CALIFORNIA COASTAL COMMISSION
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AMENDMENT REQUEST
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-98-9-A1

Applicant: Chris and Judith Hamilton Agent: Walt Crampton

Original Description: Filling a 40-foot wide, 7-foot high, maximum 14-foot deep seacave/undercut area at the base of the bluff below an existing single-family residence with a colored and textured erodible concrete mixture and riprap. This application is a follow-up to an emergency permit granted for the seacave/undercut area fill.

Proposed Amendment: Maintenance of a filled seacave/undercut area including removing the northern approximately 10 linear feet of the fill, and filling that portion of the seacave with carved and colored erodible concrete; trimming portions of the existing fill which extend beyond the bluff face.

Site: Bluff face below 407 Pacific Avenue, Solana Beach, San Diego County. APN 263-051-04.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; "Emergency Notch Infill Maintenance Request, 407 Pacific Avenue, Solana Beach, California, " dated April 30, 2003 by TerraCosta Consulting Group; "Geotechnical Review of Letter Report and Plans for Emergency Notch Infill Maintenance, 407 Pacific Avenue, Solana Beach" dated June 11, 2004 by GeoSoils, Inc.

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: Staff is recommending approval of the proposed seacave fill maintenance. The proposed maintenance is generally inline with the maintenance anticipated and required by the Commission in its original approval of the project. Maintaining the fill is a preventative measure in order to avoid or delay the construction of more substantial seawalls and/or upper bluff protection in the future, which have more significant impacts than filling seacaves. The project includes removing an existing block on concrete on the beach, which will improve visual and public access conditions at the site. The applicants have proposed a mitigation fee, which was not required with the original project approval, that will mitigate for impacts

associated with the proposed shoreline protection maintenance. As conditioned to require long-term monitoring of the fill and regular maintenance, the project will not have a significant adverse impact on shoreline processes, public access and recreation, or the visual quality of the shoreline.

Additionally, because the Special Conditions of approval of the original permit have not been satisfied, the regular coastal development permit (ref. CDP #6-98-009) has not been issued and the infill is unpermitted. Approval of this amendment, and following satisfaction of the prior-to-issuance conditions of the subject amendment, the conditions of the unissued coastal development permit will be effectively satisfied and the permit issued.

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: ***I move that the Commission approve the proposed amendment to Coastal Development Permit No. 6-98-9 pursuant to the staff recommendation.***

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the amendment 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 A PERMIT AMENDMENT:

The Commission hereby approves the coastal development permit amendment on the ground that the development as amended and subject to conditions, 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 amendment 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 amended development on the environment, or 2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the amended development on the environment.

II. Special Conditions.

The permit is subject to the following conditions:

The following conditions replace Special Conditions #1-8 of the original permit in their entirety:

1. Final Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT**, the applicant shall submit for review and written approval of the Executive Director, final seacave, irrigation and drainage plans in substantial conformance with the submitted plans dated July 31, 2003 by TerraCosta Consulting, Inc. Said plans shall first be approved by the City of Solana Beach and include the following:

a. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seacave fill. Said plans shall confirm, and be of sufficient detail to verify, that the seacave color and texture closely match the adjacent natural bluffs. The plan shall include a color board indicating the color of the fill material.

b. The notch/seacave repairs shall conform as closely as possible to the natural contours of the bluff, and shall not protrude beyond the existing "drip-line" (a vertical line extending down from the face of the bluff above the notch).

c. Any existing permanent irrigation system located within 150 ft. from the bluff edge on the blufftop property shall be removed or capped.

d. All runoff from impervious surfaces on the blufftop lot shall be collected and directed away from the bluff edge towards the street.

e. Existing accessory improvements (i.e., decks, patios, pool, walls, etc.) located within 40 feet of the edge of the bluff on the blufftop site shall be detailed and drawn to scale on the final approved site plan. All existing accessory improvements shall be located no closer than 5 feet landward of the natural bluff edge or approved reconstructed bluff edge. Any existing accessory improvements located within 5 feet landward of the reconstructed or natural bluff edge **shall be removed within 60 days of issuance of the coastal development permit.**

f. During construction of the approved development, disturbance to sand and intertidal areas shall be minimized to the maximum extent feasible. All excavated beach sand shall be redeposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for backfill or for any other purpose as construction material.

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.

2. Monitoring Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT**, the applicant shall submit to the Executive Director for review and written approval, a plan prepared by a licensed civil or

geotechnical engineer for a seacave/notch fill monitoring program which includes the following:

A. An annual evaluation of the condition and performance of the seacave/notch fill 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 erodible infills comparing the appearance of the structures to the surrounding native bluffs.

B. Current measurements of the distance between the blufftop structure and the bluff edge (as defined by Section 13577 of the California Code of Regulations), and provisions for these measures to be taken annually after completion of construction for the life of the project. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other means so that annual measurements can be taken at the same bluff location and comparisons between years can provide information on bluff retreat.

C. Provisions for measurements of any differential retreat between the natural bluff face and the seacave/notch area face, taken at both ends of the seacave/notch fills at 20-foot intervals (maximum) along the top of the seacave/notch fill face, and the bluff face intersection annually after completion of construction for the life of the project. Measurements may be taken through aerial photography. The program shall describe the method by which such measurements shall be taken.

D. Provisions for submittal of monitoring reports to the Executive Director on June 1 of each year for three years beginning after completion of construction. However, the information required below shall be measured and documented on a yearly basis for the life of the project. Each report shall be prepared by a licensed civil or 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, annual retreat or rate of retreat, and the stability of the overall bluff face, including the upper bluff area, and the impact of the notch/seacave fill on the bluffs to either side of the fill, and shall include suggestions that do not involve the construction of structures on the face of the bluff for correcting any problems. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. If the notch/seacave infill is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location, or to extend vertically above the natural bedrock shore platform by more than two (2) inches in any location, the report shall include alternatives and recommendations to remove or otherwise remedy this condition such that no seaward or vertical extension of the fill or tiebacks will remain.

E. Provisions for submission of a report containing the information identified in section D above at 3-year intervals following the last annual report, for the life of the project. However, reports shall be submitted in the spring of any year in which the following event occurs:

1. A 20-year storm event
2. An "El Niño" storm event
3. An earthquake of magnitude 5.5 or greater with an epicenter in San Diego County.

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

F. An agreement that the permittee shall apply for a coastal development permit within three months of submission of the report required in subsection D and E above (i.e., by September 1) for any necessary maintenance, repair, changes or modifications to the project recommended by the report that require a coastal development permit.

The permittee shall undertake monitoring 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.

3. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT**, the applicant shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of $11,722.20, 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 and beach area that will be lost due to the impacts of the proposed protective structures. All interest earned by the account shall be payable to the account for the purposes stated below.

The proposed in-lieu fee mitigation covers impacts only through the identified 20-year extended design life of the seacave/notch infills. 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 seacave/notch infills within its extended design life or requires mitigation for the effects of the seacave/notch infills on shoreline sand supply for the expected life of the infills beyond the extended 20 year design life. If within the proposed design life of the infills, the permittees or their successor in interest obtains a coastal development permit or an amendment to this permit to enlarge or reconstruct the infill or perform repair work that extends the expected life of the structures, the permittee shall provide mitigation for the effects of the structures on shoreline sand supply for the expected life of the structures beyond the extended 20 years of infill design life.

If the erodible concrete erodes at a faster rate than the surrounding bluffs such that additional fill is necessary following subsequent approval(s) by the Coastal Commission, the permittee shall submit new calculations for in-lieu sand mitigation for the effects of the new encroachment of seacave or notch infill, and additional fees may be required as part of approval of additional fill.

The account shall be used to fund beach sand replenishment efforts by 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 that 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 may appoint an alternative entity to administer the fund.

