifications set forth in the staff report.***

STAFF RECOMMENDATION TO CERTIFY IF MODIFIED:

Staff recommends a **YES** vote on the motion. Passage of the motion will result in certification with suggested modifications of the submitted land use plan amendment and the adoption of the following resolution and findings. The motion passes only by an affirmative vote of a majority of the appointed Commissioners.

RESOLUTION TO CERTIFY SUBMITTED LAND USE PLAN AMENDMENT WITH SUGGESTED MODIFICATIONS:

The Commission hereby certifies the Land Use Plan Amendment LCP-6-SOL-16-0020-1 for the City of Solana Beach and finds for the reasons discussed herein that, if modified as suggested below, the Land Use Plan Amendment will meet the requirements of and conform to the policies of Chapter 3 of the California Coastal Act. Certification of the plan if modified as suggested below complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the plan on the environment, or 2) there are no further feasible alternatives or mitigation measures which could substantially lessen any significant adverse impact which the Land Use Plan Amendment may have on the environment.

PART III. SUGGESTED MODIFICATIONS

Staff recommends the following suggested modifications to the proposed Land Use Plan amendment be adopted.

The underline text below represents language that the Commission suggests be added, and the strikethrough text represents language which the Commission suggests be deleted. In order to clarify the modifications proposed by staff, the text below shows changes to LUP text as currently certified and does not incorporate the changes proposed by the City to Policy 4.50. The changes proposed by the City to Policy 4.50 are included as Exhibit 2 (the City did not propose any changes to the Chapter 4 LUP text on pages 15 or 16).

Suggested modifications to Policy 4.50:

Policy 4.50: *The bluff property owner shall pay for the cost of the coastal structure or Infill and pay a Sand Mitigation Fee and a Public Recreation Fee per LUP Policy 4.38. These mitigation fees are not intended to be duplicative with fees assessed by other agencies. It is anticipated the fees assessed as required by this LCP will be in conjunction with, and not duplicative of, the mitigation fees typically assessed by the CCC and the CSLC for impacts to coastal resources from shoreline protective devices.*

[…]

Public Recreation Fee – ~~Similar to the methodology established by the CCC for the sand mitigation fee, the~~ The City and the CCC ~~are~~ have developed ~~developing~~ a method~~ology~~ for calculating a ~~statewide public recreation fee~~ Public Recreation Fee for the City of Solana Beach. ~~To assist in the effort, the City has shared the results of their draft study with the CCC to support their development of a uniform statewide Public Recreation / Land Lease Fee. Until such time as an approved methodology for determining this fee has been established, and the methodology and payment program has been incorporated into the LCP through an LCP amendment, the City will collect a $1,000 per linear foot interim fee deposit. In the interim period, CCC will evaluate each project on a site-specific basis to determine impacts to public access and recreation, and additional mitigation may be required. The City shall complete its public recreation/land lease fee study within 18 months of effective certification of the LUP.~~ To mitigate for impacts to public access and recreation resulting from loss of beach area, for all development involving construction of a Public Access and Recreation Fee shall be collected by the City which shall be deposited in an interest-bearing account designated by the City Manager of Solana Beach in-lieu of providing beach area to replace the public access and coastal recreation benefits that would be lost due to the impacts of any proposed protective structure. The method used to determine the appropriate mitigation fee has been approved by the CCC and is contained in LUP Appendix C. The funds shall solely be used to implement projects which augment and enhance public access and coastal recreation along the shoreline, not to fund other public operations, maintenance or planning studies.

Project applicants have the option of proposing a public recreation/access project in lieu of payment of Public Recreation Fees ~~(or interim deposits)~~ to the City. At the City's discretion, these projects may be accepted if it can be demonstrated that they would provide a directly-related recreation and/or access benefit to the general public.

Public Recreation Fees must be expended for public access and public recreation improvements as a first priority and for sand replenishment and retention as secondary priorities where an analysis done by the City determines that there are no near-term, priority public recreation or public access CIP identified by the City

where the money could be allocated. The Public Recreation funds shall be released for secondary priorities only upon written approval of an appropriate project by the City Council and the Executive Director of the Coastal Commission.

Suggested modifications to the last paragraph on Page 15 and the first Paragraph on Page 16 of Chapter 4 of the LUP:

~~*In April 2010, the City completed a draft fee study and conducted a public hearing on the fee study to determine the amount of fees that maybe appropriately assessed as mitigation for the potential adverse effects on public recreation and public lands resulting from placing a bluff retention device on a public beach. The City received a substantial number of comments on the fee study from local stakeholders including property owners, surfers and CCC staff and the fee study remains a draft. Because this is a statewide issue, the City will provide this draft study and the data developed by the City to the CCC. The City will coordinate with the CCC and other state regulatory entities in developing a uniform statewide Public Recreation / Land Lease Fee.*~~

Based on the October 2010 MHTL survey, the land on which bluff retention devices are proposed to be located may include public lands owned by the State of California, the City of Solana Beach or both. In addition, the location of the MHTL is constantly changing. For all development involving construction of a bluff retention device, a Public Recreation Fee shall be collected by the City which shall be deposited in an interest-bearing account designated by the City Manager of Solana Beach in lieu of providing beach area to replace the public access and coastal recreation benefits that would be lost due to the impacts of any proposed protective structure. The method used to determine the appropriate mitigation fee has been approved by the CCC and is contained in LUP Appendix C. Mitigation for impacts to ecological and other relevant coastal resource impacts that result from the construction of bluff retention devices are not included in this public recreation fee and the City's LUP shall be updated once an accepted approach on how to calculate these fees has been developed by the Commission. ~~*The City is collecting a $1,000 per linear foot fee deposit to be applied towards a future Public Recreation/Land Lease Fee. Therefore, until such time as a final Public Recreation / Land Lease Fee is adopted by the City following Coastal Commission approval of such a payment and certification of an LUP amendment adding to the City's LCP, the City will continue to impose an interim fee deposit in the amount of $1,000 per linear foot to be applied as a credit toward the Public Recreation / Land Lease Fee. The City shall complete its Public Recreation/Land Lease fee study within 18 months of effective certification of the LUP.*~~ *In association with approval of any bluff retention device located landward of the MHTL and on public land, the City shall also require an encroachment/removal agreement to be renewed at least every 20 years. Additional mitigation for impacts to public access and recreation may also be required through site-specific review and approval of the coastal development permit.*

Staff is recommending that Appendix C be replaced in its entirety as shown below. A strike-out/underline version of Appendix C is contained in Exhibit 7.

PUBLIC RECREATION IMPACT MITIGATION FEE (APPENDIX C)

In conformance with the Certified City of Solana Beach Local Coastal Program (LCP) Land Use Plan (LUP) Policy 4.50, Bluff Property Owners who construct Bluff Retention Devices shall pay the City a Public Recreation Impact Fee (may also be referred to as Public Recreation Fee) consistent with this appendix. The Public Recreation Fee is separate and independent of the Sand Mitigation Fee detailed in Appendix A.

These mitigation fees are not intended to be duplicative with fees assessed by other agencies. It is anticipated the fees in this appendix would be assessed as required by this LCP and shall be in conjunction with the mitigation fees typically assessed by the CCC and the CSLC for impacts to coastal recreation from Bluff Retention Devices.

The Public Recreation Fee shall be calculated on a project-specific basis to ensure the mitigation fees are proportional to the impact being mitigated. Variables to be considered in determining the fee imposed shall depend on the impact to the beach area based upon (1) the specific physical configuration and footprint of the proposed Bluff Retention Device and (2) the presence of a seacave or notch of any depth that would be fronted by a Bluff Retention Device. The entire area of a seacave or notch located landward of the proposed Bluff Retention Device shall be considered imminently subject to failure and be included in the mitigation calculation. In addition, the area of any seacaves or notches that have been previously infilled with erodible concrete, located landward of the proposed bluff retention device, which are no longer allowed to erode as originally approved, shall be included in the mitigation calculation.

The Public Recreation Fee addresses impacts to the loss of recreation based upon the loss of beach area described below as (1) Initial Area and (2) theoretical 20-year Bluff Retreat Area. Table 1 identifies separate rates, to ensure proportionality between the impact and the mitigation fee to be applied to the Initial Area and Bluff Retreat Area. The fees address the impacts to public recreation for a 20-year period, consistent with the requirements of LUP Policies 4.49 and 4.53. At the end of each 20-year period, the bluff retention device shall either be removed or new fees shall be assessed. The use values in Table 1 were determined as follows:

- The proxy recreational use value per beach visitor per day (Day Use Value) for Solana Beach is $32.33 in the summer months and $19.09 in the non-summer months. In the future, this Day Use Value may be required to be updated to reflect current practices or new information.

- The City's useable beach area includes the area from the toe of the coastal bluff to mean sea level existing between the northern and southern City limits. Based on 19 LiDAR datasets collected between 1998 and 2015, the useable beach area in Solana Beach is presently calculated at 15.2 acres. The City shall determine if the beach area has changed every ten years and incorporate any changes as an amendment to the LUP.
- The average annual beach attendance in Solana Beach is estimated to be 134,817 adults per year. Children are not included in the attendance data because of the assumption that consumer surplus of children is captured in the adult consumer surplus use values. The attendance estimate is based on attendance counts undertaken by the City between July 2008 and July 2009 and expansion factors to account for the likelihood that some user groups were underrepresented in the original attendance counts due to the time of day that the original population counts were conducted. Every ten years, the City shall adjust the attendance based on available population growth estimates or through an updated attendance survey. The City shall incorporate any changes to the attendance as an amendment to the LUP.
- The annual use value of the beach within the City is $4,715,843 and is obtained by multiplying the Day Use Value by the number of adults that visit the beach annually and adding the value of the Junior Lifeguard Program, which is $269,501. The City shall update the annual use value of the beach every ten years if there are changes to the beach area or attendance estimates and shall incorporate the change as an LUP amendment.
- The use value of one sq. ft. of beach was calculated to be $6.06 in 2016 and is obtained by dividing the annual use value of the beach by the size of the beach.
- The Initial Area Rate in Table 1 represents the use value of one sq. ft. of beach area over a 20-year period and this use value is multiplied by the total area of encroachment of a Bluff Retention Device (Initial Area) to determine the fee. The use value is increased each year to reflect an estimated 2% Consumer Price Index (CPI). The use value is also subject to a 2% Present Value (PV), which offsets the CPI over the 20 year mitigation period. Table 1 shall be updated every ten years and any changes shall be incorporated as an amendment to the LUP.
- The Bluff Retreat Rate (Per Linear Ft.) in Table 1 is equal to one linear ft. (Bluff Retreat Length) multiplied by 20 years of estimated erosion multiplied by the use value of one sq. ft. of beach. It represents the use value of the expected beach area that would otherwise be available for public use through passive erosion if the Bluff Retention Device was not constructed. An erosion rate of 0.4 ft. per year is assumed between 2016 and 2025 and an erosion rate of 0.673 is assumed between the years 2026 and 2046. Any change to the estimated erosion rate will require an amendment to the certified LUP. The use value increases each year to reflect an estimated 2% CPI.

The Public Recreation Fee shall be imposed as a condition of approval on any Coastal Development Permit for a Bluff Retention Device, which does not propose comparable or greater project specific in-kind mitigation. The decision

making entity (Coastal Commission or City of Solana Beach) for the Coastal Development Permit shall calculate the Public Recreation Fee on a project-specific basis during the Coastal Development Permit approval process. The entire fee shall be submitted to the City prior to issuance of the Coastal Development Permit and shall be assessed in 20-year increments starting on the building permit completion certification date.

Seacave/notch infills that consist entirely of erodible concrete (see LUP Appendix B, Figure 1A) are exempt from both the Public Recreation Impact Fee and the Sand Mitigation Fee as allowed by the LUP, provided that the infills erode with the natural bluff and are maintained to do so and provided that a Bluff Retention Device is not constructed seaward of the infills. If monitoring of the infills reveals evidence that the back of the beach has been fixed, the Permittee shall submit a complete CDP amendment application to address the impacts from these changed circumstances. At such time, sand supply mitigation and public access and recreation mitigation shall be required.

LUP Policy 4.50 requires that Public Recreation Fees shall be expended for public beach access and public recreation as a first priority, and may be expended for sand replenishment and retention if the City determines that a near-term priority public recreation or public access project is not identified. All projects funded by the Public Recreation Fees shall be located directly along the coast and projects shall result in direct improvements to coastal recreation or beach access. As an alternative allowed by LUP Policy 4.50, project applicants have the option of proposing an in-kind public coastal recreation or beach access project in lieu of payment of Public Recreation Impact Fees to the City. At the City's discretion, project specific in-kind mitigation may be accepted if the applicant can demonstrate that the project would provide a comparable or greater coastal recreation or beach access benefit to the general public.

While a reduction or elimination of the required Public Recreation Fees may be considered for Bluff Retention Devices that protect public infrastructure, mitigation offsets or reductions to any required Public Recreation Fees for Bluff Retention Devices whose primary purpose is the protection of private property are prohibited. In addition, retroactive adjustments to Public Recreation Fees (excluding the $1,000 per linear foot interim fee deposits), in the form of crediting overpayment of mitigation fees or adding underpayment of mitigation fees to future assessments based on observed bluff erosion, is prohibited.

Table 1 - Public Recreation Impact Mitigation Fee Schedule		
Permit Year	**Initial Area Rate (Per SF)**	**Bluff Retreat Rate (Per LF)**
2016	**$121**	**$600**
2017	**$124**	**$630**
2018	**$126**	**$662**
2019	**$129**	**$698**
2020	**$131**	**$737**
2021	**$134**	**$780**
2022	**$136**	**$825**
2023	**$139**	**$874**
2024	**$142**	**$926**
2025	**$145**	**$982**
2026	**$148**	**$1,044**

The Total Public Recreation Impact Fee (PRF), for a 20-year period, shall equal the Initial Area multiplied by the Initial Area Rate plus the Bluff Retreat Length multiplied by the Bluff Retreat Rate for the Permit Year.

The formula to calculate the Total PRF =

(Initial Area x Initial Area Rate) + (Bluff Retreat Length x Bluff Retreat Rate)

Definitions:

Calculation of the PRF is based on the following terms which are defined / explained below.

Initial Area - The Initial Area shall be that Useable Beach Area that is occupied by a Bluff Retention Device measured as the width of the structure multiplied by the length of the structure plus the entire area of seacaves or notches located landward of a Bluff Retention Device and any area of seacaves or notches previously infilled with erodible concrete (which are no longer allowed to erode as originally approved).

Bluff Retreat Length - The Bluff Retreat Length shall be the length of the Bluff Retention Device measured along the bluff, measured in feet.

