

CALIFORNIA COASTAL COMMISSION

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REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-05-72

Applicant: Las Brisas Condominium HOA Agent: Bob Trettin

Description: Construction of an approximately 120 ft.-long, 35 ft. high, colored and textured concrete tiedback seawall, concrete backfill and fill of seacave/notches with erodible concrete below 36 condominium structures.

Site: On the beach and bluff face below 135 South Sierra Avenue, Solana Beach.
APNs: 298-010-54-01 to 36.

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: At the July 2005 hearing, the Commission denied a permit for this same development finding that the development had not been designed to effectively mitigate for the adverse impacts that will occur to shoreline sand supply, and, by extension, to public access and recreational opportunities (Ref. 6-04-156/Las Brisas). The Commission also expressed concern because the In-Lieu Beach Sand Mitigation Fee formula that has previously been used to calculate the amount of fee to charge to mitigate the adverse effects of shoreline protective devices does not fully mitigate those impacts, and does not mitigate the impacts to public recreation and access from the physical beach loss at all. Subsequently, the applicant submitted a new application, and the Commission has contracted with an independent economist to provide an analysis of the loss in recreational value that would result from the construction of the seawall on the beach below the Las Brisas Condominiums. That study and its findings have been incorporated into the subject staff recommendation.

Staff is recommending approval of the subject development, with conditions, as the applicant has demonstrated that the existing blufftop condominium structures are in danger from erosion due to the degree of undercut beneath the subject bluff, the deterioration of an existing seacave fill and exposure of the clean sand layer below the condominiums; and, based on the applicant's geotechnical reports, the seawall and seacave/notch fills are necessary to protect the structures at the top of the bluff and have been determined to be the least environmentally-damaging alternative. The

Commission's staff engineer and geologist have reviewed the proposed project and the applicant's geotechnical assessment and concur with its conclusions. Nevertheless, conditions are necessary to ensure, among other things, that the project is designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

Staff is recommending special conditions that require the applicant to pay an in-lieu fee of \$309,000.00 to mitigate for the loss of sandy beach area from the placement of the seawall on the public beach for 22 years and the resulting loss of recreational value, and an in-lieu fee of \$22,977.36 to mitigate for the loss of sand that would have been added to the littoral cell were it not for the proposed seawall. Additional conditions are attached to mitigate the project's impact on coastal resources such as scenic quality and water quality. A special condition has been attached that requires the applicant to acknowledge that, should additional stabilization be proposed in the future, the applicant will be required to identify and address the feasibility of all alternative measures that would avoid additional alteration of the natural landform of the public beach or coastal bluffs, and would reduce the risk to the blufftop structures and provide reasonable use of the property. Other conditions involve the timing of construction, the appearance of the seawall and approval from other agencies.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; City Resolution No. 2004-171, Case No. 17-04-25; "Geotechnical/Geologic Evaluation Bluff Conditions Las Brisas Condominiums" by Anthony-Taylor Consultants dated June 22, 2004; "Preliminary Geotechnical Review of Documents Pertaining to Proposed Shoreline Stabilization Project, 135 South Sierra Avenue" by GeoSoils, Inc. dated July 27, 2004; "Response to Third-Party Geotechnical Review Emergency Permit Request Las Brisas Condominiums" by Anthony-Taylor Consultants dated October 4, 2004; "Response to CCC Staff Requests Additional Slope Stability Analysis" by Anthony-Taylor Consultants, dated January 17, 2005; CDP Nos. F1003/Las Brisas, 6-85-189/Las Brisas; 6-99-100/Presnell, et. al, 6-99-103/ Coastal Preservation Association, 6-00-9/Del Mar Beach Club, 6-00-66/Pierce, Monroe, 6-02-02/Gregg, Santana, 6-02-84/Scism, 6-03-33/Surfsong, 6-04-003-G/Surfsong and 6-04-17-G/Surfsong, 6-04-156/Las Brisas; "An Analysis of the Loss of Recreational Benefits due to Construction of the Las Brisas Seawall in Solana Beach", by Dr. Phillip King, September 26, 2005.

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: *I move that the Commission approve Coastal Development Permit No. 6-04-156 pursuant to the staff recommendation.*

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit 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 development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. Standard Conditions.

See attached page.

III. Special Conditions.

The permit is subject to the following conditions:

1. Final Revised Plans. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit for review and written approval of the Executive Director, final plans for the seawall, concrete backfill, and seacave/notch fills in substantial conformance with the submitted plans dated June 3, 2004 and as Revised on March 25, 2005, by Soil Engineering Construction. Said plans shall first be approved by the City of Solana Beach and be revised to include the following:

- a. Sufficient detail regarding the construction method and technology utilized for constructing the seawall so as to demonstrate that the design will gradually blend into the adjacent natural bluff. The north and south sides of the seawall shall be designed and constructed to minimize the erosive effects of the approved seawall on the adjacent bluffs.
- b. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall to confirm, and be of sufficient detail to verify, that the seawall and return wall's color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the color of the fill material.

- c. As noted on the plans for Repairs to Lower Bluff (Revised 3/25/05), any existing permanent irrigation system located within 150 feet from the bluff edge shall be removed or capped.
- d. All runoff from impervious surfaces on the top of the bluff shall be collected and directed away from the bluff edge towards the street.

Existing accessory improvements (i.e., decks, patios, walls, etc.) located in the geologic setback area on the site shall be detailed and drawn to scale on the final approved site plan and shall include measurements of the distance between the accessory improvements and the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at 3 or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method that enables accurate determination of the location of structures on the site. Any future permitted accessory improvements shall be located no closer than 5 feet landward of the natural bluff edge.

The permittees shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

2. Mitigation for Impacts to Public Recreational Use and Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of \$331,977.36 (\$309,000 for loss of sandy beach area, and thus, loss of public recreational impacts + \$22,977.36 for loss of sand) has been deposited in an interest bearing account designated by the Executive Director, in-lieu of providing the total amount of sand to replace the sand that will be lost due to the impacts of the proposed protective structure and to mitigate for the loss of public recreational use over 22 years resulting from effects associated with the placement of the structure on the public beach at the toe of the natural bluffs. All interest earned by the account shall be payable to the account for the purposes stated below.

The required in-lieu fee mitigation covers impacts only through the identified 22-year design life of the seawall. No later than 21 years after the issuance of this permit, the permittees or their successor in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall within its initial design life or requires mitigation for the effects of the seawall on shoreline sand supply, and thus public recreational use, for the expected life of the seawall beyond the initial 22 year design life. If within the initial design life of the seawall the permittees or their successor in interest obtain a coastal development permit or an amendment to this permit to enlarge or reconstruct the seawall or perform repair work that extends the expected life of the seawall, the permittee shall provide mitigation for the effects of the additional size of the seawall or the extended effects of the existing seawall on shoreline sand supply and

public recreational use for the expected life of the seawall beyond the initial 22 year design life.

The purpose of the account shall be to establish a beach sand replenishment fund to aid SANDAG, or a Commission-approved alternate entity, in the restoration of the beaches within San Diego County. The funds shall be used solely to implement projects which provide sand to the region's beaches, not to fund operations, maintenance or planning studies. The funds shall be released only upon approval of an appropriate project by the Executive Director of the Coastal Commission. The funds shall be released as provided for in a MOA between SANDAG, or a Commission-approved alternate entity, and the Commission, setting forth terms and conditions to assure that the in-lieu fee will be expended in the manner intended by the Commission. If the MOA is terminated, the Commission can appoint an alternative entity to administer the fund.

3. Monitoring Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a monitoring program prepared by a licensed civil engineer or geotechnical engineer to monitor the performance of the seawall, concrete backfill and exposed seacave/notch infills which requires the following:

- a. An annual evaluation of the condition and performance of the seawall, concrete backfill and exposed seacave/notch infills addressing whether any significant weathering or damage has occurred that would adversely impact the future performance of the structures. This evaluation shall include an assessment of the color and texture of the seawall and concrete backfill comparing the appearance of the structures to the surrounding native bluffs.
- b. Annual measurements of any differential retreat between the natural bluff face and the seawall face, at the north and south ends of the seawall and at 20-foot intervals (maximum) along the top of the seawall face/bluff face intersection. The program shall describe the method by which such measurements shall be taken.
- c. Provisions for submittal of a report to the Executive Director of the Coastal Commission by May 1 of each year (beginning the first year after construction of the project is completed) for a period of three years, and then each third year following the last annual report, for the life of the approved seawall and seacave/notch infills. However, reports shall be submitted in the Spring immediately following either:
 1. A significant storm event – comparable to or greater than a 20-year storm.
 2. An earthquake of magnitude 5.5 or greater with an epicenter in San Diego County or offshore.

Thus reports may be submitted more frequently depending on the occurrence of the above events in any given year.

- d. Each report shall be prepared by a licensed civil, geotechnical engineer or geologist. The report shall contain the measurements and evaluation required in sections a and b above. The report shall also summarize all measurements and analyze trends such as erosion of the bluffs or changes in sea level and the stability of the overall bluff face, including the upper bluff area, and the impact of the seawall on the bluffs to either side of the wall. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project.
- e. An agreement that the permittee shall apply for a coastal development permit within 90 days of submission of the report required in subsection c. above for any necessary maintenance, repair, changes or modifications to the project recommended by the report that require a coastal development permit and implement the repairs, changes, etc. approved in any such permit.

The permittee shall undertake monitoring in accordance with the approved monitoring program. Any proposed changes to the approved monitoring program shall be reported to the Executive Director. No changes to the monitoring program shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

4. Storage and Staging Areas/Access Corridors. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director for review and written approval, final plans indicating the location of access corridors to the construction site and staging areas. The final plans shall indicate that:

- a. No overnight storage of equipment or materials shall occur on the public beach or in public parking spaces at Fletcher Cove. During the construction stages of the project, the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seawall and notch fill. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot.
- b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.
- c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.

- d. The applicant shall submit evidence that the approved plans/notes have been incorporated into construction bid documents. The staging site shall be removed and/or restored immediately following completion of the development.

The permittee shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

5. Storm Design/Certified Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit certification by a registered civil engineer that the proposed shoreline protective devices are designed to withstand storms comparable to the winter storms of 1982-83.

In addition, **within 60 days following construction**, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seawall, concrete backfill and seacave/notch infills have been constructed in conformance with the approved plans for the project. These plans shall also show the elevations of the clean sand lens along the bluff face and the contacts of this lens with the Torrey Formation and terrace deposits.

6. Future Response to Erosion. If in the future the permittees seek a coastal development permit to construct additional bluff or shoreline protective devices, the permittees will be required to include in the permit application information concerning alternatives to the proposed bluff or shoreline protection that will eliminate impacts to scenic visual resources, recreation and shoreline processes. Alternatives shall include but not be limited to: relocation of all or portions of the principle structure that are threatened, structural underpinning, and other remedial measures capable of protecting the principal structure and providing reasonable use of the property, without constructing bluff or shoreline stabilization devices. The information concerning these alternatives must be sufficiently detailed to enable the Coastal Commission or the applicable certified local government to evaluate the feasibility of each alternative, and whether each alternative is capable of protecting existing structures that are in danger from erosion. No additional bluff or shoreline protective devices shall be constructed on the adjacent bluff face above the approved seawall or on the beach in front of the proposed seawall unless the alternatives required above are demonstrated to be infeasible. No shoreline protective devices shall be constructed in order to protect ancillary improvements (patios, decks, fences, landscaping, etc.) located between the principal residential structures and the ocean.