4. Storage and Staging Areas/Access Corridors. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT**, 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 be approved by the City of Solana Beach and indicate that:

a. No overnight storage of equipment or materials shall occur on sandy beach or 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 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.

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. State Lands Commission Approval. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT**, the applicant 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.

6. Deed Restriction. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit a deed restriction, 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 covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit. 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.

7. Condition Compliance. **WITHIN 90 DAYS OF COMMISSION ACTION ON THIS CDP APPLICATION**, or within such additional time as the Executive Director may grant for good cause, the applicant shall satisfy all requirements specified in the conditions hereto that the applicant is required to satisfy prior to issuance of this permit. Failure to comply with this requirement may result in the institution of enforcement action under the provisions of Chapter 9 of the Coastal Act.

8. Other Permits. **PRIOR TO COMMENCEMENT OF DEVELOPMENT**, 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 #6-98-009-A1. 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. As-Built Plans. **Within 60 days following completion of the project**, the permittee shall submit as-built plans of the approved infill and seacave fill which include measurements of the distance between the condominium structures and accessory improvements and the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at 12 or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method to allow annual measurements to be taken at the same bluff location and to allow accurate measurement of bluff retreat.

In addition, **within 60 days following completion of the project**, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seacave fill and maintenance have been constructed in conformance with the approved plans for the project.

10. Future Response to Erosion. If in the future the permittee seeks a coastal development permit to construct additional bluff or shoreline protective devices, the permittee shall 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 principal structure that is 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 public bluff face above the approved seacave/notch fill or on the beach in front of the proposed seacave/notch fill 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, pools, fences, landscaping, etc.) located between the principal residential structures and the ocean.

11. Future Maintenance/Debris Removal. Within 15 days of completion of construction of the protective devices, the permittee shall remove all debris deposited on the bluff, beach or in the water as a result of construction of shoreline protective devices. The permittee shall also be responsible for the removal of debris resulting from failure or damage of the shoreline protective devices in the future. In addition, the permittee shall maintain the permitted seacave/notch fill in its approved state. Maintenance of the seacave/notch fill shall include maintaining the color, texture and integrity. Any change in the design of the project or future additions/reinforcement of the seacave/notch fill 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 or an amendment to this 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 necessary, and, if necessary, shall subsequently apply for a coastal development permit or permit amendment for the necessary maintenance.**

12. Public Rights. By acceptance of this permit, each applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit and construction of the permitted development shall not constitute a waiver of any public rights which may exist on the property.

13. 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.

III. Findings and Declarations.

The Commission finds and declares as follows:

1. Project History/Amendment Description. The original permit was for filling a 40-foot wide, 7-foot high, maximum 14-foot deep seacave/undercut area with both riprap and pneumatically placed concrete. The cave is located at the base of an approximately 80 foot high coastal bluff below a lot which contains an existing single-family residence. The house was constructed in 1973. The original permit application was a follow-up to an emergency permit granted on February 6, 1998 to fill the seacave/undercut area (#6-98-9-G). The permit was approved with special conditions requiring, among other things, the submittal of a monitoring report, maintenance of the fill, and the approval from the State Lands Commission and other permitting agencies. However, none of the special conditions were satisfied, and as such, the infill is currently unpermitted development.

The applicant is proposing to amend the original permit to perform maintenance on the northern portion of the existing seacave fill. A new seacave, approximately 10 feet wide, 15 feet high and 10 feet deep has developed behind the northern portion of the existing infill. The maintenance would consist of removing the isolated 10-foot-long portion of the concrete infill that currently extends beyond the seacave entrance, and fill the existing

seacave with erodible concrete sculpted and colored to blend in with the surrounding natural bluffs. In addition, any remaining portion of the existing infill extending seaward of the face of the natural bluff would be trimmed back behind the drip line and recontoured to blend into the adjacent natural bluff face.

The applicant is also proposing to pay a $11,720 mitigation fee to mitigate impacts of the project on shoreline sand supply.

The site is located west of Pacific Avenue, south of Cliff Street, in the City of Solana Beach. The City of Solana Beach owns the bluff face and beach below the residence. The City has approved the project.

The City of Solana Beach does not yet have a certified LCP, and the project site is located in an area of the Commission's original jurisdiction. Therefore, Chapter 3 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:
>
> (l) 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 maintenance of an existing seacave infill by removing a 10-foot-long portion of freestanding concrete fill that currently extends in front of the bluff face onto the beach and a newly developed seacave. In addition, the existing seacave behind the infill would be filled with erodible concrete sculpted and colored to blend in with the surrounding natural bluffs. Any remaining portion of the existing infill extending seaward of the face of the natural bluff will be trimmed back behind the drip line and recontoured and colored to blend into the adjacent natural bluff face.

Geotechnical Background

The bluffs along the Solana Beach shoreline have been subject to substantial erosion particularly over the past 20 years because of the loss of sand along the shoreline, the resulting wave action against the bluffs and the exposure of a layer of clean sands within the bluff. As an indicator of how fragile the bluffs are near the subject site, in March 2005, the Commission approved construction of a 35-foot-high, 138-foot-long seawall and upper bluff construction below the two lots immediately adjacent to the subject site to the south (#6-04-83/Cumming & Johnson). One hundred feet further south, the Commission approved in March 2003, a 35-foot-high, 50-foot-long seawall and upper bluff retention system (6-02-84/Scism). In those cases, the applicants presented evidence documenting the structures at the top of the bluff were imminently threatened by erosion. Approximately 200 feet north of the subject site, in May 2003, the Commission approved repairs and maintenance of an existing seacave/notch infill near Tide Beach Park (#6-02-85/City of Solana Beach). In addition, Commission staff has observed an upper bluff sloughage approximately 100 feet north of the subject site, although no permit applications relating to this sloughage have been received.

The above-cited permits are only a small sample of the permits approved for shoreline protection in Solana Beach just since the original subject permit was approved. 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 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.

However, recent block failures along the Solana Beach shoreline have also resulted in the exposure of a clean sands layer that has changed the dynamics of bluff failures in Solana Beach. According to the Commission's staff geologist, the clean sand layer consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, both of which cause 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 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, a section of the bluff collapsed suddenly and without warning, leaving a vertical escarpment of 25 feet in height at the top of the bluff. This is also the type of failure that occurred at least twice over the last two years on the Surfsong Condominium site. In addition, the presence of this clean sand layer within the bluffs along the entire extent of 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. 6-99-100/Colton, et. al; 6-99-103/ Coastal Preservation Association; CDP 6-00-9/Del Mar Beach Club; 6-00-36/Scism; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina; 6-02-84/Scism and; 6-03-33/Surfsong, and others).

Site-Specific Data

The original notch fill project was approved by the Commission with geotechnical information indicating that although the bluffs along this section of shoreline were expected to continue to retreat and additional bluff failures in the area were possible, there was no evidence that the home on the blufftop was itself in jeopardy. The residence was set back a minimum of approximately 23 feet from the bluff edge. Thus, in that particular case, Section 30235 of the Coastal Act did not require that the Commission approve a shoreline-altering device. Nevertheless, although the residence was not in jeopardy at that time, the Commission determined that failure to fill the seacave/undercut areas would perpetuate the risk of future bluff failures that could threaten the existing structure, resulting in requests for construction of far more massive upper and lower bluff protection than the proposed project. The Commission concluded that the original fill would not have a significant adverse impacts on shoreline processes, public access and recreation, or the visual quality of the shoreline.

As characterized by the geotechnical reports submitted by the applicant, the project is the minimum amount of work necessary to maintain a portion of the infill previously authorized by the Commission in order to prevent lower bluff failures that would lead to progressive upper bluff failures threatening the structures at the top of the bluff and requiring the construction of more extensive and costly bluff stabilization such as seawalls and mid- and upper bluff retention devices. The reports state that not only does the fill no longer protect the bluff, it channels incoming wave energy into the seacave, thereby accelerating its growth. The proposed project has not been characterized as required to protect the existing bluff-top structure at this time. Based on the plans

submitted by the applicant, the existing home is not significantly closer to the bluff edge than it was at the time the original permit was approved (that is, 23 feet). The reports also document that beach users have been entering the seacave and that it could be characterized as an attractive nuisance.