Initial Area Rate - The Initial Area Rate shall be the amount identified in Table 1, under the Column titled Initial Area Rate dependent on the Permit Year. The

Initial Area Rate is based on the value of one sq. ft. of beach area over a 20-year period.

Bluff Retreat Rate - The Bluff Retreat Rate shall be the amount identified in Table 1, under the Column titled Bluff Retreat Rate dependent on Permit Year. The Bluff Retreat Rate is based on a linear foot of Bluff Retention Device and incorporates the annual area impacted by the Bluff Retention Device estimated by the Erosion Rate over a 20-year period.

Total PRF – Means the Total Public Recreation Impact Fee, for a 20-year period as calculated by the above formula.

Permit Year - The year the wall is considered permitted (building permit completion certification date) as defined in the LCP LUP.

Useable Beach Area – That area of Solana Beach bound by the northern and southern city limits, the average width of the beach based on the distance between Mean Sea Level and the toe of coastal bluff and that may extend landward of the toe of coastal bluff.

Examples Scenarios (Using a 67% wage rate, 2008-2009 Attendance Figures, and a 15.2 Acre Beach):

Example 1: In the year 2016, construction of a typical 2 ft. wide by 50 ft. long seawall with no seacave/notch landward of proposed seawall.

Initial Area = 2' x 50' = 100 sq. ft.
Initial Area Rate = 100 sq. ft. x $121 = $12,100
Bluff Retreat Rate = 50 ft. X $600 = $30,000
PRF = $12,100 + $30,000 = $42,100

PRF = ((2 ft. x 50 ft.) x $121 per sq. ft.) + (50 ft. x $600 per linear ft.) = $42,100

Example 2: In the year 2016, construction of a typical 2 ft. wide by 50 ft. long seawall with a 10 ft. deep by 20 ft. long seacave/notch (which has not been previously infilled) landward of proposed seawall.

PRF = (((2 ft. x 50 ft.) + (10 ft. x 20 ft.)) x $121 per sq. ft.) + (50 ft. x $600 per linear ft.) = $66,300

Example 3: In the year 2016, construction of a typical 2 ft. wide by 50 ft. long seawall with a 2 ft. deep by 20 ft. long seacave/notch (which has not been previously infilled) landward of proposed seawall.

PRF = (((2 ft. x 50 ft.) + (2 ft. x 20 ft.)) x $121 per sq. ft.) + (50 ft. x $600 per linear ft.) = $46,940

Example 4: In the year 2016, construction of a typical 2 ft. wide by 50 ft. long seawall with a 2 ft. deep by 20 ft. long seacave/notch that has been previously infilled with erodible concrete landward of proposed seawall.

PRF = (((2 ft. x 50 ft.) + (2 ft. x 20 ft.)) x $121 per sq. ft.) + (50 ft. x $600 per linear ft.) = $46,940

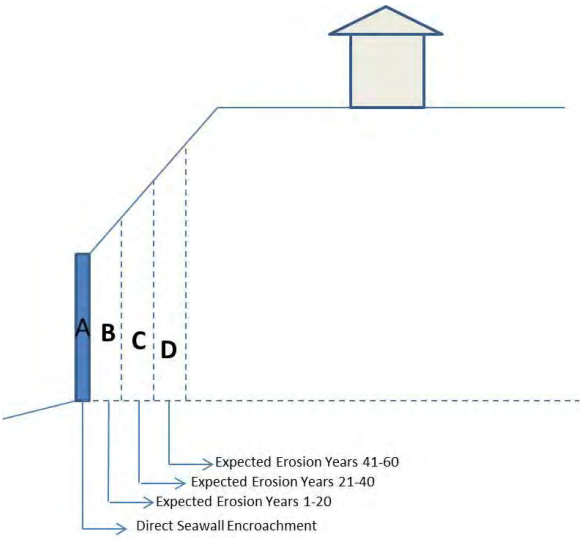
Example 5: In the year 2016, construction of a 2 ft. deep by 20 ft. long seacave/notch with non-erodible concrete.

PRF = ((2 ft. x 20 ft.) x $121 per sq. ft.) + (20 ft. x $600 per linear ft.) = $16,840

Subsequent Mitigation Periods:

If a geotechnical report finds evidence that a Bluff Retention Device cannot be removed at the end of a 20 year mitigation period, mitigation shall be required for the subsequent 20 year period. As shown in Figure 1, in subsequent mitigation periods, mitigation shall include the direct shoreline protection device encroachment and all beach area that would have otherwise been available to the public through passive erosion had the shoreline armoring not been constructed.

Figure 1



Mitigation Period	Mitigation Area
1st Mitigation Period (Pay in Year 1)	A + B
2nd Mitigation Period (Pay in Year 21)	A + B + C
3rd Mitigation Period (Pay in Year 41)	A + B + C + D

PART IV. FINDINGS FOR DENIAL OF CERTIFICATION OF THE SOLANA BEACH LAND USE PLAN AMENDMENT, AS SUBMITTED, AND APPROVAL, AS MODIFIED

The Commission finds and declares as follows:

1. Hazards/Shoreline Protection

The City of Solana Beach has approximately 8,448 linear ft.[4] of shoreline backed by steep bluffs, and bluff stability is a significant concern along the entire coastal bluff area. The existing shoreline policies in the LUP are intended to regulate the construction of shoreline bluff retention devices and to allow appropriate protection for existing bluff top structures, consistent with Coastal Act requirements, as implemented through the LUP. This LUP amendment does not alter any of the existing LUP policies related to determining the need for or design of bluff retention devices. The subject LUP amendment relates entirely to required mitigation for impacts to recreation caused by the construction of bluff retention devices.

As background, in LUP Chapter 8 (Definitions), the City defines "Bluff Retention Devices" as including all forms of shoreline protection, from seacave/notch infills, to seawalls, to mid and upper bluff protection. "Seacave/Notch Infill" refers to filling of a seacave, notch, joint, fault, rupture or crack in the bluff, "Coastal Structures" refers only to structures located at the base of the bluff (seawall, revetment, or riprap), and "Upper Bluff System" is a device to retain the portion of the bluff located above areas subject to erosion. In order to ensure consistency with the LUP and throughout this staff report, the term "Bluff Retention Device" will primarily be used. However, "Coastal Structures" and "Non-erodible seacave/notch infills," are the types of bluff retention devices that would typically result in impacts to public access and recreation and require the payment of a mitigation fee.

The following Coastal Act provisions are particularly relevant to promoting coastal access by requiring adequate public access to the beach and by requiring that oceanfront land suitable for recreational use be protected for public recreational use and related development:

> Section 30235:
>
> *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing*

[4] Reference City of Solana Beach Public Recreation Fee Report Technical Appendices. Appendix 1 – Nearshore Marine Resources Existing Conditions. P. 2-3

marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Section 30240(b):

Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Section 30253:

New development shall:

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

(4) Minimize energy consumption and vehicle miles traveled.

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

In addition, the following City of Solana Beach Land Use Plan (LUP) language provides additional guidance regarding geologic hazards and shoreline protection:

Policy 4.17: *New development shall be set back a safe distance from the bluff edge, with a reasonable margin of safety, to eliminate the need for bluff retention devices to protect the new improvements. All new development, including additions to existing structures, on bluff property shall be landward of the Geologic Setback Line (GSL) as set forth in Policy 4.25. This requirement shall apply to the principal structure and accessory or ancillary structures such as guesthouses, pools, tennis courts, cabanas, and septic systems, etc. Accessory structures such as decks, patios, and walkways, which are at-grade and do not require structural foundations may extend into the setback area no closer than five feet from the bluff edge. On lots with a legally established bluff retention device, the required geologic analysis shall describe the condition of the existing seawall; identify any impacts it may be having on public access and recreation, scenic views, sand supply and other*

coastal resources; and evaluate options to mitigate any previously unmitigated impacts of the structure or modify, replace, or remove the existing protective device in a manner that would eliminate or reduce those impacts. In addition, any significant alteration or improvement to the existing structure shall trigger such review (i.e. the analysis of the seawall) and any unavoidable impacts shall be mitigated.

Policy 4.18: *A legally permitted bluff retention device shall not be factored into setback calculations. Expansion and/or alteration of a legally permitted bluff retention device shall include a reassessment of the need for the shoreline protective device and any modifications warranted to the protective device to eliminate or reduce any adverse impacts it has on coastal resources or public access, including but not limited to, a condition for a reassessment and reauthorization of the modified device pursuant to Policy 4.52.*

Policy 4.44*: The City has adopted preferred bluff retention solutions (see Appendix B) to streamline and expedite the City permit process for bluff retention devices. The preferred bluff retention solutions are designed to meet the following goals and objectives:*

(1) Locate bluff retention devices as far landward as feasible;

(2) Minimize alteration of the bluff face;

(3) Minimize visual impacts from public viewing areas;

(4) Minimize impacts to adjacent properties including public bluffs and beach area; and,

(5) Conduct annual visual inspection and maintenance as needed. […]

Policy 4.48: *Coastal structures shall be approved by the City only if all the following applicable findings can be made and the stated criteria satisfied. The permit shall be valid until the currently existing structure requiring protection is redeveloped (per definition of Bluff Top Redevelopment in the LUP), is no longer present, or no longer requires a protective device, whichever occurs first and subject to an encroachment/removal agreement approved by the City.*

(A) Based upon the advice and recommendation of a licensed Geotechnical or Civil Engineer, the City makes the findings set forth below.

(1) A bluff failure is imminent that would threaten a bluff home, city facility, city infrastructure, and/or other principal structure.

(2) The coastal structure is more likely than not to preclude the need for a larger coastal structure or upper bluff retention structure. Taking into consideration any

applicable conditions of previous permit approvals for development at the subject site, a determination must be made based on a detailed alternatives analysis that none of the following alternatives to the coastal structure are currently feasible, including:

- *A Seacave/Notch Infill;*
- *A smaller coastal structure; or*
- *Other remedial measures capable of protecting the bluff home, city facility, non-city-owned utilities, and/or city infrastructure, which might include or other non-beach and bluff face stabilizing measures, taking into account impacts on the near and long term integrity and appearance of the natural bluff face, and contiguous bluff properties;*

(3) The bluff property owner did not create the necessity for the coastal structure by unreasonably failing to implement generally accepted erosion and drainage control measures, such as reasonable management of surface drainage, plantings and irrigation, or by otherwise unreasonably acting or failing to act with respect to the bluff property. In determining whether or not the bluff property owner's actions were reasonable, the City shall take into account whether or not the bluff property owner acted intentionally, with or without knowledge, and shall consider all other relevant credible scientific evidence, as well as, relevant facts and circumstances.

(4) The location, size, design and operational characteristics of the proposed coastal structure will not create a significant adverse effect on adjacent public or private property, natural resources, or public use of, or access to, the beach, beyond the environmental impact typically associated with a similar coastal structure and the coastal structure is the minimum size necessary to protect the principal structure, has been designed to minimize all environmental impacts, and provides mitigation for all coastal and environmental impacts, as provided for in this LCP.

(B) The coastal structure shall meet City Design Standards, which shall include the following criteria to ensure the coastal structure will be:

(1) Constructed to resemble as closely as possible the natural color, texture and form of the adjacent bluffs;

(2) Landscaped, contoured, maintained and repaired to blend in with the existing environment;

(3) Designed so that it will serve its primary purpose of protecting the bluff home or other principal structure, provided all other requirements under the implementing ordinances are satisfied, with minimal adverse impacts to the bluff face;

(4) Reduced in size and scope, to the extent feasible, without adversely impacting

the applicants' bluff property and other properties; and

(5) Placed at the most feasible landward location considering the importance of preserving the maximum amount of natural bluff and ensuring adequate bluff stability to protect the bluff home, City facility, or City infrastructure.

(C) Mitigation for the impacts to shoreline sand supply, public access and recreation and any other relevant coastal resource impacted by the coastal structure is required and shall be assessed in 20-year increments, starting with the building permit completion certification date. Property owners shall apply for a CDP amendment prior to expiration of each 20-year mitigation period, proposing mitigation for coastal resource impacts associated with retention of the coastal structure beyond the preceding 20-year mitigation period and shall include consideration of alternative feasible measures in which the permittee can modify the coastal structure to lessen the coastal structure's impacts on coastal resources. Monitoring reports to the City and the Coastal Commission shall be required every five years from the date of CDP issuance until CDP expiration, which evaluate whether or not the coastal structure is still required to protect the existing structure it was designed to protect. The permittee is required to submit a CDP application to remove the authorized coastal structure within six months of a determination that the coastal structure is no longer required to protect the existing structure it was designed to protect.

Policy 4.51: *The erosion rate, being critical to the fair and accurate calculation of the Sand Mitigation Fee shall be reviewed, after notice and public hearing, at least every ten years, and more often if warranted by physical circumstances, such as major weather events, or large-scale sand replenishment projects and possible changes in coastal dynamics due to, among others, climate change, and future changes in sea level. If warranted, the erosion rate should be adjusted by the City with input from a licensed Civil or Geotechnical Engineer based upon data that accurately reflects a change in the rate of erosion of the bluff. Any such change shall be subject to the public hearing and a vote of the City Council.*

Policy 4.52: *All permits for bluff retention devices shall expire when the currently existing blufftop structure requiring protection is redeveloped (per definition of Bluff Top Redevelopment in the LUP), is no longer present, or no longer requires a protective device, whichever occurs first and a new CDP must be obtained. Prior to expiration of the permit, the bluff top property owner shall apply for a coastal development permit to remove, modify or retain the protective device. In addition, expansion and/or alteration of a legally permitted existing bluff retention device shall require a new CDP and be subject to the requirements of this policy.*

The CDP application shall include a re-assessment of need for the device, the need for any repair or maintenance of the device, and the potential for removal based on changed conditions. The CDP application shall include an evaluation of:

- *The age, condition and economic life of the existing principal structure;*
- *changed geologic site conditions including but not limited to, changes relative to sea level rise, implementation of a long-term, large scale sand replenishment or shoreline restoration program; and*
- *any impact to coastal resources, including but not limited to public access and recreation.*

The CDP shall include a condition requiring reassessment of the impacts of the device in 20-year mitigation periods pursuant to Policies 4.48 and 4.51.

No permit shall be issued for retention of a bluff retention device unless the City finds that the bluff retention device is still required to protect an existing principal structure in danger from erosion, that it will minimize further alteration of the natural landform of the bluff, and that adequate mitigation for coastal resource impacts, including but not limited to impacts to the public beach has been provided.

The LUP defines Bluff Top Redevelopment as follows:

Bluff Top Redevelopment: *Shall apply to proposed development located between the sea and the first public road paralleling the sea (or lagoon) that consists of alterations including (1) additions to an existing structure, (2) exterior and/or interior renovations, (3) and/or demolition of an existing bluff home or other principal structure, or portions thereof, which results in:*

(a) Alteration of 50% or more of major structural components including exterior walls, floor and roof structure, and foundation, or a 50% increase in floor area. Alterations are not additive between individual major structural components; however, changes to individual major structural components are cumulative over time from the date of certification of the LUP.