7. Future Maintenance. The permittee shall maintain the permitted seawall, concrete backfill and seacave/notch infills in its approved state. Maintenance of the seawall and seacave/notch infills includes maintaining the color, texture and integrity. Any change in the design of the project or future additions/reinforcement of the seawall,

backfill or seacave/notch infills beyond exempt maintenance as defined in Section 13252 of Title 14 of the California Code of Regulations to restore the structure to its original condition as approved herein, will require a coastal development permit. **However, in all cases, if after inspection, it is apparent that repair and maintenance is necessary, including maintenance of the color of the structures to ensure a continued match with the surrounding native bluffs, the permittee shall contact the Executive Director to determine whether a coastal development permit or an amendment to this permit is legally required, and, if required, shall subsequently apply for a coastal development permit or permit amendment for the required maintenance.**

8. Other Permits. PRIOR TO COMMENCEMENT OF CONSTRUCTION, the permittee shall provide to the Executive Director copies of all other required local, state or federal discretionary permits for the development authorized by CDP #6-04-156. The applicant shall inform the Executive Director of any changes to the project required by other local, state or federal agencies. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this permit, unless the Executive Director determines that no amendment is legally required.

9. State Lands Commission Approval. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit to the Executive Director for review and written approval, a written determination from the State Lands Commission that:

- a) No state lands are involved in the development; or
- b) State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or
- c) State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicant with the State Lands Commission for the project to proceed without prejudice to the determination.

10. Public Rights. The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights that exist or may exist on the property. The permittee shall not use this permit as evidence of a waiver of any public rights that exist or may exist on the property.

11. Assumption of Risk, Waiver of Liability and Indemnity Agreement. By acceptance of this permit, the applicant acknowledges and agrees (i) that the site may be subject to hazards from erosion and coastal bluff collapse; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the

Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

12. Deed Restriction/CC&R's Modification. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant homeowners' association (HOA) shall do one of the following:

A. Submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded a deed restriction in a manner that will cause said deed restriction to appear on the title to the individual condominium units, and otherwise in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the Special Conditions of this permit, as they apply to the HOA, as covenants, conditions and restrictions on the use and enjoyment of the individual condominium units. The deed restriction shall include a legal description of the entire parcel or parcels against which it is recorded. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property, or;

B. Modify the condominium association's Declaration of Restrictions or CC&Rs, as applicable, in a form and content acceptable to the Executive Director, to reflect the obligations imposed on the homeowners' association by conditions 2, 3, 6, 7, 10, and 11, above. This addition to the CC&Rs shall not be removed or changed without a Coastal Commission-approved amendment to this coastal development permit.

13. Best Management Practices. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, a Best Management Plan that effectively assures no shotcrete or other construction byproduct will be allowed onto the sandy beach and/or allowed to enter into coastal waters. The Plan shall apply to both concrete pouring/pumping activities as well as shotcrete/concrete application activities. During shotcrete/concrete application specifically, the Plan shall at a minimum provide for all shotcrete/concrete to be contained through the use of tarps or similar barriers that completely enclose the application area and that prevent shotcrete/concrete contact with beach sands and/or coastal waters. All shotcrete and other construction byproduct shall be properly collected and disposed of off-site.

The applicant shall undertake the development in accordance with the approved Plan. Any proposed changes to the approved Plan shall be reported to the Executive Director. No changes to the Plan shall occur without a Coastal Commission approved amendment

to this coastal development permit unless the Executive Director determines that no amendment is legally required.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description/Permit History. Proposed is the construction of an approximately 120 ft.-long, 35 ft. high, colored and textured concrete tiedback seawall, approximately 8 ft. of concrete backfill and fill of seacave/notches with erodible concrete below 36 condominium structures that are located as close as 24 ft. from the bluff edge. The seacave/notches vary from 2 to 14 ft. in height and 2 to 16 ft. in depth. The proposed seawall will cover the face of all the proposed seacave/notch infills. The applicants also propose to pay an in-lieu fee to mitigate the adverse effects of the seawall on the local sand supply.

In 1974, the Commission's predecessor agency approved the construction of the subject condominiums with conditions that included a requirement to provide a 10 ft. wide public access easement paralleling the upper edge of the bluff allowing for public views of the shoreline (ref. CDP #F1003/Las Brisas). The public viewing area is accessed from an existing public access stairway leading from the public parking lot of Fletcher Cove. In May of 1985, the Commission approved the fill of a seacave beneath the subject property as a preventive measure (ref CDP #6-85-189/Las Brisas). This older seacave infill has deteriorated and is in need of repair. The proposed seacave/notch fills and seawall will effectively cover the area surrounding the older seacave infill.

The proposed project will be located at the base of an approximately 84 ft. coastal bluff immediately adjacent and south of Fletcher Cove Park, the City's central beach access park. The City of Solana Beach does not yet have a certified LCP. Therefore, Chapter 3 policies of the Coastal Act is the standard of review.

2. Geologic Conditions and Hazards. Section 30235 of the Coastal Act states, in part:

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.

In addition, Section 30253 of the Coastal Act states, in part:

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...

The proposed project involves the construction of an approximately 120 ft.-long, 35 ft.-high tiedback seawall, concrete backfill approximately 8 ft. in height, and the infill of seacave/notches landward of the proposed seawall. The subject condominiums at the top of bluff consist of three buildings containing a total of 36 condominiums. Building #3 has been identified by the applicant's representatives as currently threatened by erosion. Building #3 is located between 24 and 30 ft. from the edge of the approximately 84 ft. high coastal bluff.

The applicants' geotechnical report indicates that the project is required to protect the condominiums because of the threat posed by the extensive undercutting at the base of the bluff, the presence of joints and fractures along the base of the bluff and the deterioration of the existing seacave fill. Because of the extensive undercutting, it is reasonably foreseeable that there will soon be a collapse of the lower bluff. Following such collapse, the applicant's geotechnical report identifies that it is very likely a known layer of clean sands will become further exposed leading to an accelerated mid-bluff and upper bluff failure similar to what has already occurred on the properties immediately south of the subject site below Surfsong Condominiums.

Given that over the last 34 months, repeated bluff failures have occurred along the Surfsong project immediately to the south, and that generally similar undercuts, seacave and clean sands lens exposures have been noted along the project site, it is our opinion that the bluff along the project site will experience continued and additional bluff failures involving the lower, middle and upper bluff within the near-term (within the next 12-months). Further, it is also our opinion that the existing conditions create a real and significant likelihood of bluff failure which threaten[s] Building No. 3 with damage. (Ref. page 8 of "Response to Third-Party Geotechnical Review Emergency Permit Request Las Brisas Condominiums" by Anthony-Taylor Consultants dated October 4, 2004)

In the case of the Surfsong Condominiums immediately south of the subject property, a series of lower bluff collapses occurred in 2002 leading over time to progressive upper bluff failures resulting from the exposure of the clean sand layer. In July of 2003, following a progressive failure, the Commission approved the construction of an approximately 120 ft. long, 35 ft. long seawall and the infill of approximately 342 linear feet of notch and seacaves with colored and textured erodible concrete (Ref. 6-03-33/Surfsong). However, before the special conditions of approval could be complied with such that the permit could be released and construction commence, additional progressive upper bluff failures occurred necessitating the need for an emergency permit to construct the 120 ft.-long seawall in an expedited manner (ref. Emergency Permit 6-04-003-G/Surfsong). In addition, an additional section of the lower bluff notch (approved

for infill by CDP #6-03-33/Surfsong) collapsed necessitating the need for an additional approximately 115 ft. long seawall in place of 115 ft. of seacave/notch infill (Ref. Emergency Permit No. 6-04-17-G/Surfsong). The subject applicant's geotechnical report documents that progressive failure that occurred at Surfsong and identifies this failure mechanism is likely to occur below the subject site within 12 months:

...[T]he failure exposed and over-steepened a clean sands lens located along the base of the Terrace Deposits, which subsequently contributed to additional progressive failures within the mid- and upper-bluff, causing an accelerated migration of the failure to the north, south, and east. A review of these failures concluded that following a lower bluff collapse, a rate of bluff retreat equal to between 4 to 6-feet per month can be experienced, as measured from the base of the failed bluff. Additionally, north and south (lateral) migration was also noted to progress at a similar rate of approximately 5-feet a month. . . . Given these factors, and that Las Brisas Building No. 3 is located approximately 24 feet from the top of the bluff, a strong likelihood exists for continued bluff collapses within the outer 5- to 8-feet of the lower bluff, where a failure propagates adjacent to the building foundation within a period of approximately 8 to 12 months. (Ref. page 9 of "Response to Third-Party Geotechnical Review Emergency Permit Request Las Brisas Condominiums" by Anthony-Taylor Consultants dated October 4, 2004)

The applicant's geotechnical report describes the clean sands lens as being located at the base of the marine terrace deposits, immediately above the Torrey Sandstone bedrock, at approximately elevation 28-43 ft. MSL. To protect the condominium structures, the applicant is proposing to construct a seawall up to 35 ft. MSL and concrete backfill up to elevation 43 ft. MSL which will effectively cover the exposed section of the clean sands lens and prevent collapse of the upper bluff area above the clean sands layer.

According to the Commission's staff geologist, the 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 layer, once exposed, susceptible to wind blown 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 gentle sea breezes and any other perturbations, such as 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 sands eliminates the support for the overlying, slightly more cemented, terrace deposits.

The presence of this clean sand layer within the bluffs along the Solana Beach shoreline has previously been identified in geotechnical reports submitted in conjunction with seawall, seacave and notch infill projects in Solana Beach (ref. CDP 6-00-9/Del Mar Beach Club, CDP #6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation Association, #6-00-66/Pierce, Monroe, #6-02-02/Gregg, Santana, #6-02-84/Scism and #6-03-33/Surfsong). According to the Commission's staff geologist, 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, it commonly fails in blocks. The weaker terrace deposits are then unsupported, resulting in the collapse of the terrace deposits through circular failures. Such paired, episodic failures eventually result in a reduction in the steepness of the upper bluff, and the landward retreat of the bluff edge. Such retreat may threaten structures at the top of the slope. When failures of the upper bluff have sufficiently reduced the overall gradient of the upper bluff, a period of relative stability ensues, which persists until the lower bluff becomes sufficiently undercut to initiate a block failure once more, triggering a repetition of the entire process.

The mechanism of bluff retreat that occurs in conjunction with the exposure of the clean sand layer is somewhat different than the paired, episodic failure model described above. Because of the cohesionless character of the clean sands, once they 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. In 1998, following the exposure of the clean sands layer below 261 Pacific Avenue (south of the subject site), a section of the bluff collapsed suddenly and without warning, leaving a vertical head scarp 25 feet in height at the top of the bluff. Unless the base of the bluff is afforded shoreline protection, additional bluff failures can further expose the layer of clean sands and result in a potential upper bluff failure and an immediate threat to the structures at the top of the bluff.