As part of the local approval process at the City of Solana Beach, the geotechnical reports were reviewed by a third party engineer and geologist, who agreed with the conclusion of the applicant that the proposed maintenance is necessary and the minimum work required to insure the proper performance of infill. The reviewer agreed that the work needs to be performed immediately not only to mitigate future bluff failures but also to prevent loss of life due to the "attractive nuisance" character of the large cave currently forming behind the infill. The Commission's engineer has also reviewed the proposed project, and concluded that the work is a reasonable and needed response to the conditions that have developed.

In its approval of the original project, the Commission required monitoring and maintenance of the infill, including a requirement that "if the seacave/undercut area plug is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location, the [monitoring] report shall include alternatives and recommendations to remove or otherwise remedy this condition such that no seaward extension of the plug will remain." Although perhaps more extensive than what would have been required had regular yearly maintenance been performed at the site, the proposed project is in line with the type of maintenance anticipated in the original project approval.

The applicant has not presented alternatives to the proposed work other than to indicate that not proposing these measures could result in the need for far more extensive shoreline protection in the near future in the form of large seawalls and/or upper bluff structures. As noted, preventing the collapse of the lower bluff and the construction of far more significant shoreline structures was the intent of the infill approved by the Commission in 1998, and the proposed project is also intended to fulfill that goal. As described above, in Solana Beach, most of the recent approved seawall structures have been up to 35 ft. in height and extend out approximately 2 ½ ft. onto the public beach (ref. 6-99-100/Colton, et. al; 6-00-36/Scism; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina; 6-02-84/Scism and; 6-03-33/Surfsong). The reason for this height is to contain the clean sands layer that extends up to around 35 ft. MSL. Based on review of the above cited projects, once exposed, the only way to contain the clean sands layer is to construct a seawall or similar device. It is reasonable to assume similar large-scale protection could eventually be required at the subject site if interim measures are not taken.

As described above, the proposed maintenance is necessary in order to maintain the Commission approved infills. Based on the information submitted and reviewed by Commission staff, the proposed work represents the least environmentally damaging alternative. However, Coastal Act policies also require that 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.

Sand Supply/In Lieu Mitigation Fee

Although maintenance of the infill and filling the seacave will maintain the structures previously approved by the Commission to reduce the potential for more massive shoreline structures need to protect existing principal structures at the top of the bluff, Section 30235 of the Coastal Act and the public access and recreation policies of the Act require that the shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Since the existing infill has not been well maintained, without the proposed repairs its usefulness would expire, the bluffs would be subject to failure, and that could lead to a direct threat to the existing blufftop development. The applicant's geotechnical consultant has indicated that with the proposed maintenance and the new fill, the seacave and existing notch infills are expected to have an extended useful life expectancy of approximately 20 years. Therefore, the continued adverse impacts on local sand supply and other coastal resources are estimated to be approximately 20 years. To address these concerns, the applicant is proposing to deposit $11,722.20 as an in-lieu fee to be used in the future to purchase sand for placement along the regional shoreline as mitigation for the adverse impacts on shoreline sand supply associated with the proposed development.

There are a number of adverse impacts to public resources associated with the construction of shoreline protection on the public beach. The natural shoreline processes referenced in Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by construction shoreline protective devices, 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 shoreline protective structure 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 that 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.

Filling seacaves or notches have some, but not all, of the same impacts as seawalls. Like a seawall, seacaves and notch fills encroach onto the beach when they are constructed. The purpose of the proposed erodible fill is to prevent the collapse of the notch, cave or undercut. Thus the beach area upon which these fills are places would soon be exposed,

usable beach area were it not for the placement of the fill. Thus, the encroachment of the fills, measured from the back of the notch or undercut, to the seaward edge of the fill, is a quantifiable adverse impact that will result from these shore protection devices.

As noted above, the erodible material used in seacaves and notch fills should prevent the catastrophic collapse of the bluff, but will allow the gradual addition of bluff material to the littoral cell as the erodible material retreats landward. The sandy material of the bluff above the erodible fills will contribute to the beach material but at a different pace than it would if the site were left unprotected and the bluffs allowed to erode and/or collapse naturally. Similarly, although seacave fill does not permanently fix the back beach location, by reducing the risk of bluff collapse, it slows the landward movement of the back beach location from what would happen without the erodible fill. Seacave plugs or notch fills tend to be smaller in height and width and thus less visually obtrusive than seawalls; however, they do encroach onto the beach, alter the timing and extent of the natural landform change of the bluffs, and, if not carefully constructed and monitored, can be very conspicuous.

Unlike a seawall, however, seacave/notch fills are generally set into the bluff face and, if well maintained, do not protrude beyond the face of the bluff. Because such structures are set within the bluff, the accelerated erosion from increased wave reflection and "edge effects" to adjacent properties associated with seawalls are reduced or avoided. Further, seacave/notch fills do not prevent the erosion of bluff face material onto the beach via subaerial erosion since they do not cover any portion of the upper bluff as a seawall or upper bluff work would. However, the fill will result in the loss of the sand area where the erodible concrete fill will be located. In the past, seacaves were typically filled with a concrete material that did permanently fix the back of beach, similar to a seawall such as the case for the existing seacave/notch infill.

Loss of beach material and loss of beach area are two separate concerns. A beach is the result of both sandy material and a physical 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, published reports document that 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. Unfortunately there is not a source of extra beach land that can be used to add new land area to the littoral cell and therefore it is not possible to directly mitigate for the loss of coastal land when shoreline protective devices are required to protect existing development. In this particular case, dedication of an isolated portion of the applicant's blufftop property would not mitigate for potential impacts to public access and recreation associated with the loss of beach land because the blufftop property is not accessible to the public in the same manner as the beach. Instead, beach nourishment is

an indirect method to mitigate the loss of coastal land in that it allows us to shift the shore profile seaward and create a new area of dry beach. This will not create new coastal land, but will provide many of the same benefits that will be lost when the beach area is covered by a seawall or "lost" through passive erosion when the back bluff location is fixed.

The following is the methodology used by the Commission in developing the in-lieu fee amount. The methodology uses site-specific information provided by the applicant as well as estimates, derived from region-specific criteria, of both the loss of beach material and beach area which could occur over the life the structure, and of the cost to purchase an equivalent amount of beach quality material and to deliver this material to beaches in the project vicinity.

In earlier Commission actions that required payment of an in-lieu fee to mitigate the loss of sand resulting from shoreline devices, the long-term estimated rate of erosion along the Solana Beach shoreline had been estimated to be approximately 0.2 ft./yr. As previously described, the best current estimate for the average long-term bluff retreat for Solana Beach is from a FEMA-funded study reported on in Benumof and Griggs (1999) which estimates the rate to be 0.27 ft./yr.

The following is a description of the methodology. The actual calculations which utilize values that are applicable to the subject sites, and were used by the applicant as the basis for calculating the estimated range of the mitigation fee, are attached as Exhibit #8 to this report.

Fee = (Volume of sand for mitigation) x (unit cost to buy and deliver sand)

$\mathbf{M = V_t \times C}$

where

M = Mitigation Fee

$\mathbf{V_t}$ = Total volume of sand required to replace losses due to the structure, through reduction in material from the bluff, reduction in nearshore area and loss of available beach area (cubic yards). Derived from calculations provided below.