(b) Demolition, renovation or replacement of less than 50% of a major structural component where the proposed alteration would result in cumulative alterations exceeding 50% or more of a major structural component, taking into consideration previous alterations approved on or after the date of certification of the LUP; or an alteration that constitutes less than 50% increase in floor area where the proposed alteration would result in a cumulative addition of greater than 50% of the floor area, taking into consideration previous additions approved on or after the date of certification of the LUP.

Shoreline Hazards

The bluffs and beaches in the City of Solana Beach are public natural resources and a source of public recreational opportunities, public accessways, natural habitat, and an important part of the City's natural beauty. Solana Beach's shoreline has been almost completely built out; there is only one vacant bluff top lot remaining in the entire City.

Most of the existing structures located along the City's bluff tops were built in a location that is now considered at risk from shoreline erosion. This is due in part to the distinctive geology of Solana Beach's shoreline.

The Coastal Act and certified LUP acknowledge that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion alter natural landforms and natural shoreline processes. These changed conditions result in a variety of negative impacts on coastal resources, including adverse effects on sand supply, public access and recreation, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, including ultimate loss of the beach. Thus, such devices may be constructed only to protect existing principal structures or public beaches in danger from erosion, and only when designed to eliminate or mitigate adverse impacts on local sand supply.

In the majority of the City of Solana Beach there is a "clean sand" lens located between the Torrey Sandstone and Marine Terrace deposits at approximately elevation +25 to 35 feet Mean Sea Level (MSL). This clean sand lens consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, which causes the material to erode easily, making this clean sand lens, once exposed, susceptible to windblown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together. Geotechnical reports associated with developments near this site have stated that minor disturbances such as gentle sea breezes, landing birds or vibrations from low-flying helicopters, can be sufficient triggers of small- or large-volume bluff collapses, since the loss of the clean sand eliminates the support for the overlying, slightly more cemented, terrace deposits. Because of the cohesionless character of the clean sand, once deposits are exposed, they continue to slump on an ongoing basis as a result of very small triggers such as traffic vibrations or wind erosion. Continued sloughage results in the further exposure of more clean sand, and ongoing upper bluff collapse. This cycle occurs so quickly (over months or days, rather than years) that the upper bluff may never achieve a stable angle of repose. Unless the base of the bluff is afforded shoreline protection and the clean sand lens is contained, additional bluff failures can further expose the layer of clean sand and result in a potential upper bluff failure and an immediate threat to the structures at the top of the bluff.

The factor of safety is an indicator of slope stability where a value of 1.5 is the industry-standard value for geologic stability of new development placed on a slope. In theory, failure should occur when the factor of safety drops to 1.0, and no slope area with a proposed new-development footprint should have a factor of safety less than 1.5.

Prior to approval of a bluff retention device, the Commission's technical staff reviews the geotechnical information provided by applicants and must concur that the proposed bluff retention device is necessary to protect a threatened blufftop structure. Following construction of a proposed bluff retention device, the applicants must demonstrate that the factor of safety for the threatened blufftop structure will be increased to an adequate level. Thus, substantial evidence must be provided to document that an existing primary

blufftop structure is in danger from erosion. However, there are a variety of ways in which the threat from erosion could be addressed. Under the policies of the Coastal Act and the certified LUP, a bluff retention device project must eliminate, or if unavoidable, mitigate adverse effects on shoreline sand supply and additionally avoid, minimize, and mitigate remaining adverse effects on public access, recreation, and the visual quality of the shoreline. Applicants are required to submit a thorough alternatives analysis to demonstrate that no other feasible less-environmentally-damaging alternatives exist to address the threats to a threatened bluff top structure. Alternatives typically include, but are not limited to, construction of a seawall with a reduced height, placement of a rip-rap revetment, underpinning of the western edge of a blufftop structure, chemical grouting of the bluff face, improved drainage and landscaping, relocation of all or a portion of the blufftop structure, and a no project alternative.

Duration of Armoring Approval

While the Commission may be required to approve shoreline armoring to provide protection for threatened bluff top structures, bluff retention devices impede public access to and along the shoreline, impact beaches and related habitats, and visually impair the coastal area. Thus, it is important to limit the life of the shoreline armoring to that of the structures it is required to protect.

Sections 30235 and 30253 of the Coastal Act require new development on a bluff top lot to be sited and designed so that it does not require the construction of new shoreline armoring or reliance on existing shoreline armoring. However, when the approval of shoreline armoring is not expressly linked to a particular bluff top structure, shoreline armoring can remain long after the structure it was required to protect has been removed, and therefore may encourage the construction of new structures in an unsafe location while continuing to adversely affect resources, including sand supply and recreation. Therefore, conditions are necessary for bluff retention devices that limit the duration of the approval to when the bluff top structures requiring protection are redeveloped (as discussed in further detail below), are no longer present (i.e. demolished), or no longer require the shoreline armoring, whichever occurs first. Applicants must also be required to apply for a new CDP to remove a bluff retention device or to modify the terms of its authorization, if the blufftop structure no longer qualifies for protection.

According the requirements of the LUP, redevelopment of blufftop structures, is defined as alterations, including additions, exterior or interior renovations, or demolition that results in a 50 percent or greater alteration of a major structural component (including exterior walls, floor and roof structures) or a 50 percent increase in floor area, cumulatively over time on or after certification of the City's LUP. Furthermore, changes to major structural elements are not additive between individual elements, while alterations to individual major structural elements are cumulative. Thus, if in the future, an applicant proposed to modify 40% of the exterior walls and 30% of the roof structure; this would not be considered redevelopment because it relates to two different major structural components. However, if an applicant were to come back for a subsequent CDP to modify an additional 10% of the exterior walls or an additional 20% of the roof

structure, the project would be considered redevelopment because it would result in a cumulative alteration to 50% of a major structural component. Additions are also cumulative over time, such that an initial 25% addition would not be considered redevelopment; but a subsequent 25% addition would result in a cumulative 50% increase in floor area, and would thus constitute redevelopment.

Mitigation for Notches/Seacaves Landward of Bluff Retention Devices

As explained above, the typical mechanism of sea cliff retreat along the Solana Beach shoreline involves the slow abrasion and undercutting of the Torrey Sandstone bedrock, which forms the sea cliff at the base of the bluffs, from wave action which becomes more pronounced in periods of storms, high surf and high tides. Other contributing factors to sea cliff retreat include fracturing, jointing, sea cave and overhang collapse and the lack of sand along the shoreline. When the lower sea cliff is undercut sufficiently (i.e. notches/seacaves have formed), it commonly fails in blocks. Thus recreation mitigation for the area of notches/seacaves located landward of proposed bluff retention devices is appropriate as ensuing collapse of these voids is how additional public beach area is formed. As proposed by the City, recreation mitigation for existing seacaves located landward of a proposed bluff retention device would only be required if lower bluff failure is imminent as determined by the City's geotechnical engineer.

Determination of imminence of collapse must be consistent with information used to determine when any type of shoreline protection is warranted. Thus, collapse cannot be imminent for purposes of a shoreline protection application, yet, not imminent for purposes of the Public Recreation Fee. Thus, Suggested Modification 10 requires that the entire area of a seacave or notch located landward of the proposed Bluff Retention Device shall be included in the mitigation calculation.

The Commission has approved numerous erodible concrete notch/seacave infills in Solana Beach and, consistent with the City's certified LUP, did not require payment of the interim recreation mitigation fee because the infills were designed to erode at the same rate as the natural bluff and would therefore not fix the back of the beach. However, if a bluff retention device is proposed to be constructed seaward of an existing erodible concrete notch/seacave infill, the infill will no longer be subject to erosion and will result in the same impacts to the coastal beach as described above. Therefore, Suggested Modification 11 requires that the area of any seacaves or notches that have been previously infilled with erodible concrete, located landward of a proposed shoreline armoring device, which are no longer allowed to erode as originally approved, shall be included in the mitigation calculation.

The entire area of any existing notch/seacave infills will also be included in the Public Recreation Fee calculation for existing bluff retention devices that were subject to the interim fee deposit and constructed in front of these filled natural depressions. This clarification will ensure consistency for projects going forward and will reduce uncertainty for property owners, the public, the City and the Commission. Appendix C,

includes example calculations for bluff retention devices that have notches/seacaves located landward of the armoring.

Mitigation for Non-Erodible Seacave/Notch Infills without Another Associated Bluff Retention Device

The City's certified LUP allows for the infilling of notches/seacaves with non-erodible concrete if an existing blufftop structure is imminently threatened. Although this type of bluff retention device does not result in immediate encroachment onto usable public beach area, it will result in the same impacts as other bluff retention devices by fixing the back of the beach. As proposed by the City, recreation mitigation will be required for the area of the notch/seacave. However, the City's proposal does not require mitigation for beach area that would otherwise have been formed in the future due to passive erosion had the non-erodible notch/seacave infill not been constructed. As proposed, requiring recreation mitigation only for the initial encroachment of a non-erodible notch/seacave infill would not adequately mitigate for public beach access impacts. Thus, mitigation for the area of the beach that would otherwise have been formed in the future due to passive erosion had the non-erodible notch/seacave infill not been constructed must also be accounted for. Suggested Modification 12 clarifies that the entire area of a seacave or notch to be infilled with non-erodible concrete shall be included in the mitigation calculation and that recreation mitigation shall also be required for impacts to beach access that result from halting erosion of the bluff. Appendix C includes example calculations for infill of a notch/seacave with non-erodible concrete.

Erosion Rate

The estimated average long-term (i.e. 75 years) bluff recession rate that the Coastal Commission typically applies to the calculation of setbacks for new bluff top development in Solana beach is 0.47 feet per year, which is the upper bound of the historic rate (1932-1994) measured by Benumof and Griggs (1999) in a peer-reviewed FEMA-funded study making use of the then state of the art photogrammetic techniques. The upper bound is used as a proxy for the average rate expected over the life of proposed new bluff top development (75 years) to account for increases in bluff retreat rate due to sea level rise. At the current time, the Commission continues to believe that the best, most defensible, estimates for the future coastal erosion rates are the high end historic rates for Solana Beach reported in Benumof and Griggs (1999) for the next 75 years. However, when calculating mitigation requirements in Solana Beach over a shorter time period (i.e. 20 years), the Commission has accepted erosion rates between 0.27 and 0.40 ft. per year (Ref. 6-09-033/Garber et al. and 6-16-0281/Winkler & Lucker).

As part of the City's mitigation method preparation, the City undertook a study of the best available erosion rate to use for calculating recreation Public Recreation Fees. The City found that, when accounting for potential sea level rise, the appropriate erosion rate to use for the initial 20 year period is 0.67 ft. per year. However, the City asserts that the certified LUP references an erosion rate of 0.40 ft. per year. The City has therefore proposed to implement an erosion rate of 0.40 ft. per year for the time period between

2016 and 2025 and to then use an updated erosion rate of 0.67 ft. per year for the time period between 2026 and 2046. The Commission geologist has reviewed the City's proposed erosion rates and determined that they are appropriate. Policy 4.51 of the certified LUP requires that the City review the erosion rate at least every ten years and more often if warranted by physical circumstances, including large scale sand replenishment projects and changes in sea level. Suggested Modification 6 clarifies that any change to the erosion rate shall be required to be incorporated as an LUP amendment as it would impact the calculation of the Sand Mitigation Fee and Public Recreation Fee. A reduced erosion rate could result in lower Sand Mitigation Fee and Public Recreation Fees in the future and an increase in the erosion rate in higher Sand Mitigation Fee and Public Recreation Fees in the future.

Mitigation Offsets

The City's analysis includes the concept of granting reductions ("offsets") to the Public Recreation Fee for potential public benefits from bluff retention devices authorized to protect private development. As defined by the City, public benefits consist of fatalities avoided as a result of the installation of the bluff protection device, protection of public property (including but not limited to public beach access stairways, parking lots and public roads), and the potential increased property tax revenue associated with a stabilized site. As proposed by the City, the 'public value' resulting from the installation of a bluff retention device is quantified and compared to the private value to the property owner of the bluff retention device. The private value is defined as the cost of the bluff retention device. If the public value is found to be greater than the private value, the City would then have the discretion to reduce or eliminate the Public Recreation Fee and Sand Mitigation Fee for a particular bluff retention device. The City's analysis found that the private benefit exceeds any potential public benefit in most cases, and that no offsets would be expected.

The Commission does not agree that bluff retention devices provide any quantifiable public safety benefit and therefore, this contention is not a valid reason to offer mitigation reductions for the impacts of shoreline armoring. Passive erosion and loss of usable beach area is a direct result of shoreline armoring and can decrease the safety of a beach as areas of safe passage are reduced or eliminated. In addition, even with shoreline protection, there is no guarantee that a seawall or the bluff above a seawall will not fail and result in death or injury to beach users. Even if one assumed seawalls provided a monetary public benefit, the City's approach to calculating the value of death or injury to beach users is not rigorous.

Commission staff also questions whether increased property tax revenue should be included as a benefit to public beach access and recreation. Since the increased tax revenue will not be allocated in its entirety to improving public access and recreation at the City's beaches, it should not be included in the public benefit calculations. It may also be the case that seawalls will result in decreased property values in the future if the combination of seawalls and sea level rise further reduce or even eliminate the public's ability to enjoy the City's beaches. A Southeast US study found that building a seawall

increased individual shoreline property values but lowered the property value of non-waterfront properties, leading to a net property value loss in the community (Warren Kriesel & Robert Friedman, 2003. Coping With Coastal Erosion: Evidence For Community-Wide Impacts, 71 Shore & Beach 19, 19-23). Additionally, the City's beach recreation value is not market-based (indirect economic impacts are not part of the calculations), so including tax revenue dollars as an offset is incompatible with the scope and application of the Public Recreation Fee.

The construction of shoreline armoring to protect private property results in a direct benefit to private property owners at the expense of the public. While a reduction or elimination of the required Public Recreation Fees may be considered for bluff retention devices that protect public infrastructure, Suggested Modification 7 requires that mitigation offsets or reductions to any required Public Recreation Fees for bluff retention devices whose primary purpose is the protection of private property be prohibited.

2. Public Access/Public Recreation

Coastal Act Sections 30210, 30211, 30212, 30212.5, and 30221 require that public access and use of the coast shall be maximized, that development shall not interfere with the public's right to access the coast and use of dry sand beaches, and that oceanfront land suitable for recreational activities shall be protected. As stated elsewhere in this report, the physical encroachment of a bluff protective device on the beach reduces the beach area available for public use and is therefore a significant adverse impact. Furthermore, when the back beach is fixed with a bluff retention device, passive erosion is halted and additional public beach area can no longer be created.