An assessment of erosion risk includes both an examination of historic events and an assessment of what events are likely to occur in the future and contribute to future erosion. Historic erosion rates are developed from aerial photographs, shoreline surveys and other representations of the shoreline condition for various times in the past. These records can indicate the changes in the shoreline from one time to another, but these records alone cannot explain how the changes occurred. For example, if the assessment of shoreline change is using aerial photographs taken 10 years apart, the photographs can be used to quantify the amount of retreat that occurred over that 10 year period; the photos cannot explain whether the retreat was from a single large notch collapse, or from small gradual losses. Short-term episodic events and slow, chronic changes to the shoreline are combined into estimates for the long-term average annual retreat rates from an examination of historic shoreline change over time. Estimates for future shoreline change include both these historic rates and evaluation of those trends that can be expected to influence the shoreline in the future.

The subject geotechnical report indicates that the long-term average sea cliff erosion rate for Solana Beach is approximately 0.2 to 0.4 ft. per year, based on the examination of historic shoreline conditions. This range agrees with the regional estimate of historical long-term bluff retreat for Solana Beach is from a FEMA-funded study summarized in Benumof and Griggs (1999). These authors reported an average long-term retreat rate of

0.27 ft/yr for the Solana Beach area over the period 1932 – 1994, and the Commission staff had incorporated this study, as well as other reports, into its determination of likely rates for future erosion. The US Army Corps of Engineers is now circulating a report, "Encinitas and Solana Beach Shoreline Feasibility Study San Diego County, California: Draft Feasibility Report." This report notes that erosion in Encinitas and Solana Beach has increased on recent years due to a reduction in sand supply and to increased in wave intensity. Based on the assumption that these conditions continue into the future, the Corps of Engineers has developed FUTURE erosion rates for both the seacliff and blufftop along the Las Brisas section of Solana Beach to be between 0.4 and 1.2 feet per year for the next 50 years. Considering this new information, the erosion rate estimated by the applicant can be considered a low or conservation expectation for future shoreline change.

Although the geotechnical information supplied by the applicant identifies that the historical long-term average erosion rate is 0.2 to 0.4 ft. per year, the applicant identifies that following the collapse of the overhanging seacave/notch the subject site will likely experience rapid, episodic erosion of 5 to 8 ft. over 12 months. As explained earlier, these episodic events are part of the long-term average annual retreat rate. However the impending notch collapse and resultant bluff face retreat support the need for shore protection at present, rather than at some time in the future.

While the existing condominium structures are set back from the bluff edge between 24 and 30 feet, the slope stability analyses performed by the applicant's geotechnical engineer indicates that further collapse of the bluff would threaten these structures. In an examination of two cross-sections the applicant's engineer identifies that the factor of safety against sliding along the most likely slide plane was estimated to be at approximately 1.07 to 1.13 in cross-section "A-A" (located through south side of Building #3) and approximately 1.10 to 1.23 on cross-section "B-B" (located through the center of Building #3) ["Preliminary Geotechnical Review of Documents Pertaining to Proposed Shoreline Stabilization Project, 135 South Sierra Avenue" by GeoSoils, Inc. dated July 27, 2004]. In an update to that analysis performed in January of 2005, the applicant's engineer indicates for cross-section "A-A" the factor of safety of the upper bluff is estimated to be at approximately 1.15 and for cross-section "B-B" the factor of safety of the upper bluff is estimated at approximately 1.16. In theory, failure should occur when the factor of safety drops to 1.0, and no slope should have a factor of safety less than 1.0.

Thus, given the significant bluff collapses that have occurred throughout the Solana Beach shoreline since 1998, the progressive failures that have occurred on the adjacent Surfson property since 2002, the presence of the clean sand layer, the extreme erodibility of these sands once exposed, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structures are 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, the project must eliminate or mitigate adverse effects on shoreline sand supply and minimize adverse effects on public access, recreation, and the visual quality of the shoreline.

Alternatives

The applicant's geotechnical engineer has performed an alternatives analysis to demonstrate that no other feasible less-environmentally-damaging alternatives exist to address the threats to the structures at the top of the bluff other than the proposed seawall and seacave/notch infills. The applicant's engineer has identified that removal or relocation of the condominium structures is not feasible or practical because of the expense and the lack of available area on the lots to locate the structures. Maintenance of the existing seacave infill will also not effectively protect the condominiums since the upper bluff failures have occurred following the exposure of the clean sands lens even with concrete fill of the seacaves/notches. The applicant has examined the alternative of infill of the seacave/notches and the grouting of the clean sands lens, however this has been discounted because there appears to be no effective mechanism to grout the clean sands lens and the process itself may lead to bluff failures. Another alternative to the seawall involves the construction of below ground caissons along the western perimeter of Building #3. This alternative would involve approximately 130 lineal feet of caissons with anchoring tiebacks imbedded 50 to 70 ft, but would do nothing to slow the progression of the bluff failures and, overtime, would expose the caissons to public view and require the construction of some form of wall to hide the caissons. In the case of the seawall, the applicant's engineer has also identified that the height of the wall at 35 ft. is the minimum size necessary to protect the toe of the bluff from marine erosion and contain the layer of clean sands which has been determined to be located between 28 ft. and 43 ft. MSL.

In summary, the exposure of the clean sands layer presents a threat of rapid erosion and bluff collapses that must be addressed by a solution that effectively contains the clean sands and affords protection to the condominium structures at the top of the bluff. Given the substantial amount of documented erosion on the site over the last few years, the presence of the clean sands, the extreme erodibility of these sands, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structures are in danger from erosion and that the proposed seawall and seacave/notch infills are necessary to protect the structures at the top of the bluff from the danger of erosion. In addition, the above-described alternatives presented by the applicant does not suggest there is a less-environmentally-damaging feasible alternative. The Commission's staff geologist and coastal engineer have reviewed the applicant's geotechnical assessment of the site along with their alternatives analysis and concur with its conclusions and recommendations. Therefore, the Commission finds that the proposed seawall and seacave/notch infills are necessary and the least environmentally damaging feasible alternative.

Sand Supply/In Lieu Mitigation Fee

Although construction of a seawall is required to protect the existing principle structures on the site, Section 30235 of the Coastal Act requires that the shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. There

are a number of adverse impacts to public resources associated with the construction of shoreline protection. The natural shoreline processes referenced in Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by construction of a seawall, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a seawall is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Some of the effects of a shoreline protective structure 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 which modify the shoreline. Seawalls also have non-quantifiable effects to the character of the shoreline and visual quality. However, some of the effects that 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 area on which the structure is located; 2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and 3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally.

Based upon the provided engineering plans, the proposed seawall will be 120 feet long and will encroach 2 feet onto the beach, beyond the drip line. The wall will also cover over 420 square feet of dry beach that is now inland of the drip line. The total beach encroachment that will occur from the proposed seawall will be 660 square feet of beach area that will no longer be available for public use. In addition, if the natural shoreline were to be allowed to erosion, the beach would retreat inland and a narrow beach would persist seaward of the back bluff. However, when the back shoreline location is fixed, the inland migration of the beach is halted. This will result 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. Over a 22 year period, with a long-term average annual retreat rate of 0.27 ft/yr, 712.8 square feet of beach will be inundated and will not be replaced by new inland beach area. These two impacts from the seawall, the encroachment and the fixing of the back beach, will result in the immediate loss of 660 square feet of beach and the on-going loss of beach area that, after 22 years will total 1,372.8 square feet.

The proposed seawall will also halt or slow the retreat of the entire bluff face. The bluff consists of a significant amount of sand, in the form of terrace deposits, the clean sand lens and the lower sandstone bedrock layer. As the bluff retreated historically, this sand was contributed to the littoral sand supply to nourish beaches throughout the region. The proposed seawall will halt this contribution to the littoral cell. Based on bluff geometry and the composition of the terrace materials, the applicant has estimated that the seawall will prevent 1,641.24 cubic yards of sand from reaching the littoral cell (based on a bluff erosion rate of 0.27 ft/yr and the wall remaining in place for 22 years).

The project impacts, the loss of 1,641.24 cubic yards of beach material and the eventual loss of 1,372.8 square feet of beach area, are two separate concerns. A beach is the result of both sandy material and a physical area between the water and the back beach. Thus, beach area is not simply a factor of the quantity of sandy beach material. In Solana Beach, the shoreline is a shallow bedrock layer covered by a thin veneer of sand. The bedrock layer provides an area for collection of sandy material. The sand material is important to the overall beach experience, but even without the sand, the bedrock layer provides an area for coastal access between the coastal bluff and the ocean. The loss of beach material that will be a direct result of this project can be balanced or mitigated by obtaining similar quality and quantity of sediment from outside the littoral cell and adding this sediment to the littoral cell. There are sources of beach quality sediment that can be drawn upon to obtain new sediment for the littoral cell.

For the past decade, the Commission has also relied upon the Beach Sand In-Lieu Mitigation Program to address impacts to local sand supply and some of the impacts from the loss of beach area¹. The Beach Sand In-Lieu Fee Mitigation Program was established to mitigate for small, persistent losses of recreational beach and has been administered by the San Diego Association of Governments (SANDAG) for many years. The Commission has long recognized that while beach nourishment can address some of the losses that are directly attributable to seawall projects, the one-time provision of beach through nourishment does not adequately address the long-term and persistent the impacts from encroachment and fixing the back of the beach. The main coastal resource concerns for these impacts arise from the losses in recreational use and recreational value that result from availability of the shoreline area. As discussed in the section on Recreation, these impacts can better be mitigated as the loss of recreational value.

The applicant has proposed to make a contribution to the mitigation program that would address the sand volume impacts from wall and infill encroachments, denial of sand to the littoral cell and passive erosion, as discussed herein. The applicant applied the calculations that the Commission has used for the past decade to estimate mitigation for

¹ The above-described impacts on the beach and sand supply have previously been found to result from seawalls in other areas of North County. In March of 1993, the Commission approved CDP #6-93-85/Auerbach, et al for the construction of a seawall fronting six non-continuous properties located in the City of Encinitas north of the subject site. In its finding for approval, the Commission found the proposed shoreline protection would have specific adverse impacts on the beach and sand supply and required mitigation for such impacts as a condition of approval. The Commission made a similar finding for several other seawall developments within San Diego County including an August 1999 approval (ref. CDP No. 6-99-100/Presnell, et. al) for the approximately 352-foot-long seawall project located approximately ¼ mile south of the subject development and a March 2003 approval (ref. CDP No. 6-02-84/Scism located 2 lots south of the subject site. (Also ref. CDP Nos. 6-93-36-G/Clayton, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver/Canter and 6-99-41/Bradley; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina and 6-03-33/Surfsong).

these three impacts. However, since the impacts from encroachment and fixing the back beach are being covered through estimates for recreational losses, the In-Lieu Beach Sand Mitigation calculations applied in this analysis only address the value of the sand that will be lost from the littoral cell due to the construction of the proposed seawall. The amount of beach material that would have been added to the beach if natural erosion had been allowed to continue at the site has been calculated to be 1,641.24 cubic yards. At an estimated sand cost of \$14 a cubic yard (provided by the applicant, and based on judgment and three estimates from local contractors), this would have a value of \$22,977.36. Special Condition #2 requires the applicant to deposit an in-lieu fee of \$22,977.36 to fund beach sand replenishment of 1,641.24 cubic yards of sand, as mitigation for the direct impacts of the proposed shoreline protective device on beach sand supply and shoreline processes over the 22-year design life of the project.

Special Condition #2 also requires the applicant to amend the subject permit before the end of the 22-year design life so as to either remove the seawall or extend the mitigation fee based on the expected extended life of the seawall.