C = Cost, per cubic yard of sand, of purchasing and transporting beach quality material to the project vicinity ($ per cubic yard). Derived from the average of three written estimates from sand supply companies within the project vicinity that would be capable of transporting beach quality material to the subject beach, and placing it on the beach or in the near shore area.

$$V_t = V_b + V_w + V_e$$

where

V_b = Volume of beach material that would have been supplied to the beach if natural erosion continued, based on the long-term regional bluff retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards). This is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure.

V_w = Volume of sand necessary to replace the beach area that would have been created by the natural landward migration of the beach profile without the seawall, based on the long-term regional bluff retreat rate, and beach and nearshore profiles (cubic yards)

V_e = Volume of sand necessary to replace the area of beach lost due to encroachment by the seawall; based on the seawall design and beach and nearshore profiles (cubic yards)

$$V_b = (S \times W \times L/27) \times [(R\ h_s) + (h_u/2 \times (R + (R_{cu} - R_{cs})))]$$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated to be 0.27 ft/year. The use of any alternative retreat rates must be documented by the applicant.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

W = Width of property to be armored (ft.)

h = Total height of armored bluff (ft.)

S = Fraction of beach quality material in the bluff material, based on analysis of bluff material to be provided by the applicant

h_S = Height of the seawall from the base to the top (ft)

h_u = Height of the unprotected upper bluff, from the top of the seawall to the crest of the bluff (ft)

R_{cu} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming no seawall were installed (ft/yr). This value can be assumed to be the same as R unless the applicant provides site-specific geotechnical information supporting a different value.

R_{cs} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (ft/yr). This value will be assumed to be zero unless the applicant provides site-specific geotechnical information supporting a different value.

NOTE: For conditions where the upper bluff retreat will closely follow the lower bluff, this volume will approach a volume of material equal to the height of the total bluff, the width of the property and a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed. For conditions where the upper bluff has retreated significantly and would not be expected to retreat further during the time that the seawall is in place, this volume would approach the volume of material immediately behind the seawall, with a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed.

$$V_W = R \times L \times v \times W$$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated to be 0.27 ft/year. The use of any alternative retreat rates must be documented by the applicant.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and

extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall; based on the vertical distance from the top of the beach berm to the seaward limit of reversible sediment movement (cubic yards/ft of width and ft. of retreat). The value of v is often taken to be 1 cubic yard per square foot of beach. In the report, Oceanside Littoral Cell Preliminary Sediment Budget Report" (December 1987, part of the Coast of California Storm and Tide Wave Study, Document #87-4), a value for v of 0.9 cubic yards/square foot was suggested. If a vertical distance of 40 feet were used for the range of reversible sediment movement, v would have a value of 1.5 cubic yards/square foot (40 feet x 1 foot x 1 foot / 27 cubic feet per cubic yard). These different approaches yield a range of values for v from 0.9 to 1.5 cubic yards per square foot. The value for v would be valid for a region, and would not vary from one property to the adjoining one. Until further technical information is available for a more exact value of v, any value within the range of 0.9 to 1.5 cubic yards per square foot could be used by the applicant without additional documentation. Values below or above this range would require additional technical support.

W = Width of property to be armored (ft.)

$$V_e = E \times W \times v$$

where

E = Encroachment by seawall, measured from the toe of the bluff or back beach (ft.)

W = Width of property to be armored (ft.)

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, as described above;

The San Diego Association of Governments (SANDAG) has adopted the Shoreline Preservation Strategy for the San Diego region and is currently working on techniques toward its implementation. The Strategy considers a full range of shoreline management tactics, but emphasizes beach replenishment to preserve and enhance the environmental quality, recreational capacity, and property protection benefits of the region's shoreline. Funding from a variety of sources will be required to implement the beach replenishment and maintenance programs identified in the SANDAG Strategy. In this particular case, SANDAG has agreed to administer a program which would identify projects which may be appropriate for support from the beach sand replenishment fund, through input from the Shoreline Erosion Committee which is made up of representatives from all the coastal jurisdictions in San Diego County. The Shoreline Erosion Committee is currently monitoring several large-scale projects, both in and out of the coastal zone, they term "opportunistic sand projects", that will generate large quantities of beach quality material suitable for replenishing the region's beaches. The purpose of the account is to aid in the restoration of the beaches within San Diego County. One means to do this would be to provide funds necessary to get such "opportunistic" sources of sand to the shoreline.

The applicant has proposed 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 seacave fill 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 shoreline protective devices. 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 seacave/notch fills.

Mitigation for impacts to sand supply are based partially on the estimated 20-year design life of the seacave fills, therefore, the proposed in-lieu fee sand replenishment plan only mitigates for the extended design life of the structure. The seacave infill, however, might outlast its design life. To address the impacts of the structures on shoreline sand supply that will occur if the fill lasts for more than its design life, Special Condition #3 requires that the applicant or successor in interest apply for an amendment to the subject permit within 21 years of issuance in order to either remove the proposed seacave fill or to provide additional mitigation for the additional years of design life that occurs to the infills. If the applicant or successor in interest enlarges, reconstructs, or performs repairs that extend the design life of the structures, the applicant or successor in interest will at

that time be required to provide mitigation for the additional impacts to shoreline sand supply.

It also has been argued that the impacts of the seacave infill on shoreline sand supply, public access, and recreation must be reduced to insignificance. In this particular case, the project as approved did not originally include a mitigation fee, so as amended, additional mitigation will be provided. By requiring sand mitigation fees that will fund beach sand replenishment, the Commission is minimizing the adverse effects of the seacave repairs on public access and recreation to the greatest extent feasible. In addition, the project includes removal of an existing isolated portion of the concrete that is currently impeding beach access, and as such, will improve existing public access at the site.

If the fill were damaged in the future (e.g. as a result of wave action, storms, etc.) it could threaten the stability of the site and adjacent properties which could lead to need for more bluff alteration. In addition, damage to the fill could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. Excessive wear of the seacave/notch fill could result in the loss of or change to the color or texture of the fill resulting in adverse visual impacts (discussed in more detail in a subsequent section of this report). Therefore, in order to find the proposed shore and bluff protection consistent with the Coastal Act, the Commission finds that the condition of the structures must be maintained in their approved state for the life of the structures. 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 proposed structures annually, for three years and then 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 shoreline structures and can determine whether repairs or other actions are necessary to maintain the structures in their approved state before damage occurs resulting in the need for potentially more substantial structures. Therefore, Special Condition #2 requires the applicant to develop a monitoring program for the infill and submit a monitoring report which evaluates the condition and performance of the seacave/notches and overall site stability. This condition requires the applicant to 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 #1 requires the applicant to submit final plans for the project indicating that the seacave/notch repairs conform to the bluff contours and that demonstrate that any existing irrigation systems on the blufftop have been removed, as these would impact the ability of the shoreline protection devices 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 #10 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 additional upper bluff stabilization, will require an alternative analysis. If there are feasible alternatives to shoreline or bluff 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) can 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 (such as decks, patios, etc.). Through this condition, the property owner is required to acknowledge the risks inherent in the subject property and acknowledge 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 #11 notifies the applicant of the responsibility to maintain the repaired shoreline protective devices in their approved state. The condition also indicates that, should it be determined that additional maintenance of the repaired structures is 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 repairs and upper bluff retaining wall have been constructed properly, Special Condition #9 has been proposed. This condition requires that, within 60 days of completion of the project, certification by a registered civil engineer be submitted that verifies the proposed shoreline devices have been constructed in accordance with the approved plans.

Special Condition #5 requires the applicant to submit copies of all other required local, state or federal discretionary permits involving the subject development to ensure that no additional requirements are placed on the applicant that could require an amendment to this permit.