Section 30210:

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211:

Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212:

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) It is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) Adequate access exists nearby, or, (3) Agriculture would be

adversely affected. Dedicated accessways shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway. […]

Section 30212.5:

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Section 30221:

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

The City's certified LUP also contains various policies that require that public access and use of the coast shall be maximized, that development shall not interfere with the public's right to access the coast and use of dry sand beaches, and that oceanfront land suitable for recreational activities shall be protected.

The City's LUP policies related to public access state:

Policy 4.39: *Provide for reasonable and feasible mitigation for the impacts of all bluff retention devices which consists of the payment of Sand Mitigation Fees and Public Recreation Fees to the City or other assessing agency.*

Policy 4.50: *The bluff property owner shall pay for the cost of the coastal structure or Infill and pay a Sand Mitigation Fee and a Public Recreation Fee per LUP Policy 4.38. These mitigation fees are not intended to be duplicative with fees assessed by other agencies. It is anticipated the fees assessed as required by this LCP will be in conjunction with, and not duplicative of, the mitigation fees typically assessed by the CCC and the CSLC for impacts to coastal resources from shoreline protective devices.*

Sand Mitigation Fee - to mitigate for actual loss of beach quality sand which would otherwise have been deposited on the beach. For all development involving the construction of a bluff retention device, a Sand Mitigation Fee shall be collected by the City which shall be used for beach sand replenishment and/or retention purposes. The mitigation fee shall be deposited in an interest-bearing account designated by the City Manager of Solana Beach in lieu of providing sand to replace the sand that would be lost due to the impacts of any proposed protective structure. The methodology used to determine the appropriate mitigation fee has been approved by the CCC and is contained in LUP Appendix A. The funds shall

solely be used to implement projects which provide sand to the City's beaches, not to fund other public operations, maintenance, or planning studies.

Sand Mitigation Fees must be expended for sand replenishment and potentially for retention projects as a first priority and may be expended for public access and public recreation improvements as secondary priorities where an analysis done by the City determines that there are no near-term, priority sand replenishment Capital Improvement Projects (CIP) identified by the City where the money could be allocated. The Sand Mitigation funds shall be released for secondary priorities only upon written approval of an appropriate project by the City Council and the Executive Director of the Coastal Commission.

Public Recreation Fee – Similar to the methodology established by the CCC for the sand mitigation fee, the City and the CCC are jointly developing a methodology for calculating a statewide public recreation fee. To assist in the effort, the City has shared the results of their draft study with the CCC to support their development of a uniform statewide Public Recreation / Land Lease Fee. Until such time as an approved methodology for determining this fee has been established, and the methodology and payment program has been incorporated into the LCP through an LCP amendment, the City will collect a $1,000 per linear foot interim fee deposit. In the interim period, CCC will evaluate each project on a site-specific basis to determine impacts to public access and recreation, and additional mitigation may be required. The City shall complete its public recreation/land lease fee study within 18 months of effective certification of the LUP.

Project applicants have the option of proposing a public recreation/access project in lieu of payment of Public Recreation Fees (or interim deposits) to the City. At the City's discretion, these projects may be accepted if it can be demonstrated that they would provide a directly-related recreation and/or access benefit to the general public.

Public Recreation Fees must be expended for public access and public recreation improvements as a first priority and for sand replenishment and retention as secondary priorities where an analysis done by the City determines that there are no near-term, priority public recreation or public access CIP identified by the City where the money could be allocated. The Public Recreation funds shall be released for secondary priorities only upon written approval of an appropriate project by the City Council and the Executive Director of the Coastal Commission.

Policy 4.51: *(cited above)*

Policy 4.53: *All permits for bluff retention devices shall expire when the currently existing blufftop structure requiring protection is redeveloped (per definition of Bluff Top Redevelopment in the LUP), is no longer present, or no longer requires a protective device, whichever occurs first and a new CDP must be obtained. Prior to expiration of the permit, the bluff top property owner shall apply for a coastal*

development permit to remove, modify or retain the protective device. In addition, expansion and/or alteration of a legally permitted existing bluff retention device shall require a new CDP and be subject to the requirements of this policy.
The CDP application shall include a re-assessment of need for the device, the need for any repair or maintenance of the device, and the potential for removal based on changed conditions. The CDP application shall include an evaluation of:

- *The age, condition and economic life of the existing principal structure;*
- *Changed geologic site conditions including but not limited to, changes relative to sea level rise, implementation of a long-term, large scale sand replenishment or shoreline restoration program; and*
- *Any impact to coastal resources, including but not limited to public access and recreation.*

The CDP shall include a condition requiring reassessment of the impacts of the device in 20 year mitigation periods pursuant to Policies 4.49 and 4.53.

No permit shall be issued for retention of a bluff retention device unless the City finds that the bluff retention device is still required to protect an existing principal structure in danger from erosion, that it will minimize further alteration of the natural landform of the bluff, and that adequate mitigation for coastal resource impacts, including but not limited to impacts to the public beach, has been provided.

As cited above, the Coastal Act and the certified LUP have numerous policies related to the provision and protection of public access and recreation opportunities.

Section 30235 of the Coastal Act requires that bluff retention devices be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. An issue of major concern facing California today is the fast pace of disappearing beaches due to natural processes (i.e. erosion, subsidence and storm events) and anthropogenic factors (coastal development and sand supply interruptions). Seawalls, revetments, and other types of hard armoring have long been used to protect backshore development from erosion and flooding, but future accelerated sea level rise and extreme storm events will heighten the rate of beach loss and potential exposure of the backshore to hazards. Hard armoring already results in unintended ecological and public access consequences, such as loss of biodiversity and ecosystem services and displacement of recreational beach area by protective structures.

Some of the effects of a bluff retention device on the beach, such as scour, end effects, and modification to the beach profile are temporary or difficult to distinguish from all the other actions that modify the shoreline. However, some of the effects which a structure may have on natural shoreline processes can be quantified. Three of the effects from a shoreline protective device which can be quantified are: 1) loss of the beach/bluff area on which the structure is located; 2) the long-term loss of beach/bluff that will result when the back beach/bluff location is fixed on an eroding shoreline; and 3) the amount of

material that would have been supplied to the beach if the back beach or bluff were allowed to erode naturally.

Loss of beach material and loss of beach area are two separate concerns. A beach is the result of both sandy material and a physical, dry area between the water and the back beach that is occupied by that sand. Thus, beach area is not simply a factor of the quantity of sandy beach material.

In recent years the Commission has calculated and required separate mitigation for both the direct losses of beach area and the losses of beach sand. The Commission's mitigation approach for sand loss has been relatively straightforward. The sand mitigation fee quantifies lost sand volume and the cost of the replacement sand. Bluff retention devices will halt or slow the retreat of the entire bluff face. The bluff consists of a significant amount of compacted sand. As the bluff retreated historically, this sand was contributed to the littoral sand supply to nourish beaches throughout the region. Appendix A of the City's certified LUP includes a formula to determine the Sand Mitigation Fee. The City is not proposing any changes to LUP Appendix A or to the Sand Mitigation Fee policies through the subject LUP amendment.

In addition to the immediate encroachment footprint of a bluff retention device, if the natural shoreline were allowed to erode, the beach would migrate inland. However, when the back shoreline location is fixed by a bluff retention device, the inland migration of the beach is halted. This results in a long-term loss of recreational opportunity as the development of new inland beach land fails to keep pace with the loss of or inundation of the seaward portion of the beach.

The loss of beach area resulting from the construction of bluff retention devices creates adverse impacts on public access and recreation. The City's beaches are utilized by local residents and visitors for a variety of recreational activities, such as swimming, jogging, walking, surf fishing, beachcombing and sunbathing. In addition, the majority of Solana Beach is narrow, and at high tides throughout the year it is inundated with water and inaccessible. The loss of a beach creates a situation where refractory waves or backwash can negatively impact surfing conditions, and can make entry/exit from the water hazardous as well. Furthermore, nearly all bluff retention devices in the City will be constructed on the public beach that would otherwise be available for public use and, therefore, will have both immediate and long-term adverse impacts on public access and recreational opportunities.

Appropriate mitigation for construction of a bluff retention device would be creation of additional public beach area in close proximity to the impacted beach area. However, all of the beach areas in Solana Beach are already in public ownership, such that there is not private beach area available for purchase. In addition to the more qualitative social benefits of beaches (recreational, aesthetic, habitat values, etc.), beaches provide significant direct and indirect revenues to local economies, the state, and the nation. The loss of or any decrease in access to a public beach in an urban area such as Solana Beach represents a significant impact to public access and recreation, including a loss of the

social and economic value of this recreational opportunity. The question becomes how to adequately mitigate for these qualitative impacts on public recreational beach use and in particular, how to determine a reasonable value of this impact to serve as a basis for mitigation.

In recent years, the Commission has sought additional ways to quantify the adverse impacts to public access and recreation that result from shoreline protective devices and, thereby, develop more appropriate mitigation for those impacts. As a filing requirement for seawall applications, in areas other than Solana Beach that do not have an established interim recreation mitigation program, applicants are asked to address the adverse impacts of shoreline devices on public access and recreation opportunities and to consider ways those impacts could be mitigated. Mitigation might be in the form of a particular public access or recreational improvement to be located in close proximity to the project or might involve a payment to be used sometime in the future for a public beach access/beach recreation improvements. The Commission has not established a single method to quantify and then mitigate for recreational losses incurred by a bluff retention device.

Through the subject LUP amendment application, the City proposes to establish a Recreation Mitigation Fee that can be consistently calculated in order to reduce uncertainty for property owners and to better ensure an adequate mitigation payment for impacts to public recreation resulting from the construction of a bluff retention device.

Past Commission Recreation In-Lieu Fee Mitigation

The Coastal Commission originally initiated an in-lieu beach sand fee mitigation program in response to two coastal development permit applications for lower bluff protection in the City of Encinitas in San Diego County. One application involved the construction of nine-ft. high shotcrete seawalls, with tiebacks, on public property fronting six non-contiguous lots to protect existing private residential blufftop development (CDP #6-93-85 Auerbach et al). The second application was for similarly designed seawalls in the nearby section of shoreline on eight contiguous properties (CDP #6-93-131 Richards et al). The in-lieu fee program developed as the means to mitigate the impacts of the shoreline protective devices on beach sand supply, to be paid by the applicant in-lieu of placing sand on the beach. The payment of the fee was required as a condition of approval of the coastal development permits for the shoreline protective devices in accordance with Section 30235 of the Coastal Act. The amount of the fee was derived through a method developed by the Commission staff coastal engineer to quantify the amount of sand that would replace the lost beach area and replace the amount of sand denied to the littoral cell over the life of the structure. That volume of sand was then multiplied by the cost of transporting and depositing sand on the beach in the project vicinity to determine the fee to be paid in-lieu of placing sand on the beach to mitigate for the lost beach area and material. The in-lieu fee covered loss of beach area on which the bluff retention device was located (based on sand volume), long-term loss of beach if the back beach location was fixed (based on sand volume), and loss of material from natural back beach or bluff erosion (based on sand volume).

However, the Commission recognized that the mitigation in the form of an in-lieu beach sand fee that paid for the purchase of sand to offset the sand lost by the shoreline structure, provided some, but not all of the mitigation, associated with the adverse impacts of shoreline devices and that it did not mitigate for the impacts to public recreation and access from the physical beach loss. The Commission has continued to consistently apply the Sand Mitigation Fee for shoreline armoring projects, and a Sand Mitigation Fee is already a part of the City's certified LUP.

In 2004, the Commission began to analyze additional ways to quantify the adverse impacts to public access and recreation that result from shoreline protective devices and, thereby, develop more appropriate mitigation for those impacts. Mitigation for impacts to public beach access and recreation in California is relatively new and the Commission explored various methods to address these impacts. Although the Commission has approved various projects that included mitigation for access and recreation impacts, it is likely that the past mitigation underestimates the total economic value as it doesn't include market components or existence value (benefits of the beach regardless of use) of the impacted beaches and shorelines. As evidenced by the past access and recreation mitigation projects detailed below, the City's Recreation Mitigation Fee, as proposed, would result in mitigation fees that fall considerably short of previous valuation estimates. Through the suggested modifications contained in this report, the modified Recreation Mitigation Fee method would result in mitigation fees that are more in line with other nearby valuation estimates and Commission precedent.

The Commission first required an in-lieu beach access and recreation fee, separate from the Sand Mitigation Fee, for impacts to public access and recreation in October 2004. The approved project included the construction of a 585 ft. long seawall fronting a 172 unit condominium complex in Monterey which was estimated to impact 43,500 sq. ft. of beach area over a 50 year period. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the Commission required a mitigation payment of $5,300,000 for a 50 year period based on the area of beach impacted, the number of annual beach users, and a study of average beach user expenditure conducted for a different area of the state (Ref. CDP 3-02-024/Ocean Harbor House).

In October 2005, the Commission approved the construction of a 120 ft.-long, 2 ½ ft. wide seawall below the Las Brisas condominium complex in Solana Beach. The land area impacted over the 22 year design life of the seawall was estimated to be 1,364.8 sq. ft. After hiring an economist, Dr. Phillip King, to perform an economic analysis of the lost recreational value associated with the construction of the seawall, the Commission determined that the applicant should make a payment of $248,680.72 to mitigate impacts of the seawall. The payment was designed to be used for purchase of beach land and/or recreational beach park amenities (Ref. CDP 6-05-072/Las Brisas).

In June 2010, the Commission approved construction of a 57 ft. long seawall fronting a single-family house in Encinitas which was estimated to impact 801 sq. ft. of beach area

over a 20 year period. The Commission required the applicant to make a payment based on a current per sq. ft. real estate appraisal of the blufftop lot (without improvements) multiplied by 801 sq. ft. of lost public beach. This method was selected due to a lack of specific recreational empirical data necessary to determine the value of the lost public beach. While the value of the public beach is likely to be higher than the value of a blufftop parcel because of the public benefit derived from its use, the Commission determined that the unimproved blufftop appraisal was appropriate until a more accurate method of determining economic value of the loss to public access and recreational opportunities is identified for Encinitas. The property owner made a payment of $136,606 to mitigate recreation impacts of the seawall (CDP 6-07-133/Li). In March 2013, the Commission approved construction of a 67 ft. long seawall on the adjacent property, fronting a single-family house in Encinitas which was estimated to impact 797 sq. ft. of beach area over a 20 year period. The Commission utilized a similar methodology that resulted in the property owner making a payment of $129,561 to mitigate recreation impacts of the seawall (CDP 6-12-041/Lampl).