The applicant is being required to pay a fee in-lieu of directly depositing the sand on the beach, because the benefit/cost ratio of such an approach would be too low. Many of the adverse effects of the seawall on sand supply will occur gradually. In addition, the adverse effects impact the entire littoral cell but to different degrees in different locations throughout the cell (based upon wave action, submarine canyons, etc.) Therefore, mitigation of the adverse effects on sand supply is most effective if it is part of a larger project that can take advantage of the economies of scale and result in quantities of sand at appropriate locations in the affected littoral cell in which it is located. The funds will be used only to implement projects which benefit the area where the fee was derived, and provide sand to the region's beaches, not to fund operations, maintenance or planning studies. Such a fund will aid in the long-term goal of increasing the sand supply and thereby reduce the need for additional armoring of the shoreline in the future. The fund also will insure available sandy beach for recreational uses. The methodology, as proposed, ensures that the fee is roughly proportional to the impacts to sand supply attributable to the proposed seawall. The methodology provides a means to quantify the sand and beach area that would be available for public use, were it not for the presence of the seawall.

In addition to the adverse impacts the seawall will have on the beach as detailed above, the Commission finds that the proposed seawall could also have adverse impacts on adjacent unprotected properties caused by wave reflection, which leads to accelerated erosion. Numerous studies have indicated that when continuous protection is not provided, unprotected adjacent properties experience a greater retreat rate than would occur if the protective device were not present. This is due primarily to wave reflection off the protective structure and from increased turbulence at the terminus of the seawall. According to James F. Tait and Gary B. Griggs in Beach Response to the Presence of a Seawall (A Comparison of Field Observations) "[t]he most prominent example of lasting impacts of seawalls on the shore is the creation of end scour via updrift sand impoundment and downdrift wave reflection. Such end scour exposes the back beach,

bluff, or dune areas to higher swash energies and wave erosion." As such, as the base of the bluff continues to erode on the unprotected adjacent properties, failure of the bluff is likely. Thus, future failures could "spill over" onto other adjacent unprotected properties, prompting requests for much more substantial and environmentally damaging seawalls to protect the residences. This then starts a "domino" effect of individual requests for protection.

According to information contained in the Planners Handbook (dated March 1993), which is included as Technical Appendix III of the Shoreline Preservation Strategy adopted by the San Diego Association of Governments (SANDAG) on October 10, 1993, "[a] longer return wall will increase the magnitude of the reflected wave energy. On a coast where the shoreline is retreating, there will be strong incentives to extend the length of the return wall landward as adjacent property is eroded, thereby increasing the return wall, and its effects on neighboring property, with time."

The plans for the subject seawall submitted by the applicant do not address the design of the north and south ends of the seawall in terms of how the design will mitigate these known effects. Therefore, Special Condition #1 has been attached which requires the submission of revised final plans that reflect the end design of the proposed seawall. The condition requires that the returns incorporate a feathered design or other design to gradually blend into the adjacent natural bluffs which will help to reduce the turbulence at the end of the wall that can lead to accelerated erosion of adjacent unprotected bluffs. However, although the proposed seawall must be designed to reduce impacts of the wall on adjacent properties, at best, the impacts can be reduced, but not eliminated. Regardless of whether accelerated erosion will occur on the adjacent unprotected properties, the adjacent bluffs will continue to erode due to the same forces that are causing them to erode currently. As this occurs, more surface area of the feathered edges will be exposed to wave attack leading to increased turbulence and accelerated erosion of the adjacent unprotected bluff. These impacts are particularly problematic in the case of the proposed project, as the seawall will be an isolated structure without seawalls to either side.

If the proposed wall were damaged in the future (e.g. as a result of wave action, storms, etc.) it could threaten the stability of the site, which could lead to need for more bluff alteration. In addition, damage to the seawall could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. In addition, excessive wear of the seawall could result in the loss of or damage to the color or texture of the seawall resulting in adverse visual impacts (discussed in more detail in a subsequent section of this report). Therefore, in order to find the proposed seawall consistent with the Coastal Act, the Commission finds that the condition of the seawall in its approved state must be maintained for the life of the seawall. Further, in order to ensure that the permittee and the Commission know when repairs or maintenance are required, the permittee must monitor the condition of the seawall annually, for three years and at three-year intervals after that, unless a major storm event occurs. The monitoring will ensure that the permittee and the Commission are aware of any damage to or weathering of the seawall wall and can determine whether repairs or other actions are necessary to maintain the seawall in its approved state.

Therefore, Special Condition #3 requires the applicant to submit a monitoring report which evaluates the condition and performance of the seawall and other shoreline protective structures and overall site stability, and submit an annual report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. In addition, the condition requires the applicant to perform the necessary repairs through the coastal development permit process.

Special Condition #6 requires that feasible alternative measures must be implemented on the applicant's blufftop property in the future, should additional stabilization be required, which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, but would reduce risk to the principle residential structures and provide reasonable use of the property. The condition will ensure that future property owners will be aware that any future proposals for additional shoreline protection, such as upper bluff stabilization, will require an alternative analysis similar to one required for the subject project. If there are feasible alternatives to shoreline protection that would have less impact on visual quality, sand supply, or public access, the Commission (or, where applicable, the City of Solana Beach after the effective certification of its Local Coastal Program) will require implementation of those alternatives. The condition also states that no shore or bluff protection shall be permitted for ancillary improvements located within the blufftop setback area. Through this condition, the property owner is required to acknowledge the risks inherent in the subject property and that there are limits to the structural protective measures that may be permitted on the adjacent public property in order to protect the existing development in its current location.

Special Condition #1 requires the applicant to submit final plans for the project indicating that the seawall conforms to the bluff contours, details the design of any return walls and that demonstrate that any existing irrigation systems on the blufftop have been removed or capped, as these would impact the ability of the seawall to adequately stabilize the site. Submission of final plans will ensure that overall site conditions which could adversely impact the stability of the bluff have been addressed.

Special Condition #7 notifies the applicants that they are responsible for maintenance of the herein approved shore and bluff protection. The condition also indicates that, should it be determined that maintenance of the proposed structures are required in the future, including maintenance of the color and texture, the applicant shall contact the Commission to determine if permits are required.

To assure the proposed shore/bluff protection has been constructed properly, Special Condition #5 has been proposed. This condition requires that, within 60 days of completion of the project, as built-plans and certification by a registered civil engineer be submitted that verifies the proposed seawall has been constructed in accordance with the approved plans. The presence and location of the clean sands is a significant part of the need for and design of the proposed project. This lens may influence future plans for maintenance on this property and information on its location and extend may be important to future actions at this site and at adjacent locations. Since the clean sand lens

will be covered by the proposed seawall and backfill, Condition #5 requires that the elevation of the clean sand lens and the contacts between this lens and both the terrace deposits and the Torrey Formation be included on the as-built plans.

Special Conditions #8 requires the applicant to submit a copy of any required permits from other local, state or federal agencies to ensure that no additional requirements are placed on the applicant that could require an amendment to this permit.

Also, due to the inherent risk of shoreline development, Special Condition #11 requires the applicant to waive liability and indemnify the Commission against damages that might result from the proposed shoreline devices or their construction. The risks of the proposed development include that the proposed shoreline devices will not protect against damage to the residences from bluff failure and erosion. In addition, the structures themselves may cause damage either to the applicant's property or to neighboring properties by increasing erosion of the bluffs. Such damage may also result from wave action that damages the seawall. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the applicants have chosen to construct the proposed shoreline devices despite these risks, the applicants must assume the risks. Special Condition #12 requires the applicant to record a deed restriction imposing the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property or that the CC&Rs be modified to reflect the obligation imposed on the homeowners association by the permit conditions. Only as conditioned can the proposed project be found consistent with Sections 30235 and 30253 of the Coastal Act.

In summary, the applicant has documented that the existing blufftop primary structures are in danger from erosion and subsequent bluff collapse and that the proposed seawall and seacave/notch infills are necessary to address that threat. As conditioned, there are no other less damaging alternatives available to reduce the risk from bluff erosion. Thus, the Commission is required to approve the proposed protection for the residential structures. Since the proposed seawall will contribute to erosion and geologic instability over time and also deplete sand supply, occupy public beach and fix the back of the beach, the applicants have proposed to pay an in-lieu mitigation fee to offset this impact. Therefore, as conditioned, the Commission finds that the proposed seawall is consistent with Sections 30235 and 30253 of the Coastal Act.

3. Public Access/Recreation. As a result of the adverse impacts on local sand supply, shoreline protective devices also have significant adverse impacts to public access and recreation. Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road, on the beach. Coastal Act Sections 30210 through 30213, as well as Sections 30220 and 30221 specifically protect public access and recreation, and state:

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...

Section 30213: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. ...

Section 30220: Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

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.

Coastal Act Section 30240(b) also protects parks and recreation areas such as Fletcher Cove Beach Park. Section 30240(b) states:

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.

The project site is located on a public beach utilized by local residents and visitors for a variety of recreational activities such as swimming, surfing, jogging, walking, surf fishing, beachcombing and sunbathing. The site is located immediately adjacent to Fletcher Cove Park, which contains the main public pedestrian and vehicle beach access ramp to the City's approximately 1-mile long stretch of beach. The proposed seawall will be constructed on sandy beach area that is currently available to the public and will have both immediate and long-term adverse impacts on public access and recreational opportunities.

Although the proposed seawall has been designed to be as narrow as feasible, it will project approximately 2 feet seaward of the toe of the bluff. In addition, although the seaward encroachment of the wall appears at first glance to be minimal, the beach along this area of the coast is narrow and at high tides and winter beach profiles, the public may be forced to walk virtually at the toe of the bluff or the area would be impassable. As

such, an encroachment of any amount, including 2 feet for a length of 120 feet onto the sandy beach, reduces the small beach area available for public use and is therefore a significant adverse impact. This is particularly true given the existing beach profiles and relatively narrow beach where access is sometimes only available at high tides. In addition, however, were it not for the seawall, the seaward face of the bluff would naturally recede making additional beach area available for public use. During the 22 year life of the seawall, as the beach area available to the public is reduced, dry sandy beach will become less available seaward of the seawall such that beachgoers will not want to sit or lay a towel in this area. In addition, over time as the surrounding unprotected bluffs recede, the seawall structure will likely impede or completely eliminate public access to the beach south of Fletcher Cove Park at the subject site.

As explained in Section 2 of this report, the proposed seawall will result in the encroachment and the fixing of the back beach, which will result in the immediate loss of 650 square feet of beach (including approximately 410 sq. ft. landward of the bluff dripline which is proposed to be filled with concrete behind the seawall) and after 22 years with no recession of the bluff will result in the loss of a total approximately 1,364.8 square feet of public beach. The sand that would have reached the beach were it not for the proposed seawall is generally mitigated by the applicant's proposal to pay an in-lieu for the purchase of an equal amount of sand for future placement. However, the loss of this approximately 1,364.8 sq. ft. of recreational area is not mitigated by the one-time placement of sand since that area will not be available for public use (or placement of sand) over the estimated 22 year life of the seawall. Since any loss of public beach area will significantly affect public access and recreational opportunities along the beach adjacent to Las Brisas and Fletcher Cove, additional mitigation is required.