Due to the inherent risk of shoreline development, Special Condition #13 requires the applicant to waive liability and indemnify the Commission against damages that might result from the proposed repairs and new upper bluff wall. The risks of the proposed development include that the repaired shoreline devices will not protect against damage to the structures at the top of the bluff from bluff failure and erosion. In addition, the proposed 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 seacave/notch infills. Although the Commission has sought to minimize these risks, and has concluded that the risks are sufficiently low that approval of the project is not inconsistent with Section 30253, the risks cannot be eliminated entirely. Given that the applicant has chosen to construct the proposed

shoreline devices despite these risks, the applicant must assume the risks. Special Condition #6 requires the applicant to record the permit conditions to reflect the obligations of the subject permit.

In summary, the applicant has documented that the previously approved shoreline protective devices are in need of maintenance. The proposed maintenance is substantially in line with the intent of the maintenance anticipated under the original permit. The Commission's staff coastal engineer has reviewed the applicant's geotechnical assessment and concurs with its conclusions. As conditioned, the project won't have any significant adverse impact on shoreline processes or site stability, and there are no other feasible less damaging alternatives available to address the needed repairs, which will allow the fill to avoid the need for larger, more intrusive structures in the future. In addition, mitigation for impacts on shoreline sand supply resulting from the project has been provided. Therefore, as conditioned, the Commission finds that the proposed maintenance and seacave fill is consistent with Sections 30235 and 30253 of the Coastal Act.

3. Visual Resources. Section 30251 of the 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 at the base of a coastal bluff on the public beach. The lower bluffs at the subject site have previously been filled with concrete, while the upper bluffs generally appear in their natural state. During some parts of year the base of the bluff at this location is covered by sand and much of the existing infill is not visible. The applicant is proposing to remove the portion of the concrete extending out onto the beach, and filling the seacave with a colored and textured erodible concrete. It is likely that the seacave would not be as large if the property owner had maintained the structures in the approved state over the last 7 years. However, at this point, removing the concrete on the beach will improve the visual quality of the area, and to mitigate the visual impacts of the proposed repairs to the seacave/notch fills, the applicant proposes to color and texture the infill material to closely match the natural surrounding bluffs. In addition, the applicant is proposing to remove any portion of the existing infill that extends out from the drip line of the existing bluff. The visual treatment proposed is similar to the visual treatment approved by the Commission in recent Commission action for other seawalls and seacave infills in Solana Beach (Ref. CDP Nos. 6-99-100/Presnell, et. al, 6-00-66/Monroe, Pierce, 6-00-138/Kinzel, Greenberg, 6-02-2/Gregg, Santina, 6-02-84/Scism and 6-03-33/Surfsong). The proposed project will not substantially change the appearance of this section of shoreline.

To address potential adverse visual impacts, Special Conditions Nos. 2 and 11 have been attached, which require the applicant to monitor and maintain the proposed seacave/notch infills in their approved state. If during monitoring it is determined that the color or texture of the materials no longer matches the surrounding natural bluff or if portions of the erodible concrete infill or seacave infills extend out from the face of the bluff, the applicant is required to apply for a coastal development permit or amendment to repair and maintain the protective devices in their approve state and remove any portion of the infill that lies on the public beach. Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seacave/notch infill. In this way, the Commission can be assured that the proposed seacave fill and notch maintenance will blend with the natural bluffs in the area to the maximum extent feasible.

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 Section 30251 of the Coastal Act.

4. Public Access/Recreation. Pursuant to Section 30604 (c), the Coastal Act emphasizes the need to protect public recreational opportunities and to provide public access to and along the coast. Section 30210 of the Coastal Act is applicable to the proposed development and states:

> 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.

In addition, Section 30212 of the Act is applicable and states, in part:

> (a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:
>
> (l) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,
>
> (2) adequate access exists nearby....

Section 30220 of the Coastal Act provides:

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

In addition, Section 30604(c) requires that a specific access finding be made for all development located between the sea and first coastal roadway. In this case, such a finding can be made.

The project site is located on a public beach utilized by local residents and visitors for a variety of recreational activities. The City of Solana Beach owns the bluff face and beach on the subject site. There is an existing public beach stairway approximately one block north of the subject site at Tide Park Beach. The proposed seacave/undercut area filling will not impact this accessway. However, because the proposed seacave maintenance will occur on structures located on sandy beach area, the project could result in several adverse impacts on public access.

The subject project is located on the beach and on the bluff formation directly adjacent to the public beach. Although public lateral access is available along the entire stretch of coastline in this area, mostly at low tides, vertical access is available only at a limited number of public accessways. Because of the nature of the topography of the area, with steep, fragile coastal bluffs between the first public roadway and the coastline, and the existing, highly developed pattern of development, the provision of additional vertical public access is not practical at this time.

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 onto the sandy beach, reduces the 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 low tides.

In addition to the above-described direct interference with public access by the proposed seawall, there are a number of indirect effects as well resulting from the seawall and seacave/notch infills. Shoreline processes, and sand supply and beach erosion rates are affected by shoreline structures as described in Section 3 of this report, and thus alter public access and recreational opportunities.

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 #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 development proposed in this application involves repairs to an existing notch fill and filling a new seacave. Although the seacave fill will adhere closely to the contour of the natural bluff, the proposed repairs will extend the life of the fill for an estimated 20 years. The proposed structures on the beach will have adverse impacts on the natural shoreline processes. However, the proposed seacave/notch fill has been designed to erode with the natural bluffs, and thus will not permanently fix the back of the beach. As designed, the fill will not extend beyond the face of the bluff onto sandy beach currently usable by the public. However, in this case as in others the Commission has seen with approved "erodible" fills, the fill material does not always perform as designed such that without maintenance some seacave/notch fills may eventually lie on the public beach (Ref. CPD No. 6-02-85/City of Solana Beach) and inhibit public access. Therefore, Special Condition #2 requires that applicant monitor the site over the lifetime of the project to assure that the fill material does not extend beyond the face of the bluff more than 6 inches. In addition, Special Condition #2 requires the applicant to apply for a Coastal Development Permit or Permit Amendment in a timely manner to remove those portions of the fill material that extends out from the face of the bluff onto the public beach. As condition, public access can be protected to the maximum extent feasible.

In order to mitigate the public access impacts of shoreline protection, the Commission has in the past required an offer of dedication of lateral public access in order to balance the burden placed on the public with a public benefit. In this particular case, the beach is in public ownership and will remain as such. Therefore, a dedication of lateral public access is not an available mitigation option. However, the applicant has proposed to provide mitigation for adverse impacts on beach and sand area resulting from the project, which will also serve to mitigate the impact of the loss of beach access caused by the fill. The mitigation will be an in-lieu fee which will be utilized for beach replenishment projects within San Diego County.

Much of the beach is accessible in this area only at lower tides, and thus, the protection of a few feet of beach along the toe of the bluff is still important. This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition #12 acknowledges that the issuance of this permit does not waive the public rights that exist on the property. The proposed project may be located on State Lands property, and as such, Special Condition #5 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. The applicant has submitted a preliminary construction staging and material storage plan for the subject development indicating that beach access to the site will occur via Fletcher Cove which is located approximately ½ mile south of the subject site. In other developments for shoreline protection along this stretch of Solana Beach shoreline, the Commission has authorized the temporary placement of steel-tracked construction equipment (which cannot traverse asphalt streets) upland of the Fletcher Cove access ramp, in an area which is not currently used for parking. In addition, the Commission has previously authorized the use of parking spaces in an existing City-owned parking lot

across the street from Fletcher Cove known as the "Distillery Lot" (for its previous use) for staging and storage of equipment during construction. This free, City-owned parking area is within easy walking distance of Fletcher Cove and is currently available to any beach users or patrons of the several small commercial facilities surrounding the lot. However, it is also the only off-street, open area in the vicinity of Fletcher Cove which can accommodate the type of equipment and vehicles required to construct the proposed project, other than Fletcher Cove itself. In addition, the City of Solana Beach has in the past indicated that the lot is used only minimally, and thus has an excess capacity which can be allocated to staging and storage for the project, with only a minimal impact to beach uses.

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 sandy beach during weekends and holidays between Memorial Day to Labor Day of any year.