In August 2012, the Commission approved the construction of a 120 ft. long seawall fronting a condominium complex in the Ocean Beach community of San Diego which was estimated to impact 780 sq. ft. of beach over a 20 year period. The applicant proposed to partially fund the repair or replacement of an adjacent public access stairway with a public access mitigation fee of $81,000, which the Commission accepted (Ref: 6-11-010/Oceanus GHAD). In December 2016, the Commission approved a 106 ft. long extension to this existing seawall and required a public access and recreation fee of $77,600 to mitigate for the 671 sq. ft. of expected impacts over a 20 year period (6-16-0281/Oceanus GHAD).

In August 2013, the Commission approved construction of a bluff retention device fronting a condominium complex in Pacifica which was estimated to impact 37,895 sq. ft. of beach area over a 20 year period. The Commission required the applicant to make a payment based on a current per sq. ft. real estate appraisal of the blufftop property (without improvements) multiplied by 37,895 sq. ft. of lost public beach. The property owner was required to pay a fee of $1,620,011 to mitigate recreation impacts of the bluff retention device (CDP 2-11-039/Lands End).

In July 2014, the Commission approved construction of a bluff retention device fronting an apartment building in Pacifica, which was estimated to impact 7,944 sq. ft. of beach area over a 17 year period. The Commission required the applicant to make a payment based on a current per sq. ft. real estate appraisal of the blufftop property (without improvements) multiplied by 7,944 sq. ft. of lost public beach. The applicant was required to either pay a fee of $263,581 to mitigate recreation impacts of the bluff retention device or to implement a comprehensive public access program to include a blufftop public trail, beach viewing overlooks, and interpretive signs (CDP 2-11-009/City of Pacifica).

Past Commission Recreation Project Based Mitigation

Recognizing that the intent of in-lieu recreation mitigation fees is to fund actual projects that improve beach access and recreation, the Commission has also approved applications for bluff retention devices with the requirement that the applicants undertake specific beach access and recreation projects as mitigation. This following list of projects is not comprehensive and serves to illustrate the variety of project based mitigation accepted in the past by the Commission.

In May, 2012, the Commission approved a 1,800 ft. long seawall to replace an approximately 1,800 linear ft., 12 ft. wide existing rock revetment fronting the Pacific Coast Highway in Ventura County. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the Commission required the construction of a new public access stairway and a new public access ramp to the beach, new public access signs, new ADA-compliant parking spaces, and repair and paving of the existing adjacent road shoulder and bicycle lane areas (Ref. CDP 4-11-026/Caltrans).

In August 2010, the Commission approved construction of an approximately 130 ft. long seawall fronting a single-family house in Santa Cruz which was estimated to impact 3,716 sq. ft. of beach area over a 20 year period. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the applicant proposed the incorporation of a new two-foot-wide public access pathway along the lower platform of the proposed seawall at an elevation about 4 feet above the mean high tide line to provide a connection from the upcoast pocket beach, over the seawall, to the downcoast pocket beach. Furthermore, conditions of approval also required modification to the path (e.g., increase in elevation) over time if necessary to ensure that it always continues to be usable even at high tides, including in light of sea level rise. In addition, the applicant proposed that development on the adjacent downcoast property (also owned by the applicant) shall be limited to public access, recreation, and open space development and uses (Ref. CDP 3-09-042/O'Neill).

In December 2009, the Commission approved the modification and expansion of an existing 120 ft. long seawall fronting a single-family house in Santa Cruz. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the applicant proposed the incorporation of a new two-foot-wide public access pathway along the lower platform of the proposed seawall to provide a connection from the upcoast adjacent beach, leading around a rocky promontory, and terminating at a public access stairway (Ref. CDP 3-08-019/Sea Breeze).

In January 2017, the Commission approved construction of a seawall fronting a public road and a wastewater lift station in the City of Pismo Beach, which was estimated to impact 3,400 sq. ft. of beach area over a 20 year period. Based on the market value of a number of nearby blufftop properties, the Commission determined that the beach area

impacted by the seawall had a public access value of $1,120,810 over a 20 year period. In place of an in-lieu fee, the Commission worked with the applicant to design a comparable mitigation package of beach access improvements that included a lateral blufftop trail, a coastal overlook, repairs, improvements, or replacement of an existing damaged public beach stairway, removal of a concrete outfall located on the beach, removal of non-safety related barriers to public access, benches, picnic tables, bike racks, garbage and recycling receptacles, dog mitt stations, informational and directional public beach access signage, and invasive plant removal and installation of native landscaping (CDP A-3-PSB-12-042/Capistrano Seawall and A-3-PSB-12-0043/Vista Del Mar Seawall).

Ownership of Beach and Bluffs

Although site-specific anomalies may exist along the coast in Solana Beach, the area seaward of the toe of the bluff is public along the City's entire coastline and the area located between the bluff edge and the toe of the bluff south of Fletcher Cove is private, while the area located between the bluff edge and the toe of the bluff north of Fletcher Cove is for the most part, public.[5]

Throughout the majority of Solana Beach, the area between the toe of the bluff and the ocean is most likely Public Trust Lands. Public Trust Lands can include, but are not limited to tide lands[6] and submerged lands. Under Coastal Act regulations, Public Trust Lands also include historic tidelands and submerged lands that are presently filled or reclaimed and which were subject to the Public Trust at any time (Cal. Code of Regs., tit. 14, § 13577(f)). In the City of Solana Beach, the Mean High Tide Line (MHTL) is at the toe of the bluff. The area has received substantial beach nourishment over the past

[5] In 1988 the City of Solana Beach approved a resolution to allow the transfer of publicly owned coastal bluff face to each blufftop homeowner whenever development on the blufftop lot was proposed (Resolution No. 88-45). The purpose of the resolution was to transfer the liability associated with the eroding bluff and any future shoreline device to the blufftop homeowner. Since 1988, the City has created and quitclaimed approximately 6 or 7 bluff face lots to the blufftop property owners. Land divisions such as the "carving out" of lots from publicly owned land constitutes development under the Coastal Act and requires a coastal development permit. The Commission has approved approximately two coastal development permits for these quitclaimed lots (Ref: CDP Nos. 6-91-129/Steinberg; 6-92-082/Vicker). However, coastal development permits have not been approved for the majority of these quitclaimed lots and, therefore, the majority of these quitclaimed lots are unpermitted. The Commission subsequently stopped approving such transfer and gift of public land by the City due to Coastal Act consistency concerns related to scenic resources, public access, recreation and shoreline sand supply (Ref: CDP #6-06-104/Vams, LLC).

[6] Tidelands include "those lands lying between the lines of mean high tide and mean low tide which are covered and uncovered successively by the ebb and flow thereof." (*Lechuza Villas West v. California Coastal Com.* (1997) 60 Cal.App.4th 218, 235.) The State owns all tidelands and holds such lands in trust for the public. (*Ibid.; State of Cal. Ex rel. State Lands Com. v. Super. Ct.* (1995) 11 Cal.4th 50, 63; Cal. Civil Code, § 670). "The owners of land bordering on tidelands take to the ordinary high water mark. The high water mark is the mark made by the fixed plan of high tide where it touches the land; as the land along a body of water gradually builds up or erodes, the ordinary high water mark necessarily moves, and thus the mark or line of mean high tide, i.e., the legal boundary, also moves." (*Lechuza Villas West, supra*, 60 Cal.App.4th at p. 235). In other words, the boundary between private property and public tidelands is an ambulatory line. (*Id*. at p. 242.)

decade, which has raised the sand level on the beach and resulted in the high tide not reaching the toe of the bluff as frequently in some locations. In these locations, the beach replenishment projects do not change the MHTL and the MHTL is still likely at the toe of the bluff. Regulation 13577(c) defines the MHTL "…as the statistical mean of all the high tides over the cyclical period of 18.6 years." Based on the location of the MHTL, any existing or future seawall or seacave/notch infill is likely on public land.

Compatibility with the California Coastal Commission Sea-Level Rise Policy Guidance

The Coastal Commission unanimously adopted the Sea Level Rise Policy Guidance document on August 12, 2015. [7] The interpretive guidelines are intended to assist local governments preparing Local Coastal Programs and Coastal Development Permit applicants plan for sea level rise within the context of the Coastal Act. The information in the guidance document is rooted in certain fundamental guiding principles, many of which derive directly from the requirements of the Coastal Act. In this respect, the principles are not new, but rather generally reflect the policies and practices of the Commission since its inception in addressing coastal hazards and the other resource and development policies of the Act. The guidance document acknowledges that climate change is causing the sea level to rise along the coast of California and that the Commission and coastal communities must prepare for the effects of sea-level rise. The guidance document further recognizes the potential risks to the State of California's economy, which includes coastal tourism, commercial fisheries, coastal agriculture, and ports. Furthermore, the guidance document recognizes the risks to coastal property, coastal infrastructure, and public beaches and recreational resources. The document includes proactive steps that can be taken by the Commission, local governments, permit applicants and other interested parties to prepare for sea level rise in the context of the LCP and the CDP process.

The guidance document is particularly relevant to the subject LCP amendment in terms of shoreline armoring. As discussed in the guidance document, shoreline armoring has the potential to lead to loss of public beaches, an impact aggravated as sea level rises and beaches are no longer able to retreat landward. Siting new development in locations that will not require bluff retention devices in the future, and limiting the retention of existing bluff retention devices and the construction of new bluff retention devices, when feasible, will help to ensure maximum public access to the coast and protection of coastal resources. Furthermore, the guidance stresses the importance of ensuring that property owners assume the risk of development in hazardous areas throughout the life of the development, which includes risks to both private property and to adjacent coastal resources that may be adversely impacted.

In order to ensure that coastal resources are protected, adequate mitigation for all impacts must be provided (i.e. public access, sand supply, ecological value, visual aspects, etc.). Section IV of the guidance, which is intended to aid the Commission and local

[7] Available at https://www.coastal.ca.gov/climate/slrguidance.html.

governments in addressing sea level rise through local coastal programs, identifies adaptation measures to minimize risks of new development. The City's certified LUP incorporates many of the adaptation measures contained within the draft of the "California Coastal Commission Sea-Level Rise Policy Guidance." In addition, the proposed LUP amendment further implements the recommendations of the guidance through the requirement to provide mitigation for impacts to public access and recreation that result from coastal structures or non-erodible seacave/notch infills.

Interim Public Access and Recreation Fees

Policy 4.50 of the City's LUP explains that the Commission and City are developing a methodology for calculating a Public Recreation Fee and that until a public recreation mitigation fee method is approved. Applicants are required to pay a $1,000 per linear foot interim fee deposit to mitigate impacts to public recreation that result from coastal structures or non-erodible seacave/notch infills. In June of 2007, the City of Solana Beach adopted an interim in-lieu fee program (Ref. Resolution 2007-042, City of Solana Beach), and this interim fee was included as a part of the City's LUP as approved by the Commission in 2012. The program was designed as "interim" until the City completed, and the Commission certified as part of the LUP, an economic study that developed a more precise way to determine impacts to public access and recreation from shoreline armoring. Shoreline armoring projects that involve only erodible concrete notch/seacave infills are exempt from the interim fee, provided that the bluff is allowed to erode at a rate comparable to adjacent natural conditions.

The Commission and the City began requiring the interim deposits in 2008. Since that time, the Commission has approved ten CDPs (encompassing 20 properties) for coastal structures or non-erodible seacave/notch infills which have been subject to the interim deposit. The blufftop property owners have paid a total of $1,187,500 for a total of 1,187.5 linear ft. of costal structures and non-erodible seacave/notch infills (Exhibit 1). Each of the approved CDPs has included a Special Condition, which requires that within six months of approval of the LUP amendment for the Public Recreation Fee, the applicant must submit to the Executive Director of the Commission for review and written approval, documentation of the final mitigation fee amount required by the City to address impacts of the armoring on public access and recreation. In addition, the Special Conditions require that if the amount differs from the interim amount required by the Commission, then the applicant must submit an application for an amendment to the CDP to adjust the mitigation fee to be paid to the City to address adverse impacts to public access and recreational use resulting from the coastal structure or non-erodible seacave/notch infill.

In its application, the City has proposed to modify Policy 4.50 of the LUP to incorporate the proposed Public Recreation Fee method. Suggested Modification 15 requires that Policy 4.50, as proposed by the City, shall be modified to remove reference to specific mitigation amounts from Table 1 of Appendix C for two reason; first, the table is proposed to be changed through other suggested modifications by staff and second, because Table 1 will be updated over time, which would necessitate further changes to

Policy 4.50 in the future. Instead Suggested Modification 15 refers solely to Appendix C which allow for a more streamlined LUP amendment process every ten years. In addition, staff suggests that Policy 4.50 not reference the City's Recreation Fee Study, as suggested modifications by staff recommend that the Recreation Fee Study not be incorporated into the LUP and instead that the Fee Study become a substantive file document. Staff also suggests that references to the continued use of the interim recreation mitigation program and the 18 month deadline to complete the recreation mitigation methodology be deleted, as these aspects will be completed following approval of the subject LUP amendment.

Suggested Modification 16 requires that pages 15 and 16 of Chapter 4 of the LUP also be modified to remove reference to the 2010 draft recreation mitigation methodology fee study, the interim recreation mitigation program, and the 18 month deadline to complete the recreation mitigation methodology, as these issues will not be applicable following approval of the subject LUP amendment. In addition, staff suggests that language be added to clarify that mitigation for impacts to ecological or other relevant coastal resources that result from the construction of bluff retention devices are not included in the recreation mitigation fee and the City's LUP shall be updated once an accepted approach on how to calculate these fees has been developed by the Commission. Staff also suggests that the language related to the need for an encroachment agreement be updated to clarify that encroachment agreements are required only for bluff retention devices constructed on public land that is owned by the City.

A number of bluff retention devices were approved and constructed in Solana Beach prior to 2005 and were not required to provide mitigation, or were required to mitigate for impacts to sand supply but not for impacts to public access and recreation. These properties will not immediately be subject to the Public Recreation Fee requirements. However, as described in the City's certified LUP, when new development of a blufftop structure is proposed or when expansion and/or alteration of a blufftop structure is proposed and there is an existing bluff retention device, property owners will be required to mitigate for ongoing impacts to public beach access and recreation. In addition, expansion or alteration of a legally permitted bluff retention device shall include an assessment of the need for mitigation to address ongoing impacts.

Method for Estimating Public Recreation Fee

The total economic value of beaches far exceeds that of public access and recreation alone. It is comprised of use and non-use values, which encompass existence value, ecological value, recreation value, and the market dollars directly tied to the recreation economy. The Public Recreation Fee is based on one component of total beach value that refers to a non-market based estimation of the societal value of public access and recreation at Solana Beach.