Development along the shoreline which may burden public access in several respects has been approved by the Commission. However, mitigation for any adverse impacts of the development on access and public resources is always required. The Commission's permit history reflects the experience that development can physically impede public access directly, through construction adjacent to the mean high tide line in areas of narrow beaches, or through the placement or construction of protective devices seawalls, rip-rap, and revetments. Since physical impediments adversely impact public access and create private benefit for the property owners, the Commission has found in such cases (in permit findings of CDP #4-87-161 [Pierce Family Trust and Morgan], #6-87-371 [Van Buskirk], #5-87-576 [Miser and Cooper]) that a public benefit must arise through mitigation conditions in order that the development will be consistent with the access policies of the Coastal Act, as stated in Sections 30210, 30211, and 30212.

The most appropriate mitigation for the subject development would be the replacement of the 1,364.8 sq. ft. of beach with an identical area of beach in close proximity to the eliminated 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. As discussed in more detail below, 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. There is little doubt

that the loss of 1,364.8 sq. ft. of sandy beach in an urban area such as Solana Beach represents a significant impact to public access and recreation, including a loss of the social-economic value of this recreational opportunity. Based on a recent economic analysis, approximately 92,460 people per year (a very conservative estimate) visit the beach fronting Fletcher Cove and Las Brisas Condominiums (Ref. "An Analysis of the Loss of Recreational Benefits due to Construction of the Las Brisas Seawall in Solana Beach", by Dr. Phillip King, September 26, 2005). There are undoubtedly substantial benefits being provided to these users of the beach resource. The question becomes how to adequately mitigate for the impact of the loss of 1,364.8 sq. ft. of beach, and in particular, how to determine a reasonable value of this impact that could serve as a basis for mitigation, in light of the absence of actual feasible mitigation measures to maintain or create equivalent beach resources at or near the project site.

In the past ten to fifteen years, the Commission has approved the construction of shoreline devices in San Diego County when they are necessary to protect an existing primary structure and when mitigation is provided according to a formula that the Commission developed to address some of the more easily quantifiable effects on local sand supply, as required by Section 30235 of the Coastal Act. In each of those decisions, the Commission recognized that the mitigation in the form of an in-lieu fee paid for the purchase of sand to offset the sand lost by the shoreline structure, provided some, but not all mitigation, associated with the adverse impacts of shoreline devices. Recently the Commission has asked for 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. One possible way to determine an appropriate mitigation fee is to estimate the economic recreational value of the beach in front of the Las Brisas Condominiums, which will eventually be lost due to the construction of the seawall.

The Commission recently contracted with Dr. Phillip King, Chair of the Economics Department at San Francisco State University, to perform an economic analysis of the loss of recreational values associated with the subject seawall. His report, attached as Exhibit #4, details his assessment of the value of a day at the beach at the subject site and provides an estimate of the potential loss of value resulting from the seawall's construction and placement over 22 years:

In order to estimate the loss of recreational benefits for this project one must know the recreational value of the beach before and after the project. The standard methodology here, used by all economists working for government agencies, is to estimate the day use value for each visitor (i.e., how much is a beach day worth) and multiply this by the number of visitors. To estimate the loss of recreational value one must estimate the decrease in day use value, as well as potential decrease in visitation. My report will begin with an estimate of visitation, then day use value before and after the project and then provide an estimate of the total loss. (Ref. p. 2, Exhibit 4)

As Dr. King describes in his report, there are various accepted economic techniques and methodologies available to estimate recreation values: "The most common technique is

the travel cost method and its more sophisticated offshoot, the random utility model (RUM). The other main technique used is the contingent valuation method." He explains that his approach is based on a RUM and involves the use of a "benefit transfer" comparison model, based on a comparison of the characteristics of the subject beach with other beaches whose recreational values have been assessed, to extrapolate from those "measured" beaches to other beaches across the State of California. He indicates that the methodology also incorporates a number of studies that analyze the effect of beach width on recreational value and attendance throughout Southern California.² Because the RUM is an offshoot of the travel cost method, it is ultimately based on the amount of money people are willing to spend to reach the beach. Since there is every reason to think that at least some of the people visiting the beach would be willing to pay even more, if it would cost more, to reach the beach, this method inevitably yields a minimum value.

Generally, Dr. King's study compares the beach fronting Las Brisas Condominiums and Fletcher Cove with what he terms a beach with perfect amenities (for a Southern California beach). He assigns a day use value of \$14.00 as the value of an individual's day at the perfect beach. This value was derived from the examination of various comparable studies, including what is likely the best known study, by a Dr. Hanemann (considered one of the foremost experts in the field) for the American Trader Case, which, adjusted for today's dollars, concluded that the value of a day at Huntington Beach was approximately \$16.00 (The American Trader Oil Spill, unpublished Memo, 1998, by Chapman, Haneman and Rudd). (However, Dr. King emphasizes that the \$14.00 value may be very conservative since "many studies have derived values as high as \$30.00 per day.") Using \$14.00 as the value of a day at a perfect beach, Dr. King's methodology then uses specific "amenity values" of a studied beach to assess how that beach compares to the model beach, and thus, what value should be assigned to represent the value of the studied beach. These "amenity" values address the parameters of weather, water quality/surf, beach width and quality, overcrowding, facilities and services, and availability of substitute beaches.³ Perfect weather, for example would involve a beach where every day is warm and sunny. Perfect beach width and quality, for example, is described as having from 100 to 250 ft. of fine, white sandy beach width. In addition, each amenity is weighted so that, for instance, weather makes up 20% of the final value, while beach width and quality make up only 15%.

² Commission staff has also examined the potential real estate value of the approximately 1,364.8 sq. ft. beach area. For comparison purposes only, based on land values identified by the San Diego County Assessors, the 7 single-family residential lots on the top of the bluff just north of Fletcher Cove range in value from a low of \$54. per sq. ft. to a high of \$509.33 per sq. ft. Removing these two extremes, the average of the remaining 5 properties is \$211.66 per sq. ft. Using this average, if the subject 1,364.8 of beach land were at the top of the bluff the assessed land value might be approximately \$288,876.29. This value is comparable to the amount required for the loss of recreational value as estimated by Dr. King's report.

³ This approach does not factor in loss of aesthetic value to those who continue to attend and does not take into account the loss of lateral access to the beach area south of the proposed seawall after the beach is gone. Therefore, this approach results in a conservative estimate of the recreational loss.

In the case of the subject beach, Dr. King has determined that the beach fronting Fletcher Cove and Las Brisas is not a "perfect" beach. By carefully assigning site-specific amenity values, Dr. King estimates that the beach fronting Fletcher Cove and Las Brisas has a total amenity value of 48.7% of a perfect beach. Since his conservative estimate of a "perfect" beach is valued at \$14.00, the beach at the subject site is estimated to have a value of \$6.81 per day (48.7% of a perfect beach value). To estimate the overall economic recreational value of this beach it is also then necessary to multiply this day use value (\$6.81) by the total number of visitors.

Dr. King identifies that Solana Beach does not record beach attendance at Fletcher Cove and that his estimates on use are derived from discussion with City lifeguards and use of a recent parking study conducted for the City of Solana Beach at Fletcher Cove. Based on that information, he estimates that approximately 92,460 individuals visit beach fronting the subject site each year (approximately 40,460 during the 3 summer months and approximately 52,000 over the remaining year). However, he emphasizes that because of concerns he has with the parking study, the amount of non-summer use may be a "very rough" and conservative estimate. Finally, once the recreational value of the beach fronting the Fletcher Cove and Las Brisas has been derived, the loss of value resulting from the placement of the subject seawall must be determined. It is this loss of recreational value resulting from the seawall that must be mitigated.

In calculating the loss of recreational value, Dr. King estimates the loss of beach that will be lost by the placement of the seawall initially and over 22 years. He identifies that 652 sq. ft. will be lost immediately after the seawall is constructed and 32.4 sq. ft. per year for the next 22 years. Using that information he adjusts the amenity values for beach width and overcrowding (the two factors affected by the loss of beach) for each of the 22 years (and adjusts population figures as well, to account for projected population change). As a result of these adjustment of the amenity factors (the other amenity factors, weather, surf, etc. remaining constant) along with the application of "real discount rate", Dr. King estimates that the reduction of recreational value over 22 years resulting from the placement of the seawall equates to approximately \$309,000.00.

The Commission finds that for the various reasons listed above, the fee generated is likely to be an underestimate of the total loss of recreational value as a result of the seawall's impacts on shoreline sand supply. The Commission finds that the applicant should be required mitigate for the significant loss of recreational value resulting from the proposed seawall. Mitigation through the payment of a \$309,000.00 fee could be used in a variety of ways such as purchase of beach land, recreational and beach park amenities, or for sand replenishment. Since the Commission and the San Diego Association of Government already have an established beach sand replenishment fund, the Commission is recommending that the monies be used for the purchase of beach sand that ultimately will be placed along the San Diego coastline. Therefore, Special Condition #2 requires the applicant to contribute an in-lieu fee in the amount of \$309,000.00 to the SANDAG sand replenishment fund. In addition, as identified in Section 2 of the subject report, the seawall will result in sand no longer reaching the beach over the next 22 years from the bluff area behind the seawall. As identified in

Section 2, the applicant is also required to mitigate this loss of sand by the payment of an in-lieu of \$22,977.36 paid into the SANDAG sand replenishment. Therefore, in total the applicant is required to pay \$331,977.36 to mitigate for the adverse impacts to sand supply, public access and recreation.

This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition #10 acknowledges that the issuance of this permit does not waive the public rights that may exist on the property. The seawall may be located on State Lands property, and as such, Special Condition #9 requires the applicant to obtain any necessary permits or permission from the State Lands Commission to perform the work.

In addition, the use of the beach or public parking areas for staging of construction materials and equipment can also impact the public's ability to gain access to the beach. While the applicant has not submitted a construction staging and material storage plan for the subject development, it is likely that beach access to the site will occur via Fletcher Cove which is located approximately 100 feet north of the subject site. Because the applicant has not identified the location of the staging and storage area, Special Condition #4 has been attached to mitigate the impact on public parking areas and public access. Special Condition #4 prohibits the applicant from storing vehicles on the beach overnight, using any public parking spaces within Fletcher Cove overnight for staging and storage of equipment, and prohibits washing or cleaning construction equipment on the beach or in the parking lot. The condition also prohibits construction on the beach during weekends and holidays between Memorial Day to Labor Day of any year.

With Special Conditions requiring mitigation for the loss of recreational value resulting from the shoreline protective device, assuring maximum public access during construction, and authorization from the State Lands Commission, impacts to the public will be minimized to the greatest extent feasible. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

4. Visual Resources/Alteration of Natural Landforms. Section 30240 (b) of the Coastal Act is applicable and states:

(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.

In addition, Section 30251 of the Coastal Act states, in part:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of

surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas . . .

As stated above, the proposed development will occur on the face of a coastal bluff and on the public beach. An approximately 120 ft.-long seawall has been constructed approximately 200 ft. to the south of the subject site (ref. CDP Nos. 6-03-33/Surfsong). However, the bluffs on either side of the proposed seawall remain in their natural state. With a proposed 120 ft.-long, approximately 35 ft.-high concrete seawall, with the approximately 8 ft. high erodible concrete backfill extending above the wall, the potential for adverse impacts on visual resources of the adjacent natural bluffs resulting from the proposed development could be significant.

The applicant is proposing to construct an approximately 120-ft. long, 35-ft. high tied-back concrete seawall with concrete backfill of approximately 8 ft. in height. To mitigate the visual impacts of the proposed seawall, the applicant proposes to color and texture the seawall. The visual treatment proposed is similar to the visual treatment approved by the Commission in recent years for seawalls along the Solana Beach shoreline. (ref. CDP #6-02-84/Scism; 6-02-02/Gregg, Santina; 6-03-33/Surfsong). It is not clear, however, whether the concrete backfill will also be colored and textured to closely match the natural bluff. The specific design methods for coloring and texturing the seawall were also not submitted. Therefore, Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seawall and backfill structures.