With Special Conditions assuring maximum public access, addressing sand supply and authorization from the State Lands Commission, impacts to the public will be minimized. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

5. Unpermitted Development. Development has occurred on site without the required coastal development permits and in non-compliance with the terms and conditions of previously issued coastal permits. Because the Special Conditions of approval have not been satisfied, the regular coastal development permit (ref. CDP #6-98-009) has not been issued and the infill is unpermitted. Following satisfaction of the prior-to-issuance conditions of the subject amendment, the conditions of the unissued coastal development permit will be effectively satisfied and the permit issued. To ensure that the unpermitted development component of this application is resolved in a timely manner, Special Condition #8 requires that the applicant satisfy all conditions of this permit which are prerequisite to the issuance of this permit within 90 days of Commission action.

Although development has taken place prior to the submission of this permit application, consideration of the application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Approval of this permit does not constitute a waiver of any legal action with regard to any alleged violations nor does it constitute an admission as to the legality of any development undertaken on the subject site without a coastal development permit.

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 region-wide solution to the shoreline erosion problem be generated 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, the work involves repair to structures already authorized by the Commission. 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 and repairs to the existing structures are necessary to assure they remain in their previously approved state, 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 maintenance 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 geologic stability, visual quality, and public access policies of the Coastal Act. Mitigation measures, including conditions addressing payment of an in-lieu fee for impacts to sand supply, construction techniques consistent with the geotechnical report, the color of construction materials and timing of construction 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.

(G:\San Diego\Reports\Amendments\1990s\6-98-009-A1 Hamilton sftrpt.doc)

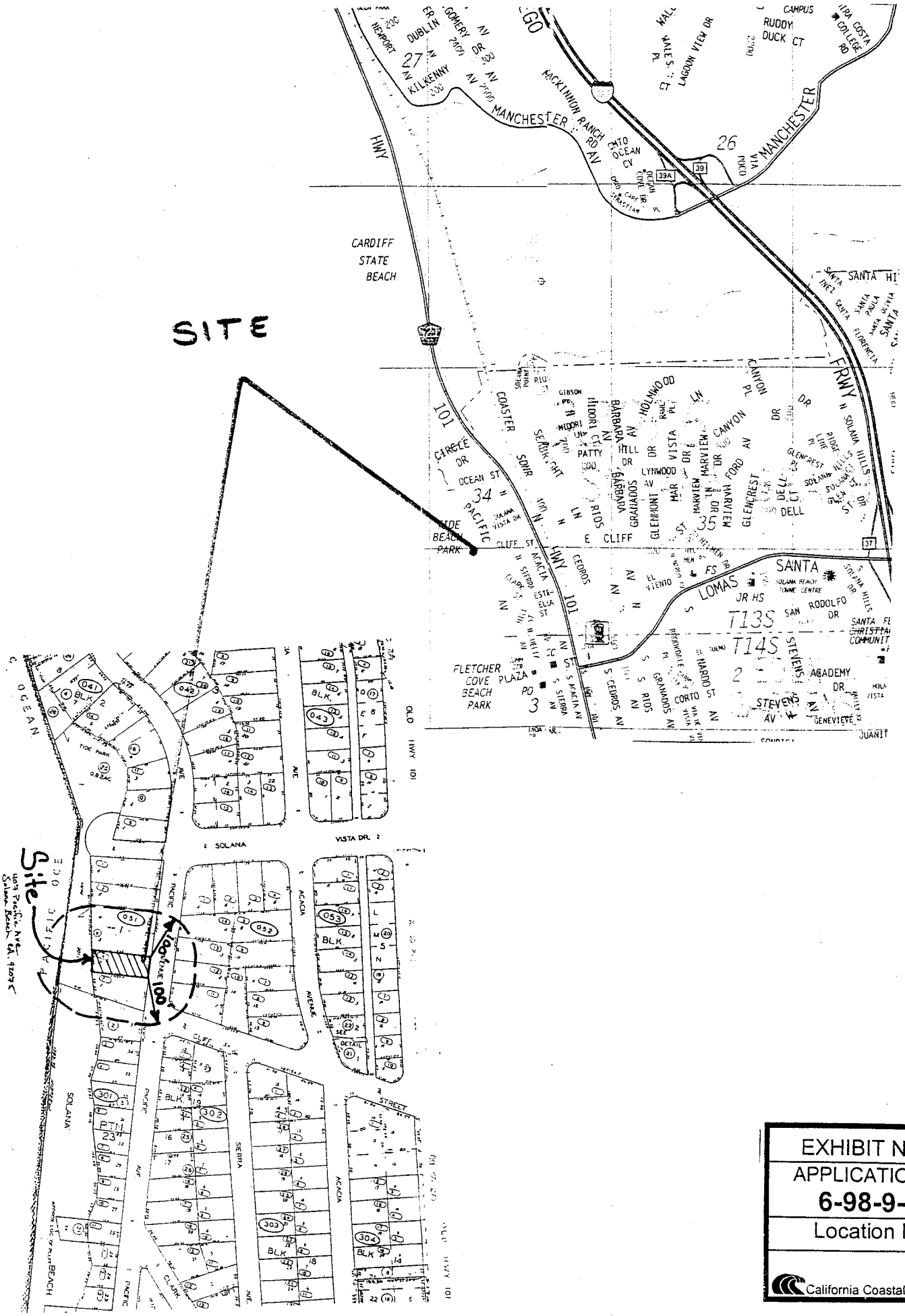
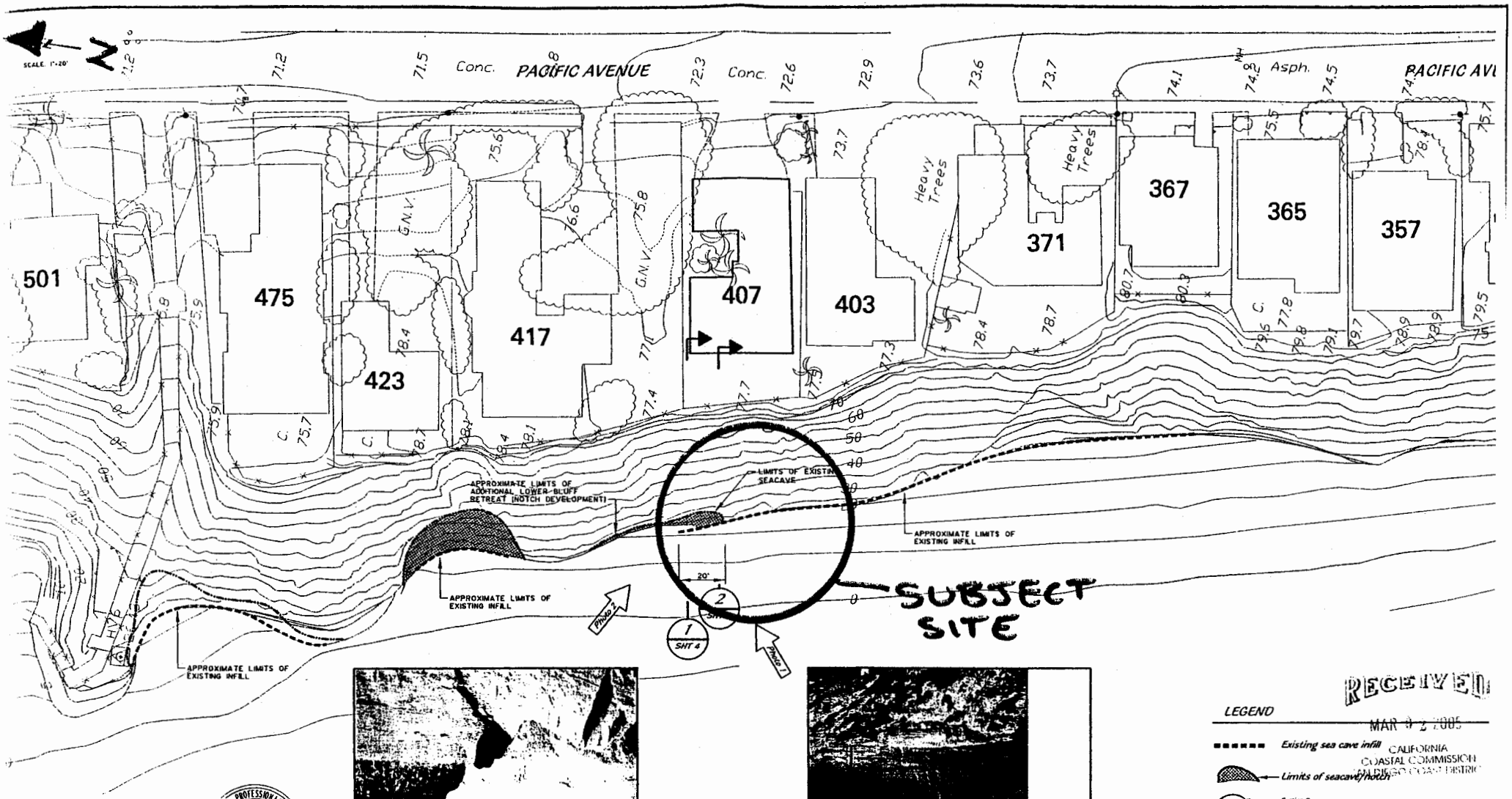