The elements of most beach recreation valuation studies include some dollar value reflecting the willingness of visitors to pay for their time at the beach. Some methods to assess willingness to pay for beach recreation are surveys of stated preference, while

others are more observation-based, like travel cost surveys. The City's choice of a travel cost survey is a typical method for assessing a proxy for non-market recreation value per visitor. The beach day use value is multiplied by the annual beach attendance to then determine annual beach recreation value.

Because shoreline armoring ultimately results in the loss of beach area, the factor of beach area can be used to connect the impact of coastal structures to the loss of value ascribed to any square foot of beach area. The per square foot value of beach allows a common metric to equate armoring impacts to lost recreation value. Thus, area is a very important parameter for the City's method.

Beach Day Use Value

In any discussion of beach day use value, it is important to highlight that the total economic value of beach access and recreation includes its direct market spending, indirect non-market value, and non-use (existence) value. A travel cost survey is one method of assessing non-market value, providing only a proxy of value for this one component. Thus, any mitigation fee based on a non-market proxy for recreation underestimates the total economic value of beaches. The proxy of beach day use value gives an indication of how much a person is willing to pay for a beach visit.

The City estimated the beach day use value using the travel cost method. This method determines the value of a beach day visit based upon estimates of the adult visitors' travel expenses to get to and from the beach plus the value of the adult visitor's travel time, based upon income. Input data for the City's beach day use value came from a total of 563 surveys of adult beach users on 34 randomly selected days and times over the period of one year between July 23, 2008, and ending on July 31, 2009. The survey asked beach users how long they planned to use the beach that day, their primary activity at the beach, the mode of transportation to get to the beach, the number of people who traveled together, the distance traveled to get to the beach, the beach users home zip code, the number of days per month the beach user went to the beach, income, occupation, age, sex, and age and number of children. A copy of the survey and its associated 'code book' is included as Exhibit 8. The City then used the mode of transportation, the distance traveled, and the annual individual salary to determine the average cost of a trip to the beach.

The City used this data in a standard travel cost analysis to quantify the value of a day at the beach. The travel cost method assumes that the farther people will travel to get to the beach and the more they pay for this travel, the higher the value that is placed on the beach visit. The travel cost attributed to a visitor who drives for 30 minutes to get to the beach is higher than the travel cost of someone who walks 10 minutes to the beach, due both the increased travel time and increased cost for the travel. Also included in the value of a beach trip is the value of beach visitors' travel time, based on their income. While some travel cost studies look at household income, the City's method included only individual adult wage-earners for valuation and added in the Junior Lifeguard Program to include this important user group. As will be discussed in more detail below, the City

also assumed that value of travel to the beach would be based on only 33% of the visitors' hourly wage or salary. Based on the data from the beach surveys and these main assumptions for how to include the survey data, the City found that during the summer months, the beach day use value is higher than non-summer months, which indicates that people are more willing to travel farther to get to the beach during the summer season. The City determined that the beach day use value in the summer is $19.25 (2016 dollars) and in the non-summer is $14.76 (2016 dollars).

Numerous economists recognize that the most difficult issue in using the travel cost method is in computing trip cost (Parsons 2003).[8] A significant portion of trip cost is accounted for as time lost traveling to and from the beach (i.e. opportunity cost of time). This time cost is typically related to a person's wage, allowing researchers to multiply an hourly wage factor by travel time to determine trip cost. This wage factor or wage rate is a percentage of a person's hourly income. The City chose to use a 33% wage rate to estimate the value of visitors' time in traveling to the City's beaches. Thus, the City assumes that the value of a person's free time is worth 1/3 of the value of their hourly income. The City contends that the 33% wage rate was chosen, in part, because it resulted in the best statistical fit to the demand curve.

While 33% of wages is sometimes used in travel cost calculations, it is not a universal standard among economists. In fact, in response to comments on previous versions of the City's Recreation Mitigation Fee study, the City stated that the 33% wage rate was chosen because "…it is considered the lower boundary and is therefore conservative and defensible." There is much variation in the opportunity cost of time—economists have used zero (for retired people, unemployed, etc.) to 100 (or even 150%) of wages (when opportunity cost is high). Using income as a key determinate of beach value has the potential to drastically undervalue a beach given the presence of retired people, homemakers, students, and unemployed people who do not have a full time job, so that the value of the beach to them is not represented in the beach value. Reliance on a low wage rate therefore has the potential to further underestimate value due to the fact that these other persons are not included in the calculation. An additional argument against the use of a low wage rate in Solana Beach relates to the high price of real estate that masks the value that local residents place on beach visits. The average home value in Solana Beach is over $1.1 million, more than double the average home value in San Diego County[9]. Thus, using the low wage rate for the beach use value has the strong potential to underestimate the value of the beach and to result in a low Recreation Mitigation Fee. Local residents are willing to pay more to live close to this beach, but that investment is then underrepresented when looking at cost of travel given the close proximity of these homes to the beach, and the inherently reduced cost for local homeowners to get to the beach.

[8] Parsons, G.R., 2003. The travel cost model. In *A primer on nonmarket valuation* (pp. 269-329). Springer Netherlands.

[9] https://www.zillow.com/solana-beach-ca/home-values/

In response to concerns raised by stakeholders, the City also analyzed beach day use values using a 67% and 100% wage rate. The table below shows the results of the multiple wage rate alternatives:

Wage Percentage	Summer/Non-Summer	Average Beach Day Use Value Per Visitor (2016 Dollars)
33%	Summer	$19.25
	Non-Summer	$14.76
67%	Summer	$35.56
	Non-Summer	$21.00
100%	Summer	$59.04
	Non-Summer	$28.07

The City contends that a low beach day use value is appropriate for its beaches due to the site specific characteristics and relative lack of amenities in comparison to more highly used Southern California beaches located closer to large population centers. Specifically, the City asserts that its beaches have a lower recreation value because they are not visible from the highway, are often narrow or inaccessible at higher tides, and public parking is limited.

In an April 8, 2016 comment letter to the City (Exhibit 5), in response to a previous draft of the City's Recreation Mitigation Fee study, Commission staff noted that the City's decision to use a 33% wage rate had the potential to underestimate the value of the beach. Over the past year, the Commission has further evaluated the use of this low wage rate for use in the valuation of the City's beach and finds that it undervalues a day at this particular beach. Coastal Act Sections 30210, 30211, 30212, 30212.5, and 30221 require that public access and use of the coast shall be maximized, that development shall not interfere with the public's right to access the coast and use of dry sand beaches, and that oceanfront land suitable for recreational activities shall be protected. Use of a wage rate that is too low would result in Recreation Mitigation Fees that undervalue the public beach. Undervaluing the public beach would not result in maximum public access to the beach, as mitigation fees will be too small to compensate for diminished public beach resources. Furthermore, while a travel cost study provides an informational basis for understanding some of the economic impacts of shoreline armoring at Solana Beach, it is a proxy that reflects many assumptions and cannot be considered precise, and the selection of a lower wage rate (in order to be conservative) has a greater likelihood to underestimate the value of the beach.

The City's Recreation Mitigation Fee study is not the only effort at developing a value for a visit to the beach and City's value should be considered in the broader context of California and Southern California beaches. From 2012 through 2015, Coastal Commission staff worked with economists experienced in applying recreational valuation methods to explore potential applications to Commission mitigation practices for

shoreline armoring projects (CCC Beach Valuation Study[10]) (Exhibit 9 includes the Economists' curriculum vitae). Many studies have been undertaken to determine beach day use values for California beaches. Most of the studies have focused on highly used beaches in southern and central California and beach day use values range from $14.97 to $111.57 (all in 2016 dollars).[11] While some beaches do have higher recreation use values relative to other beaches, day use value determinations at the same beach can also vary, not necessarily because of flaws in any of the studies, but because it is difficult to control for all the variability in assumptions, data collection methodology, and statistical processing choices that can influence each beach day use value result. Due to the complexity, cost, and variability of methods for individual studies of southern and central California beaches, the economists who worked on the technical appendix for the CCC Beach Valuation Study recommended that beach day use value for new armoring permits not be based on studies for individual beaches. Instead, the economists recommended a single beach day use value for the state. Commission staff acknowledges that this single value is primarily based on Central/Southern California beaches and thus more accurately represents a regional standard value.

Using a regional value would make developing mitigation programs for other jurisdictions more straightforward and repeatable. The day use value for the ideal beach width that the economists recommended is $39.49 (2015 dollars; $40.03 in 2016 dollars) per visitor per day.[12] The standard regional value was developed by taking the average of a range proposed by Pendleton and Kildow, based on various available studies, for estimating the high ($62.12) and low ($18.64) statewide values for a day at the beach and adjusted for inflation in 2016 dollars. The Day Use Values from the studies referenced above ranging from $14.97 to $111.57 (all in 2016 dollars) were not statewide estimates and instead were studies of individual beaches. The CCC Beach Valuation Study economists recommended this approach because it is difficult to consistently evaluate the value of a particular beach due to the many assumptions that go into the economic studies. Thus, economists who prepared the technical appendix for the CCC Beach Valuation Study found that the most appropriate approach for the Commission to use for assigning beach day use value is a benefit transfer model based on a midpoint of multiple, peer-reviewed surveys, rather than on any one study.

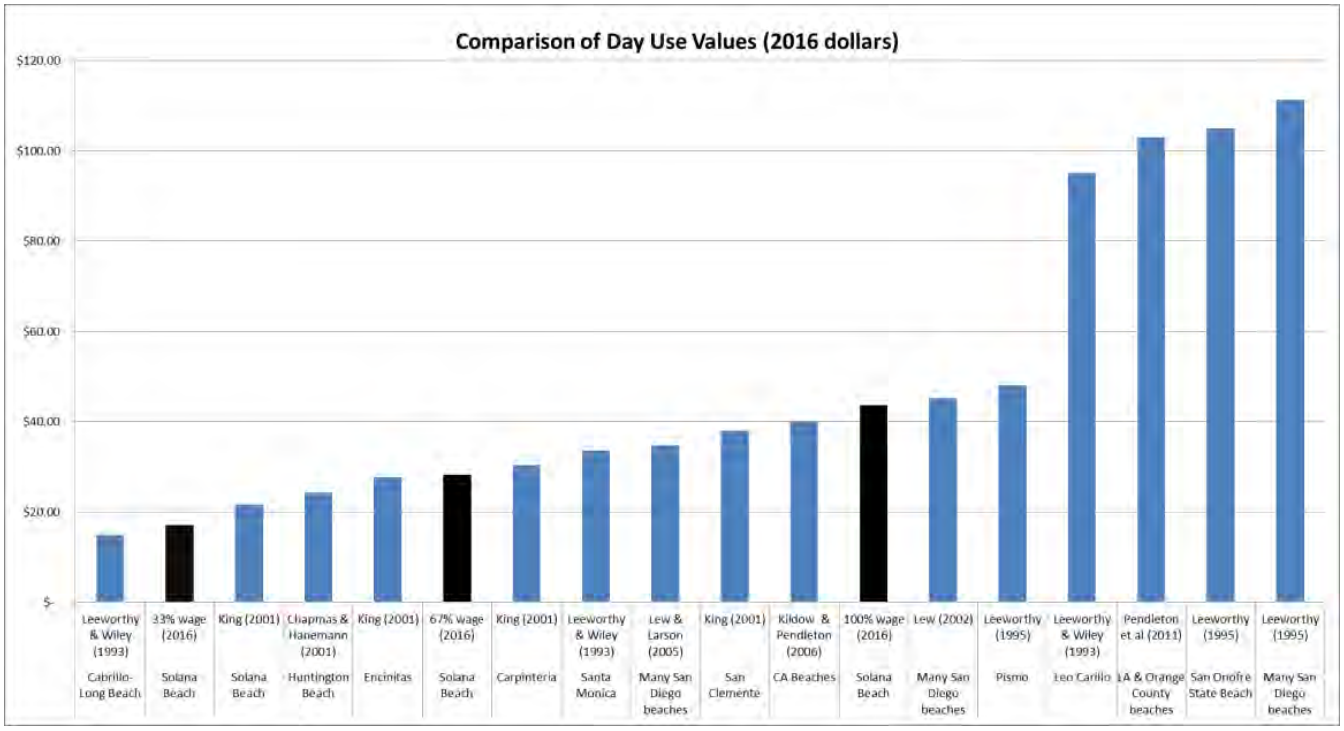
The day use value proposed by the City is significantly lower than what is recommended in the CCC Beach Valuation Study, and falls in the very lower end of the range of studies

[10] CCC Administrative Draft. September 2015. Improved Valuation of Impacts to Recreation, Public Access, and Beach Ecology from Shoreline Armoring. FY 2012 NOAA Project of Special Merit (NA12NOS4190026) grant report.

[11] Pendleton, L., and Kildow, J. (2006). The non-market value of beach recreation in California. Shore and Beach, 74(2), 34.

[12] The CCC Beach Valuation Study economists recommend a minor reduction in the beach day use value for beaches that are less than 250 feet in width, due to the reduced consumer value that they associate with narrower beaches.

reviewed in the development of the CCC Beach Valuation Study recommendation. As evidenced by the graph below, the City's decision to use a 33% wage rate, along with the numerous other assumptions the City's consultants made when undertaking this study, would result in the second lowest beach day use value out of the 15 previous studies of beach day use value surveyed in the CCC Beach Valuation Study. The City also included calculations for scenarios where a 67% wage rate and a 100% wage rate were used, which are included the graph below.



Furthermore, use of a 33% wage rate would result in Recreation Mitigation Fees that are significantly lower than mitigation fees required by the Commission since 2005. Past mitigation fees required by the Commission for bluff retention device approvals statewide have ranged from $81,000 to $5,300,000. The City's Public Recreation Fee Report included an overview of past Commission actions that required in-lieu fees for recreation impacts and found that the majority of past fees were more than $100 per sq. ft. of impact (Exhibit 10). The values included direct encroachment impacts and impacts that were expected to result from halting passive erosion during an initial mitigation period. Specific to Solana Beach, the Commission's approval of CDP 6-05-072/Las Brisas for a 2 ½ ft. wide 120 ft. long seawall required a Public Recreation Fee of $248,680.72, or ~$181 per sq. ft. for the initial 22 year period based on a similar travel cost study, as proposed in this application (Exhibit 10).

Solana Beach did a thorough travel cost study to support the development of its public recreation mitigation fee. This process took over eight years to develop and refine through multiple iterations of review. Indeed, this effort demonstrates the complexity of conducting valuation studies, even when the most straightforward study types, such as a

single site travel cost model, are used. Many assumptions are inherent in structuring travel cost studies, some of which are more apparent than others. Sampling strategy, treatment of multiple purpose trips, demographic questions, measurement of trip cost from raw data, and statistical modeling choices are just some of the components of a single site travel cost study. As we see from the literature (Pendleton and Kildow, 2006), it is difficult to match a day use value result even from the same location and same data collection effort—modeling methods can account for great variations in results.