In addition, to address other potential adverse visual impacts, Special Conditions Nos. 3 and 7 have been attached which require the applicant to monitor and maintain the proposed seawall, concrete backfill and exposed seacave/notch infills in their approved state. In this way, the Commission can be assured that the proposed seawall and concrete backfill element will be maintained so as to effectively mitigate their visual prominence.

Therefore, as conditioned, the Commission finds that potential visual impacts associated with the proposed development have been reduced to the maximum extent feasible and the proposed development will include measures to prevent impacts that would significantly degrade the adjacent park and recreation area (beach area). Thus, the project can be found consistent with Sections 30240 and 30251 of the Coastal Act.

5. Protection of Ocean Waters/BMP's. Section 30230, 30231 and 30232 of the Coastal Act requires that new development be designed so that ocean waters and the marine environment be protected from polluted runoff and accidental spill of hazardous substances:

Section 30230

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.

Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30232

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

The construction of the proposed seawall will occur on the public beach within a few feet of ocean waters. Construction activities will only occur at low tides when access along the beach is available. However, at high tides ocean waters will extend up to face of the seawall such that the seawall at times will be subject to wave action. The method of construction of the seawall involves the multiple application of shotcrete that is sprayed over the face of the seawall structure. This shotcrete material will eventually be sculpted and colored to closely match the appearance of the natural bluffs. According to the applicant's engineer, approximately 10 to 15% of this shotcrete (concrete) material rebounds off the structure onto the beach as it is being applied. Because the material is wet, the applicant's representative indicates it cannot be picked up until it hardens. The Commission has recently become aware that in previously constructed seawalls along the Solana Beach shoreline, this shotcrete "rebound" has not been removed before the ocean waters rise and mix with the wet shotcrete material. After the return of low tides, any remaining hardened shotcrete is then picked up by the construction crews and removed from the beach. According to the Commission's water quality division and staff of the State Regional Water Quality Control Board, San Diego Region, the mixing of this rebound shotcrete with ocean waters is a violation of the State Water Quality Act since it would involve the unauthorized discharge of a pollutant into ocean waters.

Along other sections of the coast, shotcrete is applied without the associated rebound problems. Contractors place tarps on the beach to collect material that drops from the wall. They also use backdrops or drapes along the face of the bluff to contain splatter and rebound and prevent scatter of shotcrete material all around the beach. These and other

techniques are possible ways to control shotcrete debris and prevent discharge into the marine environment.

Special Condition #4 is attached which requires that during the construction of the project, "the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion". This is a standard condition on all seawall projects approved by the Commission. However, based on information supplied by the applicant's engineer, this special condition has not effectively served to prohibit the contamination of ocean waters by rebounded shotcrete. To assure that the subject development will not result in the pollution of the ocean waters, Special Condition #13 has been attached. Special Condition #13 requires the applicant to submit a Polluted Runoff Control Plan that incorporates structural and nonstructural Best Management Practices (BMPs), for Executive Director approval, for the construction of the proposed seawall. Construction methods must be devised to assure this rebound shotcrete material does not mix with or pollute ocean waters. With appropriate BMPs, the potential for this polluted material from the site making its way into the ocean will be eliminated. Therefore, as conditioned, the Commission finds the proposed development consistent with the marine and water quality protection policies of the Coastal Act.

6. Local Coastal Planning. Section 30604(a) also requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program (LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The subject site was previously in the County of San Diego jurisdiction, but is now within the boundaries of the City of Solana Beach. The City is preparing and plans to submit a new LCP for the area to the Commission for review. Because of the incorporation of the City, the County of San Diego's LCP was never effectively certified. However, the issues regarding protection of coastal resources in the area have been addressed by the Commission in its review of the San Diego County LUP and Implementing Ordinances.

The City of Solana Beach has prepared a draft LCP. In preparation of its LCP, the City of Solana Beach is faced with many of the same issues as the City of Encinitas, located immediately north of Solana Beach, whose LCP was certified by the Commission in March 1995. The City of Encinitas' LCP includes the intent to prepare a comprehensive plan to address the coastal bluff recession and shoreline erosion problems in the City. The plan will include at a minimum, bluff top setback requirements for new development and redevelopment; alternatives to shore/bluff protection such as beach sand replenishment, removal of threatened portions of a residence or the entire residence or underpinning existing structures; addressing bluff stability and the need for protective measures over the entire bluff (lower, mid and upper); impacts of shoreline structures on beach and sand area as well as mitigation for such impacts; impacts for groundwater and irrigation on bluff stability and visual impacts of necessary/required protective structures.

The City of Solana Beach LCP should also address these items in the context of a comprehensive approach to management of shoreline resources. As shoreline erosion along the coast rarely affects just one individual property, it is imperative that a regional wide solution to the shoreline erosion problem be addressed and solutions developed to protect the beaches. Combined with the decrease of sandy supply from coastal rivers and creeks and armoring of the coast, beaches will continue to erode without being replenished. This will, in turn, decrease the public's ability to access and recreate on the shoreline.

In the case of the proposed project, site-specific geotechnical evidence has been submitted indicating that the existing structures at the top of the bluff are in danger. The Commission feels strongly that approval of the proposed project should not send a signal that there is no need to address a range of alternatives to armoring for existing development. Planning for comprehensive protective measures should include a combination of approaches including limits on future bluff development, ground and surface water controls, and beach replenishment. Although the erosion potential on the subject site is such that action must be taken promptly, decisions regarding future shoreline protection should be done through a comprehensive planning effort that analyzes the impact of such a decision on the entire City shoreline.

The location of the proposed seawall and seacave/notch fill is designated for Open Space Recreation in the City of Solana Beach Zoning Ordinance and General Plan, and was also designated for open space uses under the County LCP. As conditioned, the subject development is consistent with these requirements. Based on the above findings, the proposed development is consistent with the Chapter 3 policies of the Coastal Act in that the need for the shoreline protective devices has been documented and its adverse impacts on beach sand supply and on adjacent unprotected properties will be mitigated.

Therefore, the Commission finds the proposed development, as conditioned, is consistent with the Chapter 3 policies of the Coastal Act, and will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program. However, these issues of shoreline planning will need to be addressed in a comprehensive manner in the future through the City's LCP certification process

7. Consistency with the California Environmental Quality Act (CEQA).

Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The proposed project has been conditioned in order to be found consistent with the water quality, geologic stability, visual quality, and public access and recreation policies of the

Coastal Act. Mitigation measures, including conditions addressing payment of an in-lieu fee for impacts to sand supply, a fee to mitigate for the loss of public access and recreation opportunities, monitoring and maintenance of the structures over the lifetime of the project, color of construction materials, timing of construction and the use of BMP's will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and is consistent with the requirements of the Coastal Act to conform to CEQA.