EXHIBIT NO. 1
APPLICATION NO.
6-98-9-A1
Location Map
California Coastal Commission



PROFILE DETAIL - PHOTO 2
NO SCALE

PROFILE - PHOTO 1
NO SCALE

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SAN DIEGO COAST DISTRICT

LEGEND

- Existing sea cave infill
- Limits of seacave/notch
- 1 / SHT 4 — Section # / Location of cross section, Fig. #

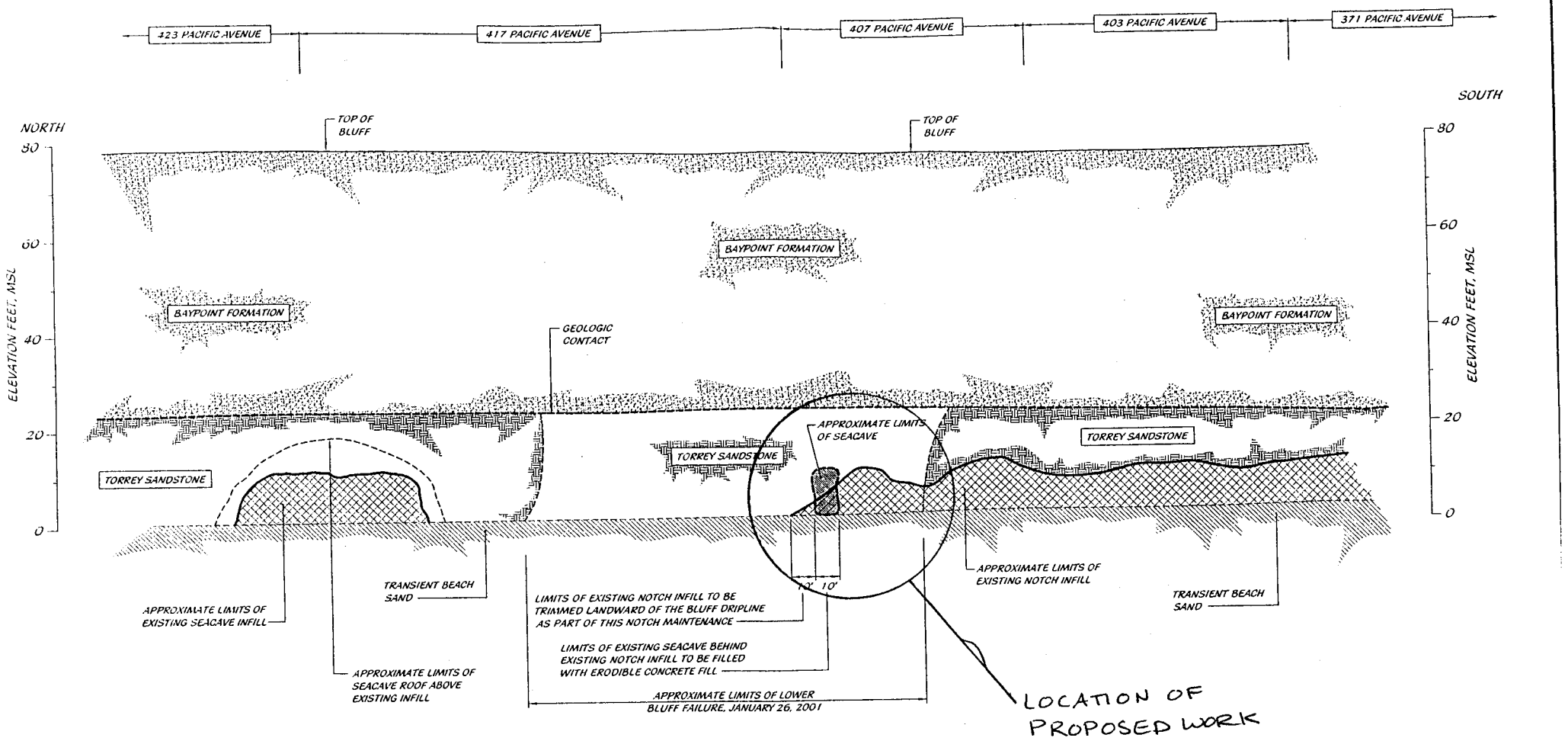
PROFESSIONAL ENGINEER — WILLIAM L. DOBRUTS — No. C58903 Exp. 6-30-07 — CIVIL — STATE OF CALIFORNIA

1903	TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJD	REVISIONS					407 PACIFIC AVENUE - NOTCH MAINTENANCE INFILL	CITY OF SOLANA BEACH	DRAWING NO. C-2
		DRAWN: GDS	REV.	BY	DATE	APP.			RECOMMENDED FOR APPROVAL / APPROVED FOR CONSTRUCTION	SHEET 2 OF 5
3-07		CHECKED: WFC						SITE PLAN & PHOTO PROFILE	BY: / R.C.E.: EXP.: / DATE: — BY: / CITY ENGINEER R.C.E.: / EXP.: DATE:	7-31-03 DATE OF PRINT

218

California Coastal Commission

EXHIBIT NO. 2
APPLICATION NO.
6-98-9-A1
Site Plan



PROPOSED NOTCH MAINTENANCE INFILL PROFILE

SCALE: 1"=10' (HORIZ.:VERT.)