While it is difficult to know the contribution of each assumption to travel cost model results, comparison of the City's study results with those of many other day use value studies indicates the City's model choice produces one of the lowest values in California. While the value of Solana Beach compared to more highly visited areas might be lower (e.g., due to the availability of fewer amenities), some of the assumptions underpinning the Solana Beach study are undervaluing the beach. The City provided additional time cost results that show how their time cost assumption of wage rate can change the final results substantially. It is also the case that estimating time cost is the most unsettled and difficult issue in travel cost modeling and using a wage rate to equate time cost requires specific assumptions that are rarely if ever fulfilled.[13] There is no consensus on which wage rate is appropriate, and though 33% is often used, researchers have used zero (for retired people, unemployed, etc.) to 100 (or even 150%) of wages in travel cost models.[14] The recreation literature has generally accepted 33% as the lower bound and the full wage as the upper bound (Parsons, 2003). It is also vital to recognize what the result of the model represents – a day trip value that excludes overnight and side trips, associated spending in the local economy, and nonuse values.

In order to obtain a Recreation Mitigation Fee that is more in line with past beach day use value studies conducted in Southern California and is consistent with the access and recreation policies of the Coastal Act, Suggested Modification 2 requires that a 67% wage rate be used. If a 67% wage rate is used, for a typical 2 ft. wide, 50 ft. long seawall, (with 635 sq. ft. of estimated impacts over 20 years), a property owner would be required to pay a Recreation Mitigation Fee of $42,100,[15] or ~$66 per sq. ft., for the initial 20-year mitigation period. In contrast, if the 33% wage rate proposed by the City is used, for typical 2 ft. wide, 50 ft. long seawall, a property owner would only be required to pay a Recreation Mitigation Fee of $26,780,[16] or ~$42 per sq. ft. for the initial 20-year

[13] For example, it is not possible for all individuals interviewed to have flexible work schedules to allow full substitution of leisure and work time—i.e., no individuals in the study should work a fixed 40 hour a week job for a salary. This will contribute to error in the model, as will other choices in model parameters, measurement errors, or omitted variables, and researchers must use their best professional judgment in addressing these issues (Parsons 2003).

[14] Day (2000) – 150% of household wage rate; Annex (1995) – 100% wage; Fezzi et al. (2012) – 80% wage rate; Fleming and Cook (2008) – ¼ to 1/2 wage rate; Pearce et al. (2006) – 1/3 to ½ wage rate; Parsons, G.R., 2003. The travel cost model. In A primer on nonmarket valuation (pp. 269-329). Springer Netherlands.

[15] This amount incorporates the suggested modification in this staff report related to beach width. If the larger beach width proposed by the City is used to calculate the fee, it would be reduced to $34,050.

[16] This amount incorporates the suggested modification in this staff report related to beach width. If the larger beach width proposed by the City is used to calculate the fee, it would be reduced to $21,550.

mitigation period. Also, as described previously, relying on a lower wage rate has a greater potential to underestimate beach value and this is reinforced by comparisons to other economic studies on beach value in Southern California. The Recreation Mitigation Fee, as modified, would still be on the lower end compared to past Commission required Recreation Mitigation Fees and would also be on the low end of past beach valuation studies. Suggested Modification 3 also requires that Table 1 in Appendix C be updated to reflect the change to the beach day use value. For these reasons, the Commission finds the City's proposed day use value undervalues the recreational value of their beach and selecting a 67% wage rate based value is consistent with Chapter 3 policies to maximize public access and recreation.

Beach Attendance

To determine the estimated annual beach attendance, the City counted attendance at the beach on seven randomly selected days per month over a 12-month period between July 25, 2008 and July 23, 2009, the same time period that was used to collect data from the beach use value. The City attendance figures are based on a customized survey program that was developed in coordination with Commission staff and other stakeholders. There were 88 individual counting days over this one-year period. The data collection days were reviewed to make certain that five/sevenths of the seven days were weekdays and two sevenths were weekends. The data collector counted visitors on the beach and in the water offshore. The attendance counts were then recorded into three categories: on the beach, in the water/swimming, and surfing. The City also included expansion factors to account for the likelihood that some user groups were underrepresented in the original attendance counts due to the time of day that the original population counts were conducted. In addition, beach attendance counts were further categorized as to whether the beach user was an adult or a child (e.g., under age 16 by observance). Children are not included in the attendance data because of the City's assumption that children's Beach Day Use value is captured in the adults' Beach Day Use values.

The CCC Beach Valuation Study was intended to provide Commission staff with a simplified method for assessing recreation value where data might not be available, so it provided two attendance density numbers to be utilized across the State--one for all Central and Southern California beaches (3.3 people per sq. ft. of beach per year) and a second for all Northern California beaches (1.26 people per sq. ft. of beach per year). The CCC Beach Valuation Study recommendations were based primarily on highly used beaches in in Southern and Central California, which resulted in a higher attendance density than the City's attendance survey produced. The attendance density found by the City's counts is 17 times lower than that recommended in the CCC Beach Valuation Study for central and southern California beaches.

Beach Visitor Growth Rate/Updated Attendance Counts

California's coastal population is projected to show significant growth in the coming decades. A new study indicates that population growth through 2100 will place five times more people at risk to sea level rise when comparing future population trends to current

population. [17] Demand for recreation in coastal areas will also grow with the increases in coastal population as well as with longer and more recurrent heat waves that will drive visitors to the beach for relief from the heat. SANDAG projections of population growth[18] for San Diego County residents show significant levels of increasing growth through 2050. Many San Diego beach visitors also come from Arizona,[19] and that state is projected to grow in population by over 1% annually.[20] Adjusting for population and income growth is very important because demand and willingness to pay for a day at the beach will increase over time in this region.

The City is not proposing to apply a growth rate to the estimated annual attendance or to conduct additional beach use counts in the future. The City asserts that beach density is relatively constant and that the recreational value lost due to a seawall can be measured by the change in beach size (e.g., if the beach narrows, there is a proportional decrease in beach attendance), and thus, outside influences such as climate change and population growth would not significantly influence the number of beach users in the future. The Commission finds it important to assume growth and to take into account future observations that will discern the actual trend. Therefore, since the current beach attendance for Solana Beach is significantly lower than the average for central and southern California beaches, on average; and, in order to ensure that attendance figures accurately reflect beach use in the future, Suggested Modification 4 requires that every ten years, the City shall adjust the attendance based on available population growth estimates or through an updated attendance survey and that the City shall incorporate any changes to the attendance as an amendment to Appendix C of the LUP.

Beach Area

The City proposes to use available Light Detection and Ranging Imagery (LiDAR) data to determine average beach area within the City, and has focused on four specific survey dates to inform this analysis. These dates were selected due to proximity to the beach survey collection dates conducted by the City. The LiDAR data that the City proposes to use were taken on April 2008, September 2008, March 2009, and October-December 2009 and results in an average beach area of 18.8 acres. The City's beach attendance surveys were conducted between July 25, 2008 and July 23, 2009 and these LiDAR dates were specifically selected by the City because of the overlap with the attendance surveys. Measuring beach size with LiDAR is a sound method; however, using only four data points to calculate an average does not provide the best available estimate of beach area. Instead, beach area should be determined using as much of the available beach width and beach area data as possible and should incorporate all of the 19 LiDAR datasets collected between 1998 and 2015 (Exhibit 11).

[17] Hauer, M.E., Evans, J.M. and Mishra, D.R., 2016. Millions projected to be at risk from seal-level rise in the continental United States. Nature Climate Change, 8 pp., http://dx.doi.org/10.1038/nclimate2961.
[18] http://www.sandag.org/uploads/projectid/projectid_503_19239.pdf
[19] Phil King, personal communication. March 24, 2016.
[20] https://population.az.gov/population-projections

There are multiple reasons to use all available beach area data. First, most beach visitors go to the beach with an expectation of the beach size based on previous experience or information based on past area. While new visitors may consult various sources about the quantity and quality of a particular beach, repeat visitors are more likely to base their beach perception on their mental recall of prior visits. Thus, an average based on more data points is not only more accurate but reflects what the typical visitor would expect. Second, using an average from multiple datasets accounts for the variability of beach widths that visitors experience. The average of all available LiDAR beach areas compared to other historic beach transect areas produce similar values (15.2 and 15.5 acres, respectively), providing greater confidence that these numbers are better representations of the average condition. Third, the Fall 2008 LiDAR survey recorded significantly more beach area than any of the other LiDAR surveys or transect measurements. The Fall 2008 LiDAR survey also shows a beach area that is 8.3 acres greater than that of the Fall 2008 transect. The Fall 2008 LiDAR beach area measurement is an outlier when compared with the full multi-year set of beach area data. The inclusion of this outlier survey as one of only four data points greatly skews the average beach area. Given the large difference between LiDAR and transect Fall 2008 areas, it is imprudent to disregard the other available LiDAR and transect data points. Fourth, the limitations on the attendance data should not put an artificial limit on the use of the available beach area data. This constraint would, at the extreme, reduce the beach area data to only the Fall 2008 and Spring 2009 survey results. Suggested Modification 1 requires that the City update Table 1 in Appendix C to reflect the change to beach area.

Beaches are dynamic environments that can change in size in a relatively short period of time. The use of such a small data set has the potential to create significant inconsistencies. Therefore, Suggested Modification 1 requires that the whole LiDAR data set available be used to provide a more representative depiction of average beach area. As modified, the beach area used to calculate the beach value for the Public Recreation Fee is 15.2 acres. Using a smaller beach area will result in increased Public Recreation Fees as the value of the total beach remains constant, while the value of each sq. ft. of beach is greater. Suggested modification 1 also requires that the City determine if the beach area has changed every ten years and incorporate any changes as an amendment to Appendix C of the LUP.

In addition, Suggested Modification 5 requires that the City update the annual recreational value and annual recreational value per square foot of the beach every ten years to reflect any changes beach area estimates.

Public Recreation Fees Credits and Deficits

The City's proposal includes a discussion regarding allocation of mitigation credits and deficits if sea level rise or erosion estimates differ from projections. Specifically, the City's proposal indicates that if large sand replenishment projects are implemented, Public Recreation Fees may be reduced due to slowed beach erosion rates. However, sand can be removed from a beach by one or two large wave events and there is no guarantee that long term replenishment projects will continue to be funded in the future.

Reducing Public Recreation Fees due to a scheduled or one time beach replenishment event may result in underpayment of Public Recreation Fees and inadequate mitigation for impacts.

After-the-fact adjustments to Public Recreation Fee amounts would increase uncertainty for permittees, the City, and the Coastal Commission. Furthermore, erosion estimates are based on long term averages and adjustments and should not be based on a shorter time scale. As described in Policy 4.51 of the City's certified LUP, the erosion rate may be adjusted at ten year intervals with a vote of the Council. In addition, any change to the estimated erosion rate would require an amendment to the City's Local Coastal Plan. An appropriate time to adjust mitigation payment amounts on individual properties is at the 20-year intervals, when additional review of approved shoreline armoring is required. Thus, Suggested Modification 8 prohibits retroactive adjustments to Public Recreation Fees (excluding the $1,000 per linear foot interim fee deposits), in the form of crediting overpayment of Public Recreation Fees or adding underpayment of Public Recreation Fees to future assessments based on observed bluff erosion.

Calculation of Public Recreation Fees and Timing of Payment

As submitted, the City proposes to calculate the Public Recreation Fee during the discretionary approval process and to finalize the Public Recreation Fee at the time that the construction permit is issued. The Public Recreation Fee is defined and required by the City's Local Coastal Program Land Use Plan, which will be the standard of review for Coastal Development Permits and currently functions as guidance. As such, Suggested Modification 13 requires that the Public Recreation Fee for bluff retention devices be calculated by the decision making entity for the Coastal Development Permit at the time of that action. Until such time that the Commission certifies the City's Implementation Plan, the Commission will continue to issue all of the Coastal Development Permits for bluff retention devices in Solana Beach. Once a LCP is certified, the City will take over permitting for bluff retention devices located landward of the mean high tide line, while the Commission will retain permitting authority for any development proposed to be located seaward of the mean high tide.

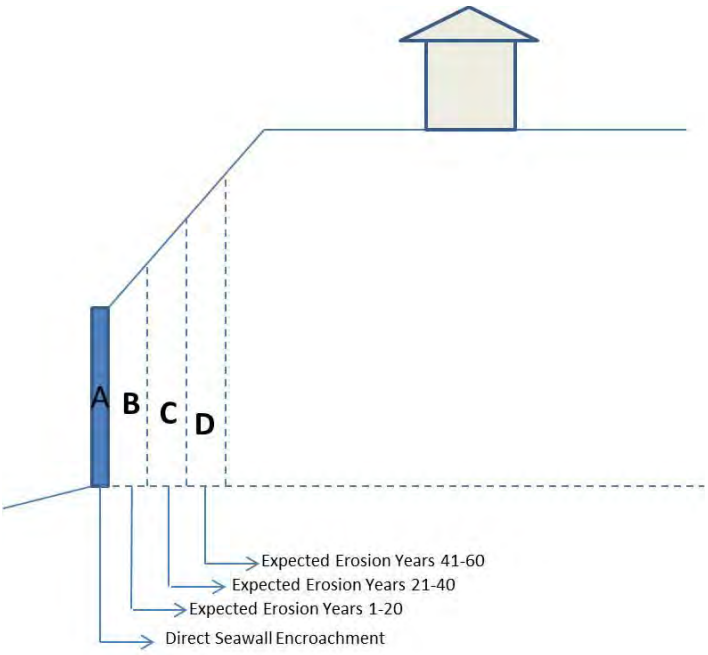
As proposed by the City, the "…City Council shall make the controlling decisions regarding payment options and terms [for the Public Recreation Fee]…" The City proposal includes example payment options at 5-year and 10 year intervals. Suggested Modification 13 instead requires that payment in full of the Public Recreation Fee be made prior to issuance of the Coastal Development Permit. Payment of mitigation fees prior to issuance of the Coastal Development Permit rather than on a payment plan will simplify the mitigation calculation, will reduce potential enforcement issues, and will result in Public Recreation Fees being available sooner to fund beach access and recreation projects.

Subsequent Mitigation Periods

The City's certified LUP requires that mitigation for impacts to public access and recreation resulting from the construction of a bluff retention device be assessed in 20-year increments. Property owners are required to apply for a CDP amendment prior to the expiration of each 20-year mitigation period to propose mitigation for coastal resource impacts associated with continued effects of the bluff retention devices beyond the preceding 20-year mitigation period and to analyze alternative feasible measures to modify the bluff retention device to lessen impacts on coastal resources. However, the City's proposed mitigation method does not address how to calculate mitigation for subsequent 20-year periods in cases where the decision-making entity for the CDP determines that the bluff retention device cannot be removed or modified and therefore would continue to impact coastal resources. Suggested Modification 15 has been included to clarify the mitigation calculation method for these subsequent 20 year periods. As modified, mitigation shall include the direct shoreline protection device encroachment and all beach area that would have otherwise been available to the public through passive erosion had the shoreline armoring not been constructed.