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

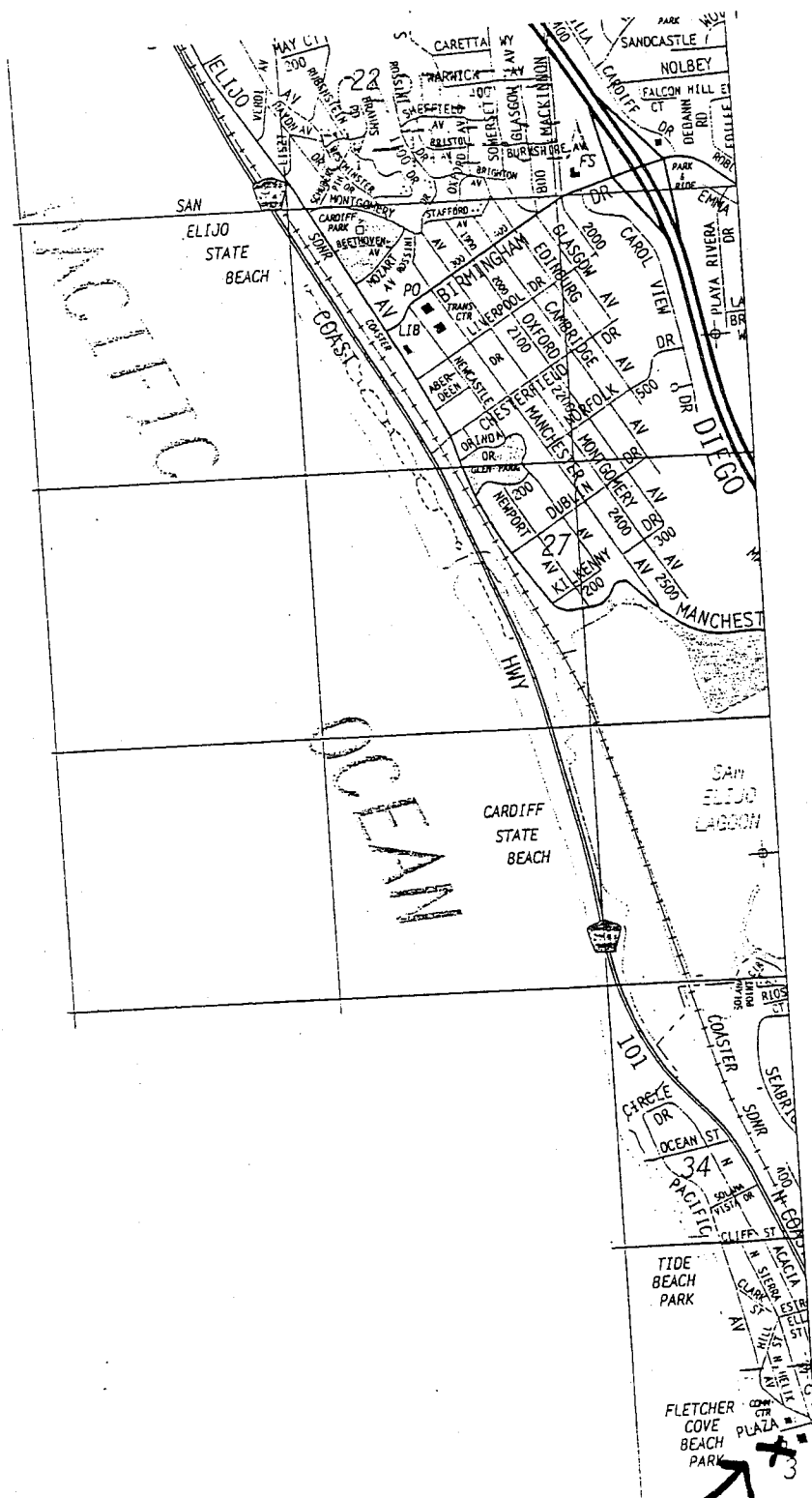


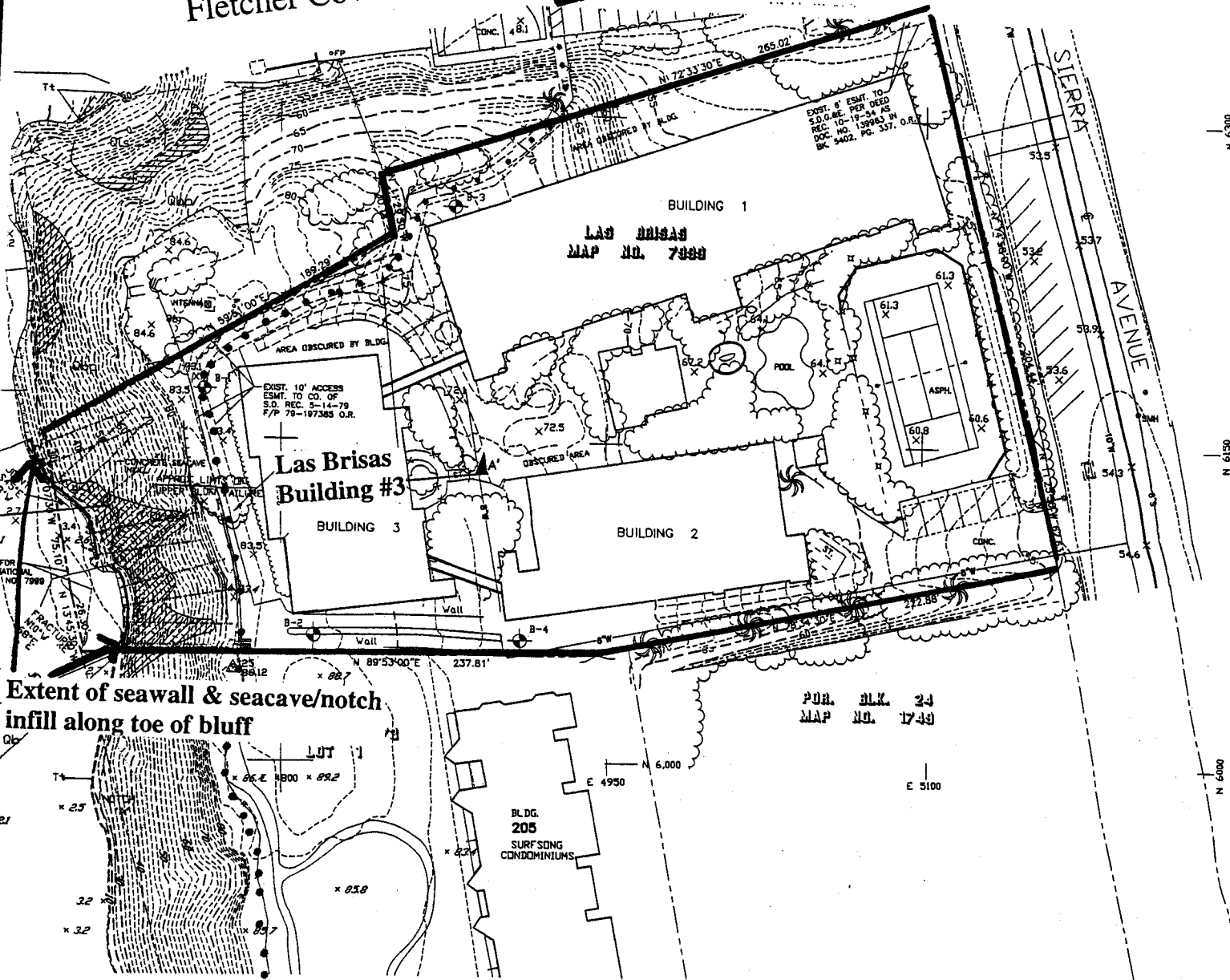
EXHIBIT NO. 1
 APPLICATION NO.
 6-05-72
 Location Map

California Coastal Commission

5

**Public access stairs
from Fletcher Cove
parking lot to access
easement along top
of bluff**

Fletcher Cove Park



Public access easement along top of bluff

SITE PLAN
SCALE: 1"=30'



SCALE: 1"=30'

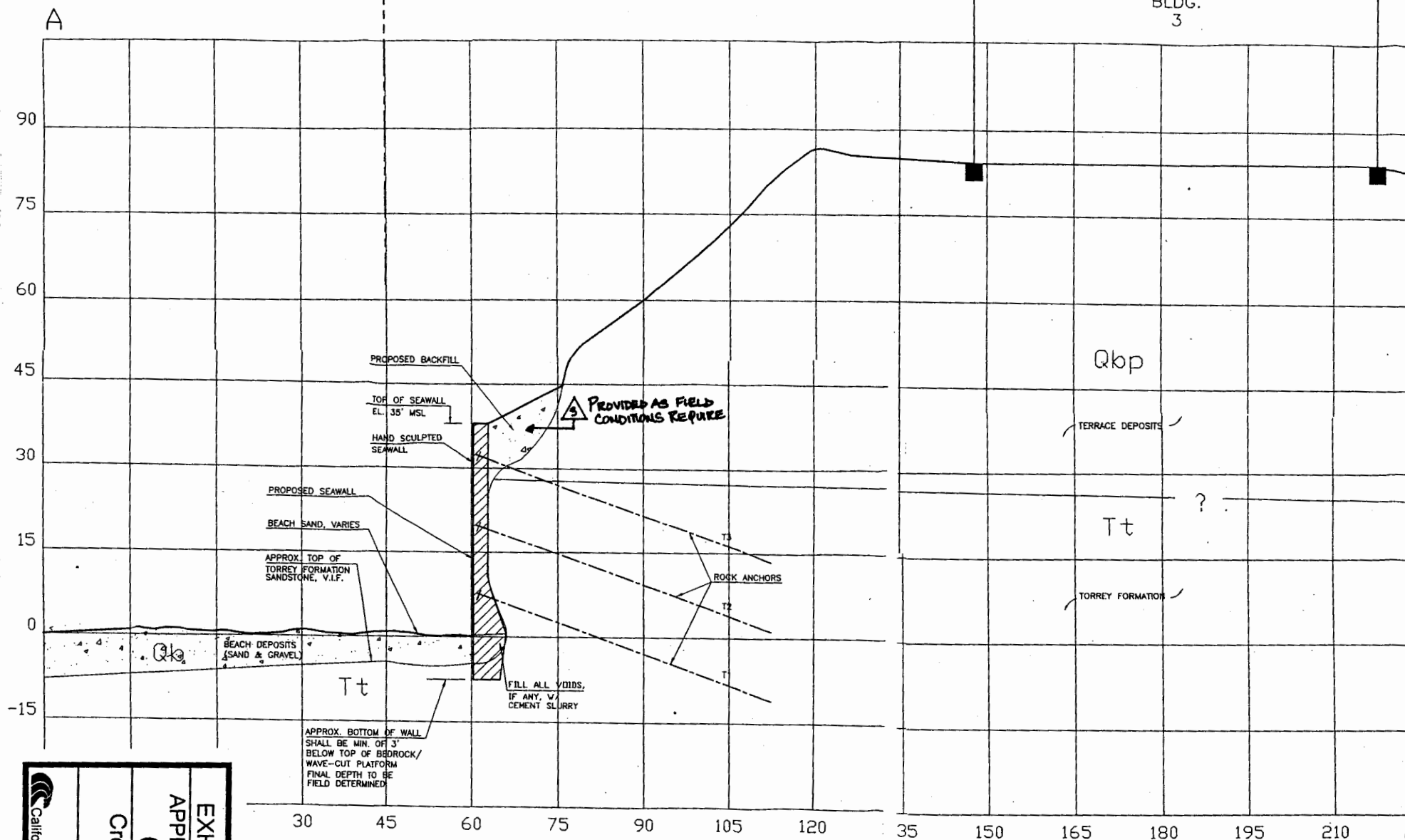


EXHIBIT NO. 2
APPLICATION NO.
6-05-72
Site Plan



LOOKING NORTH

EXIST.
BLDG.
3



PROFILE SECTION A-A'

SCALE: 1"=10'

* NOTE:
GENERALIZED WALL PROFILE - SEE SHT. 4 FOR CONSTRUCTION DETAILS.

<p>California Coastal Commission</p>	EXHIBIT NO. 3
	APPLICATION NO.
	6-05-72
Cross-Section	


An Analysis of the Loss of Recreational Benefits due to
Construction of the Las Brisas Seawall in Solana Beach

Dr. Philip G. King

Chair, Economics Dept.

San Francisco State University

September 26, 2005

EXHIBIT NO. 4
APPLICATION NO. 6-05-72
Loss of Recreational Benefits Study
Page 1 of 12
 California Coastal Commission

I have been asked by the California Coastal Commission to provide an analysis of the loss in recreational value due to the creation of a 120 ft seawall at Las Brisas, just south of Fletcher Cove in Solana Beach. The project time period is 22 years. My analysis is based upon the following evidence:

- Three site visits on the weekend of June 18-19, 2005 including observations of the beach at high and low tide.
- Several site visits during the week of July 16-23, 2005 and a visit on August 28, 2005.
- A survey and analysis conducted for the City of Solana Beach in 2001 entitled "Economic Analysis of Beach Spending and the Recreational Benefits of Beaches in the City of Solana Beach"
- Numerous other site visits to Solana Beach over the past 6 years
- Conversations (mostly in 2001, but also in 2005) with Solana Beach lifeguard staff
- Fletcher Cove Parking Study prepared for the City of Solana Beach by Katz, Okitsu, and Associates, April 12, 2005.
- A Staff Report prepared by the California Coastal Commission regarding the Las Brisas Seawall and data from the Commission regarding the predicted impact of the Seawall on the current beach area
- Numerous photos provided by the Coastal Commission and from the California Coastal Records Project website: www.californiacoastline.org
- Other reports and surveys prepared for the State of California, the US Army Corps of Engineers and local communities regarding the economics of beach recreation (see references).

In order to estimate the loss of recreational benefits for this project one must know the recreational value of the beach before and after the project. The standard methodology here, used by all economists working for government agencies, is to estimate the day use value for each visitor (i.e., how much is a beach day worth) and multiply this by the number of visitors. To estimate the loss of recreational value one must estimate the decrease in day use value, as well as potential decrease in visitation. My report will begin with an estimate of visitation, then day use value before and after the project and then provide an estimate of the total loss.

1. Attendance

Solana Beach does not record attendance for its beaches. For the purposes of this project I consider the beach area at Fletcher Cove and the adjacent Las Brisas beach as contiguous. In several visits to the area I have noted that visitors spread out continuously over this area. Most access the beach through the concrete ramp at Fletcher Cove. My 2001 survey indicated that approximately 3/4 of visitors to Solana Beach were on day trips. Approximately 1/3 were local residents and 1/3 were from San Diego County; the remaining third came from California and

other states with few foreign visitors. 60% of visitors in the survey reported they arrive on the beach that day by car; 40% arrived by other means, mostly by foot.

My estimate of high season attendance is based on numerous site visits, discussions with lifeguards, as well as a study of parking at Fletcher Cove, performed by Katz, Okitsu, and Associates.¹ Katz, Okitsu, and Associates estimate parking in February and then applied a rule of thumb to estimate high season parking. Their method probably *underestimates* parking², however this analysis will use their data since no other data is available. Table 1 below presents my estimate of people arriving to Fletcher Cove/Las Brisas by car on a typical summer day.