Impacts to public beach access and recreation are valued per sq. ft. of beach area per year that is not available for public use. The area of direct encroachment and area of beach that would otherwise have been created had a bluff retention device not been constructed continues to be unavailable during subsequent mitigation periods. Thus, mitigation for subsequent periods addresses ongoing and increased impacts. It includes mitigation for the total area of beach that is being affected from the inception of the shoreline armoring impact.

Figure 1 below has been included as a suggested modification to Appendix C and is included below to illustrate the area that is impacted in each 20-year mitigation period and is subject to the Public Recreation Fee. In the first mitigation period, which covers the initial 20 years, the property owner is responsible for mitigating the direct encroachment area of the bluff retention device and for the area of beach that would have been created through bluff erosion during the 20-year mitigation period. In the second mitigation period, which covers the second 20-year period, the property owner will be required to mitigate for the continued direct encroachment of the bluff retention device and the beach area that would have been created and available for public use during the entire 40 year period, since the initial construction of the bluff retention device. Mitigation will continue until the bluff retention device has been removed. Public Recreation Fees may become progressively larger as the device's continued presence results in increasing impacts to public beach area.



Mitigation Period	Mitigation Area
1st Mitigation Period (Pay in Year 1)	A + B
2nd Mitigation Period (Pay in Year 21)	A + B + C
3rd Mitigation Period (Pay in Year 41)	A + B + C + D

It is important to note that the method to calculate mitigation for recreation impacts during subsequent mitigation periods differs from mitigation for sand supply impacts in subsequent mitigation periods. Sand supply impacts are based on the volume of sand that would otherwise have been introduced to the public beach and littoral cell. Thus, the expected volume of sand in the bluff that would have reached the beach during the initial 20-year mitigation period. During subsequent mitigation periods applicants are responsible to mitigate for any additional sand that would have reached the beach during that next mitigation period.

Use of Public Recreation Fees

The purpose of mitigating the loss of recreational benefit is to compensate for the impact to public resources caused by the shoreline protection. The beach and bluffs are publicly owned resources that are adversely impacted by the construction of bluff retention devices. Not only do many bluff retention devices occupy beach area that would otherwise be available for recreation, but they can block public access and will also eventually cause beach area to be eliminated through beach erosion, a condition that will accelerate as sea levels rise in the future.

The City's certified Land Use Plan provides that Public Recreation Fees must be expended for public access and public recreation improvements unless an analysis cannot

identify any "near-term" public recreation or public access projects. In which case, the Public Recreation Fees will be available for sand replenishment projects. The Commission recognizes that beach sand replenishment projects can provide an improved public access and recreational experience for beach goers. Although no definition for near-term is provided by the City, funds can be released for secondary priority projects only upon written approval of the Executive Director of the Commission. Examples of near-term public access and recreation projects include public stairway replacement and repairs, parkland acquisition in the vicinity of the coastal bluffs and beaches, restrooms, lifeguard facilities, and even the potential acquisition of bluff top land. The LUP also allows project applicants to fund a specific public access/recreation project in lieu of paying the Public Recreation Fee.

The City has undertaken one project with the help of Public Recreation Fees. In 2005, prior to the implementation of the City's interim fee program, the Commission required payment of a $248,680.72 Public Recreation Fee to mitigate for the impacts resulting from a 120 ft. long, 5.5 ft. wide seawall constructed on the City's public beach to provide protection for a condominium complex (Ref: CDP 6-05-072/Las Brisas). The Public Recreation Fee amount resulted from a site specific Travel Cost Study for the site. As required by the Commission, these funds were deposited in an interest bearing account and by 2014 had grown to $276,266.73. In June of 2014, the Executive Director approved allocation of the entirety of the funds in the account to be spent to partially fund replacement of the Del Mar Shore public beach stairway in the City of Solana Beach. The total cost of the stairway replacement was ~$1,500,000. As evidenced by this project, the required Public Recreation Fees likely won't be sufficient to completely fund beach improvement projects, although the funds can result in an important contribution that assist in making these important public access projects a reality.

The City and Commission staff have recently begun coordinating on the development of a proposed project to redevelop the marine safety center at Fletcher Cove. This project would result in improved beach safety and could be an appropriate future use of public access and beach recreation mitigation funds.

The City's Fee Study, which as suggested to be modified by staff, shall not be incorporated by reference into the LUP, proposes to use public access and mitigation funds to pay for capital improvement projects and operations and maintenance projects throughout the City, and not just on projects located on or adjacent to the beach and coastal bluffs. However, inland projects would not result in improved public access and recreation at the beach and would therefore not provide an adequate nexus to mitigate for the impacts of shoreline armoring. Thus Suggested Modification 9 requires that all projects funded by the Public Access and Recreation Mitigation Fees be located directly along the coast and that the projects result in direct improvements to public recreation and beach access, and that Appendix C be updated accordingly. As part of future efforts to construct its Implementation Plan, the City should produce a specific list of shoreline-related projects that would describe opportunities where mitigation fund dollars could be utilized to improve direct public access and recreation improvements on the beach or directly adjacent to the beach.

3. Biological Resources

The following Chapter 3 policies of the Coastal Act are most applicable to this development:

Section 30230 of the Coastal Act states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Policy 3.55 of the City of Solana Beach certified Land Use Plan protects unique habitats:

> *For the ocean shoreline area, limit development on sand or rock beaches to lifeguard towers/stations, temporary public comfort stations, safety and public information signs, public stairways, public recreation equipment, bluff retention devices as permitted herein, and pollution control devices approved by the RWQCB. Any permitted structures shall be the alternative with the least impact on coastal resources and recreation, the minimum size necessary, and shall provide any necessary mitigation.*

Sandy beach ecosystems are unique--their intrinsic biota and ecological functions are not provided by any other coastal ecosystem. Sandy beaches are comprised of three different biological zones: the supra-littoral zone, the mid-littoral zone, and the surf zone, each of which provides critical habitat, food and/or breeding grounds for many species. These zones provide functions that include buffering and absorption of wave energy by stored sand, filtration of large volumes of seawater, extensive detrital and wrack processing and nutrient recycling, and the provision of critical habitat and resources for declining and endangered wildlife, such as shorebirds and pinnipeds.

The City conducted a review of available ecological studies that have been conducted for Solana Beach's shoreline and beach areas to compile a baseline natural resources survey of physical and biological resources that could potentially be impacted by the construction of bluff retention devices. This survey will aid in the determination of appropriate mitigation opportunities in the future.

The effects of shoreline armoring on sandy beach ecosystems are increasingly recognized, though difficult to quantify. Ecological impacts due to armoring result from direct loss of beach due to the physical footprint of the structure, from erosion and scour resulting from the armoring, and from reduced sediment supply as a result of fixing the back beach. These physical changes to the beach environment have ecological impacts such as the loss of sandy beach zones/habitat and the concomitant loss of infaunal

biomass and biodiversity (upper beach zones are most heavily impacted), loss of sandy beach area currently or potentially used for feeding, roosting, nesting, or reproduction of wildlife, and loss of sandy beach ecosystem services and functions (flood protection, nutrient cycling, etc.). The highly dynamic nature of the ecological components and functions of sandy beaches (beaches change during daily, weekly, seasonal, yearly, and decadal time periods) make quantitatively evaluating the sandy beach ecosystem expensive, time-consuming, and difficult.

Armoring directly encroaches upon the beach and fixes shoreline position, constraining the possible responses and evolution of beach ecosystems to adjust to changes in sea level and other dynamic coastal processes. This loss of the scope and ability of beaches to respond to coastal processes results in the reduction of overall width and the elimination of habitat zones and the space needed by biota to adjust to changing swell, tide and beach conditions. As pressure to develop the coast continues, and sea level rise and coastal erosion accelerates, the need to understand the ecological consequences of armoring on coastal ecosystems is increasingly urgent.

Quantitatively assessing effects of armoring on ecological components and functions potentially altered or lost on a given stretch of sandy beach is complex. One option for mitigating ecological impacts of coastal armoring is to use the cost of restoring suitable natural habitat, either at that site or nearby as a proxy for ecological value. A fundamental assumption to the replacement cost method is that the restored ecosystem function is equivalent to the natural function lost and is the least costly way to regain that natural function.[21,22] The replacement cost approach relies on determining proportional and appropriate ecological restoration for identifying equitable mitigation and thus requires a robust set of suitable restoration projects to draw upon for valuation.

However, a replacement cost approach is only one alternative to delving into the array of methods for identifying, replicating, and monitoring lost ecological components of a specific stretch of beach and still requires further study before a mitigation method can be devised and implemented. The Commission finds that the full ecological impacts of shoreline armoring on beach habitat may not be fully identified, or mitigated at this time. Research continues and staff anticipates this issue will be resolved in the future. The Commission finds that it is not feasible at this time to mitigate for the loss of the biological productivity of a given stretch of beach. Thus, Suggested Modification 16, clarifies that mitigation for impacts to ecological resources and other relevant coastal resources, that result from the construction of bluff retention devices is not included as a part of the City's Public Recreation Fee program and that the LUP shall be updated once an accepted approach on how to calculate these mitigation fees has been developed by the Commission.

---

[21] US National Research Council. 2005. *Valuing Ecosystem Services: Toward Better Environmental Decision- Making.* The National Academies Press. Washington, DC. http://www.nap.edu/catalog/11139.html

[22] Bockstael, N.E., A.M. Freeman, R.J. Kopp, *et al*. 2000. On measuring economic values for nature. *Environ. Sci.Technol.* 34: 1384–1389.

4. Conclusion

In summary, the LUP amendment, as proposed, is inconsistent with Chapter 3 of the Coastal Act because it does result in adequate recreation mitigation for the impacts resulting from construction of bluff retention devices. The proposed LUP amendment is deficient in several critical policy areas that affect priority public access and recreation. The proposed modifications are necessary to address and resolve these identified policy conflicts. Therefore, as modified, the Commission finds the LUP amendment does conform to the Chapter 3 policies of the Coastal Act and the land use plan may be approved.

While the need to mitigate for impacts to public access and recreation that result from the construction of bluff retention devices applies to the entire coastline of California, the Public Recreation Fee method proposed by the City of Solana Beach and the suggested modifications to the fee study are specific to the City of Solana Beach. Understanding of the issues related to Public Recreation Fees will continue to evolve as the Commission continues to review Local Coastal Program amendments and individual Coastal Development Permits that proposed mitigation for impacts to public access and recreation. As evidenced in the subject LUP amendment application, each jurisdiction will have its own unique traits and circumstances related to valuation of public access and recreation of the beach.

PART V. CONSISTENCY WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 21080.9 of the California Environmental Quality Act (CEQA) exempts local government from the requirement of preparing an environmental impact report (EIR) in connection with its local coastal program. The City found that the proposed LUP amendment is statutorily exempt from CEQA per CEQA Guidelines Section 15265. The Commission's LCP review and approval program has been found by the Resources Agency to be functionally equivalent to the EIR process. Thus, under CEQA Section 21080.5, the Commission is relieved of the responsibility to prepare an EIR for each LCP.

Nevertheless, the Commission is required in an LCP submittal to find that the LCP does conform with CEQA provisions. The proposed City of Solana Beach LUPA is not consistent with the public access, visual protection, and natural resource protection policies of the Coastal Act. Suggested modifications have been added as described and listed above. If modified as suggested, no impacts to coastal resources are expected to result from the amendment.

Any specific impacts associated with individual development projects would be assessed through the environmental review process, and, an individual project’s compliance with CEQA would be assured. Therefore, the Commission finds that no significant

immitigable environmental impacts under the meaning of CEQA will result from the approval of the proposed LCP amendment as modified.

(G:\San Diego\Reports\LCPs\Solana Beach\LCP-6-SOL-16-0020-1 (Fee Study)\LCP-6-SOL-16-0020-1 Stf Rpt (Public Recreation Fee).docx)

Substantive File Documents

- City of Solana Beach Certified LUP
- CCC Administrative Draft. September 2015. Improved Valuation of Impacts to Recreation, Public Access, and Beach Ecology from Shoreline Armoring. FY 2012 NOAA Project of Special Merit (NA12NOS4190026) grant report.
- City Of Solana Beach Public Recreation Fee Report February 25, 2016 and Appendices
- California Coastal Commission Sea Level Rise Policy Guidance, Adopted August 12, 2015
- City of Solana Beach interim in-lieu fee program (Ref. Resolution 2007-042, City of Solana Beach).
- City of Solana Beach interim in-lieu fee program (Ref. Resolution 2016-039, City of Solana Beach).
- City of Solana Beach interim in-lieu fee program (Ref. Resolution 88-45, City of Solana Beach).
- CDP Nos. 6-83-85/Auerbach et al., 6-91-129/Steinberg; 6-92-082/Vicker, 6-93-131/Richards et al., 3-02-024/Ocean Harbor House, 6-05-072/Las Brisas, 6-06-104/Vams, LLC, 6-07-133/Li, 3-08-019/Sea Breeze, 3-09-042/O'Neill, 2-11-009/City of Pacifica, 4-11-026/Caltrans, 2-11-039/Lands End, 6-12-041/Lampl, A-3-PSB-12-042/Capistrano Seawall, A-3-PSB-12-0043/Vista Del Mar Seawall
- Parsons, G.R., 2003. The travel cost model. In A primer on nonmarket valuation (pp. 269-329). Springer Netherlands.
- Pendleton, L., and Kildow, J. (2006). The non-market value of beach recreation in California. Shore and Beach, 74(2), 34.
- Day (2000) – 150% of household wage rate; Annex (1995) – 100% wage; Fezzi et al. (2012) – 80% wage rate; Fleming and Cook (2008) – ¼ to 1/2 wage rate; Pearce et al. (2006) – 1/3 to ½ wage rate; Parsons, G.R., 2003. The travel cost model. In A primer on nonmarket valuation (pp. 269-329). Springer Netherlands.
- Hauer, M.E., Evans, J.M. and Mishra, D.R., 2016. Millions projected to be at risk from seal-level rise in the continental United States. Nature Climate Change, 8 pp., http://dx.doi.org/10.1038/nclimate2961.
- US National Research Council. 2005. Valuing Ecosystem Services: Toward Better Environmental Decision- Making. The National Academies Press. Washington, DC. http://www.nap.edu/catalog/11139.html
- Bockstael, N.E., A.M. Freeman, R.J. Kopp, et al. 2000. On measuring economic values for nature. Environ. Sci.Technol. 34: 1384–1389.