Table 1: Estimate of Parking and Turnover from Katz, Okitsu and Associates

Item	M-F	Weekend	Week
Avg. Parking Occupancy 7am-6pm	21%	26%	23%
Avg Time	1.71	1.54	1.66
Turnover in 12 hour period	7.0	7.8	7.2
Total Capacity of Fletcher Cove Lot	62	62	62
Avg Number of Cars (at a given time)	13.3	16.2	14.1
Avg. Total # Cars per day	93.2	126.0	102.6

Table 2 presents my estimate of high season (Memorial Day weekend to Labor Day weekend) attendance: 40,460. My own observations in several site visits in 2001 and in June, July and August of 2005 indicate that forty thousand is a good estimate. Based on data from my 2001 survey, I assume 3.2 people per car. My 2001 survey also indicated that 40% of beach attendees did not come by car (usually they walked). Table 2 accounts for this attendance as well. My observations indicate that the vast majority of people who park in the Fletcher Cove lot during high season use the beach.

Table 2: Estimate of High Season Attendance

Item	Estimate
# Cars/day	85
Est % Cars beach related	90%
# People per Car	3.2
# Visitors by Car	244
# Visitors by Other Means	161
Total Visitors per Day	405
# Days in High Season	100
Total Visitors High Season	40,460

¹ See Memo to Chandra Collure, City of Solana Beach, April 12, 2005, Subject Fletcher Cove Parking Study, by Katz, Okitsu, and Associates.

² They multiply low season parking by a factor based on shopping and other beach attendance, but without accounting for the specific traffic at Fletcher Cove, their analysis is insufficient.

Katz, Okitsu, and Associates data was actually collected in February and adjusted upwards for high season. Their methodology assumes that, adjusted for weekday and weekend, 22% fewer people go on an average day. Applying their rule, I estimate that off-season attendance is 52,000, however this is a rough approximation and I have much less confidence in this estimate. In particular, there are no data on how many people arrive at the beach by car and how many walk or use other means.

My final analysis also adjusts attendance for increases in population. The City of Solana Beach is near build-out and over the next 15 years, the City is expected to have a much lower growth rate than the State as a whole. I obtained projections for future population increases in Solana Beach and the surrounding region from a study prepared for UCSD.³ Based on this research as well as my survey results I have applied an increase of 0.5% per year, for future beach attendance at this location.

2. Day Use Value Methodology

Economists have developed a number of techniques to value recreation for "non-market" goods such as a day at the beach. Non-market goods are those which have no price attached, such as Fletcher Cove/Las Brisas. However a day at the beach has obvious value for visitors. Economists have created several techniques to estimate these values. The most common technique is the travel cost method and its more sophisticated offshoot, the random utility model (RUM). The other main technique used is the contingent valuation method.

The standard practice for estimating recreational value is to estimate the day-use value—how much is one beach day worth for one person. Numerous studies of day use value have been conducted in the State of California. Perhaps the best known study, by Hanemann, was created for the American Trader Case.⁴ Adjusted for today's dollars, Hanemann estimated that a day at Huntington Beach was worth \$16 per person.

The most sophisticated study of beach use in California was conducted by Dr. Michael Hanemann (UC Berkeley), Dr. Linwood Pendleton and others. Both are recognized experts in the field and Dr. Hanemann is widely considered to be one of the leading experts in the world on this topic. They used a RUM to estimate the value of a beach day at a number of southern California Beach towns. Unlike previous studies (such as Huntington Beach) they account for substitution—the fact that if one beach disappears visitors can go to others, which was a weakness in earlier estimates. Since these RUM models do not consider congestion at beaches, and focus primarily on visitors from southern California, their estimates are likely a lower bound for beach values. For more information on their project, see <http://marineeconomics.noaa.gov/SCbeaches/welcome.html>.

For beaches where no study has been conducted it is possible to use a technique referred to as "benefits transfer" (BT). In BT, one equates a beach not studied with a similar beach. This technique is widely used by Federal government agencies to assess the value of recreational sites for public policy.

³ UCSD Long Range Development EIR, prepared by Keyser Martson Associates, Inc, April 2004.

⁴ Chapman, D., Hanemann, M., and Ruud, P. 1998. The American Trader Oil Spill, unpublished Memo.

I recently developed a benefits transfer protocol for the State of California which has now been applied by the State to a number of beaches in the State for use in Public Policy work.⁵ This methodology allows one to estimate day use values for beaches across the State based on the quality of the recreation experience. This methodology is consistent with economic theory and with results from the Southern California Beach project. This methodology also incorporates a number of studies that analyze the effect of beach width on recreational value and attendance throughout Southern California. A more complete discussion of this methodology is in King (forthcoming, see references). Table 3 presents the key criteria in this methodology. The highest possible score is \$14 per day. I derived this value after examining numerous studies, in particular after interviewing people involved with the Southern California Beach project. The model was calibrated for Huntington beach, which yields a value of just over \$10 a day, consistent with the most recent work in the state by the southern California Beach Project. This \$14 value is conservative number since many studies have derived values as high as \$30 per day.

Table 3: A Rating System for Benefits Transfer

Amenity	Relative Weighting
Weather	20%
Water Quality/Surf	20%
Beach Width and Quality	15%
Overcrowding	15%
Facilities and Services	15%
Availability of Substitutes	15%

- **Weather:** Points are assigned according to the number of warm sunny days. A perfect score of 100 would indicate that every day is warm and sunny. High winds are a negative factor. A score of 90-100 indicates almost perfect weather. Since virtually all southern California beaches have morning fog it is unlikely any California beach would score in the 90s. Some beaches where sunshine is predominate after 10 or 11 am (e.g., Huntington) should score in the 80s. Beaches with generally poor weather (e.g., Oxnard) would score below 50%.
- **Water Quality/Surf:** Some beaches in southern California (e.g., Huntington) are closed periodically due to poor water quality. A perfect score for water quality indicates that there are no water quality issues and no closures. Some beaches (e.g. Carpinteria) come close. Surf is a more difficult category since surfers and swimmers sometimes have diametrically opposed preferences.
- **Beach Width and Quality:** The ideal beach width is approximately 100-250 ft. (e.g. Huntington). Narrower beaches are scored lower in direct proportion to width. Few

⁵ The Economics of Regional Sediment Management in Ventura and Santa Barbara Counties: A Pilot Study, prepared for the California Department of Boating and Waterways, 2005, Forthcoming.

beaches in California are too wide but it is possible that a beach could be so wide that access is restricted. The quality of the beach depends on the quality of the sand—a fine white sandy beach is ideal and a beach with cobble is much less desirable. As a general rule, most recreational beaches we will be examining have good quality sand, though the proportion of cobble varies.

- **Overcrowding:** The USACE often follows a policy that 100 square feet of space is necessary per person. In practice this variable is difficult to measure without a precise study, however most people know overcrowding when they see or experience it. The value here also must be a composite of weekday and weekend values and, of course crowding depends on beach width and availability of parking. A score of 100 would indicate a beach where crowding is not an issue. (It does not mean no crowds and, of course, some beach visitors like crowds up to a point.) A low score is indicative of a beach where crowds significantly degrade the experience.
- **Other Recreational Amenities:** This category is primarily concerned with manmade recreational amenities. Restrooms, some snack facilities and other retail, and lifeguards services all generally add to the level of amenities. A beach with a score of 90-100 would have all the man-made amenities associated with a good quality beach (lifeguards, snack bars, close availability of retail and rental).
- **Availability of Substitutes:** A beach would score high (90 – 100) if there are few substitutes available nearby. If a beach has a particular set of attributes that are hard to find elsewhere, then it would score high as well. If substitutes are available but already crowded, one must also take this factor into account. As a practical matter, in southern California there are a wide array of beaches available nearby, but most are crowded on weekends. High quality beaches which are not particularly close to other similar quality beaches (Carpinteria, San Clemente) should score higher.

The various amenity values need to be combined to estimate a Beach Day Value. A standard functional form used by economists is the Cobb-Douglas function:

$$(4) \text{ Value of a Beach Day} = A_1^a * A_2^b * A_3^c * A_4^d * A_5^e * A_6^f$$

$$\text{where: } a + b + c + d + e + f = 1$$

In the equation above, each of the terms, A_i , represents the index (in percentages from 0 to 100) from Table 2 above. The superscripts a through f represent the relative weightings of each terms (see Table 2 for weightings).

3. Application of Day Use Value Methodology to Fletcher Cove/Las Brisas

Table 4 applies the amenity value methodology developed above to Fletcher Cove/Las Brisas before a seawall is constructed—under current conditions. The amenity point value rating is based on site visits in June 2005, previous site visits and interviews with City officials, the California Coastal Access guide, and several photos taken in 2005. Fletcher/Las Brisas scores well on weather (as do most beaches in the area) and water quality, but much lower on recreational amenities, availability of substitutes and lowest on beach width and quality, since

the beach is already quite narrow. Column tree below, "Weighted Amenity Value," is calculated by raising the amenity point value to the power of the weight. For example, for weather, the amenity point value, 0.85, is raised to the power of the weight: $0.85^{0.2}$, or 0.968. Economic theory posits that these weighted point values are multiplicative rather than additive. The final (multiplied) amenity value, 0.487, is multiplied by \$14 to obtain the estimate for the current day use value in High Season of \$6.81.

Table 4: Day Use value for Fletcher/Las Brisas before Seawall

Amenity	Amenity Point Value	Weight	Weighted Amenity Value
Weather	85%	20.00%	96.8%
Water Quality	75%	20.00%	94.4%
Beach Width and Quality	20%	15.00%	78.6%
Overcrowding	50%	15.00%	90.1%
Other Recreational Amenities	50%	15.00%	90.1%
Availability of Substitutes	30%	15.00%	83.5%
Total Index Value		100%	48.7%
Maximum Value per day	\$ 14.00		
Fletcher/Las Brisas Value	\$ 6.81		

4. Reduction in Day Use Value

Reducing the size of the beach will reduce the day use value in two ways. First, a narrower beach provides a less enjoyable beach experience.⁶ I used the results from this survey and others to calibrate the benefits transfer model presented in the previous section. As second way that reduced beach size decreases the value of a beach day is through increased crowding. Should crowding become sufficiently high, people will go to another beach, which also implies a loss, since the beach they go to is their second choice. However, the relatively small amount of increased crowding from this project is unlikely to induce people to leave, but it reduces recreational value for visitors. For this analysis, I am assuming visitation will be unaffected by the seawall, but recreational value per visitor will fall slightly.

Table 5 below presents my estimate of the area of the beach. I measured the beach at high and low tide on June 18 and 19, 2005 and used an average of beach width for high and low tide. From these measurements, the estimated total usable beach area currently is 5640 square feet—very small.

⁶ Overcrowding and the Demand for Beaches in Southern California, Dr. Philip G. King, April 2001.

Pages 8 through 10 of this report are still being finalized to produce the clearest explanation of the calculations that led to the generation of this \$309,000 figure. These pages will be distributed in an addendum.

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Dr. Philip King received his Ph.D. from Cornell in 1987 specializing in Applied Microeconomics. He has taught Economics at San Francisco State University since 1987 and is currently chair of the Economics Department. He has been an active consultant with the State of California's Resource Agency since 1995 and has been the Principal Investigator on over two dozen projects for public and private agencies and traveled throughout the State to conduct informational interviews and present his findings to State and local officials. His projects include: evaluating the economic and fiscal impacts of California's beach tourism; examining the economic impacts of each one of California's Ports and Harbors on local industry clusters, and examining the fiscal impacts of beach tourism at both the State and local level; and using demographic data from the State of California to forecast the effect of future beach tourism on local communities in Southern California. He has completed over a dozen surveys (telephone, mail, on-site) for the State analyzing quantitative and qualitative data from survey data, private, and public secondary sources and informational interviews.