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY

0 1 2 3

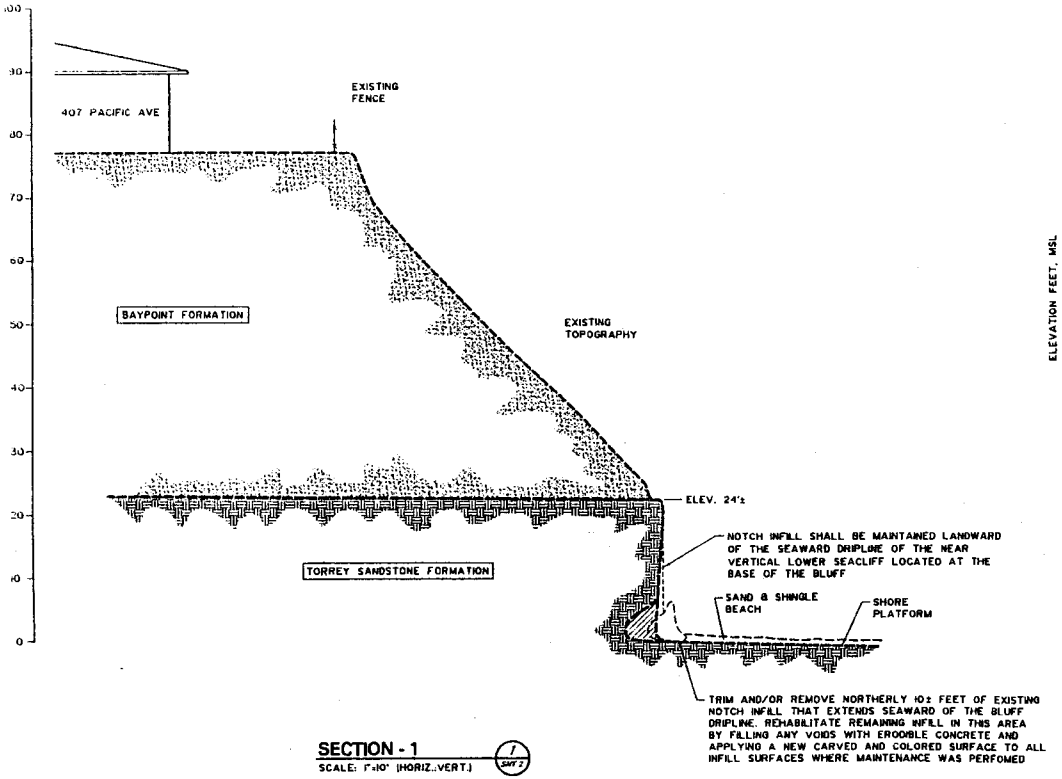
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REGISTERED PROFESSIONAL ENGINEER WILLIAM J. DOBRUNS No. C58903 Exp. 6-30-07 CIVIL STATE OF CALIFORNIA

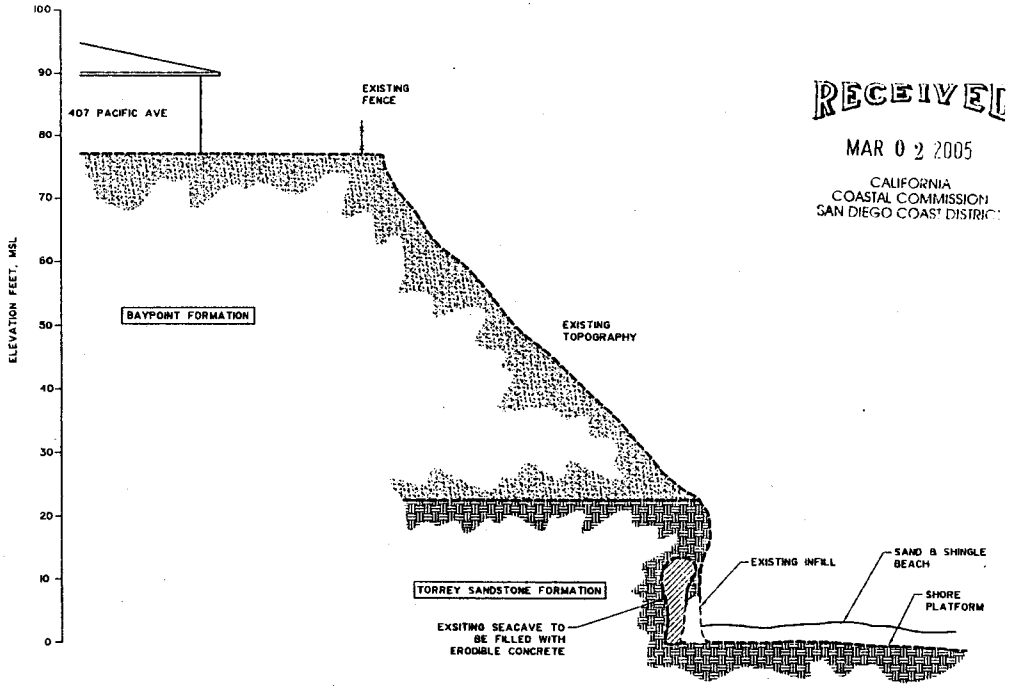
2189

EXHIBIT NO. 3
APPLICATION NO. 6-98-9-A1
Profiles
California Coastal Commission

TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJD DRAWN: GDS CHECKED: WFC	REVISIONS REV. / BY / DATE / APP.	407 PACIFIC AVENUE - NOTCH MAINTENANCE INFILL PROFILE	CITY OF SOLANA BEACH RECOMMENDED FOR APPROVAL BY: ____ R.C.E.: ____ EXP.: ____ DATE: ____ APPROVED FOR CONSTRUCTION BY: ____ CITY ENGINEER R.C.E.: ____ EXP.: ____ DATE: ____	DRAWING NO. C-3 SHEET 3 OF 5 7-31-03 DATE OF PRINT



SECTION - 1 (1 SHT 2)
SCALE: 1"=10' (HORIZ.:VERT.)



SECTION - 2 (2 SHT 2)
SCALE: 1"=10' (HORIZ.:VERT.)

TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJD DRAWN: GDS CHECKED: WFC	REVISIONS REV. / BY / DATE / APP.	407 PACIFIC AVENUE - NOTCH MAINTENANCE INFILL **DETAILS & SECTIONS**	CITY OF SOLANA BEACH RECOMMENDED FOR APPROVAL BY: ____ R.C.E.: ____ EXP.: ____ DATE: ____ APPROVED FOR CONSTRUCTION BY: ____ CITY ENGINEER R.C.E.: ____ EXP.: ____ DATE: ____	DRAWING NO. C-4 SHEET 4 OF 5 7-31-03 DATE OF PRINT

ACCESS & STAGING AREA NOTES

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ALLEYS, SIDEWALKS, PRIVATE DRIVEWAYS AND PUBLIC STREETS AT ALL TIMES.

CONTRACTOR SHALL EXAMINE CONDITION AND CONSTRAINTS OF STAGING AREAS AND SITE ACCESS PRIOR TO BID. STAGING AREAS WILL BE LIMITED TO THOSE SHOWN ON THESE PLANS OR OTHERWISE AGREED TO WITH THE CITY OF SOLANA BEACH.

ALL PUBLIC AND/OR PRIVATE IMPROVEMENTS REMOVED, DAMAGED OR DESTROYED IN THE COURSE OF CONSTRUCTION SHALL BE REPLACED OR RESTORED TO AT LEAST THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE CITY OF SOLANA BEACH UPON COMPLETION OF WORK.

THE CONTRACTOR SHALL POST SECURITIES TO GUARANTEE PROPER CARE AND USE OF THE FLETCHER COVE RAMP. NO CONSTRUCTION MATERIALS TO BE OFF-LOADED ON THE RAMP OR AT THE END OF THE RAMP.

THE CONTRACTOR SHALL OBTAIN A SPECIAL USE PERMIT FROM THE CAPTAIN OF MARINE SAFETY AND CITY ENGINEER SPECIFYING THE CONDITIONS GOVERNING USE OF VEHICLES, USE OF THE BOAT RAMP, AND ENTRY UPON AND USE OF AREAS OF THE PUBLIC BEACH FOR CONSTRUCTION EQUIPMENT AND VEHICLES. EVIDENCE OF PERMIT ISSUANCE SHALL BE SUBMITTED TO THE CITY ENGINEER BEFORE ISSUANCE OF THE PERMIT FOR THE PROJECT.

CITY OF SOLANA BEACH LIFEGUARDS SHALL BE CONTRACTED, AT THE CONTRACTOR'S EXPENSE, THROUGH THE CAPTAIN OF MARINE SAFETY TO MONITOR ALL ACTIVITIES IN ORDER TO INSURE FULL COMPLIANCE WITH THE CONDITIONS OF THIS PERMIT. THESE LIFEGUARDS SHALL BE ON DUTY AT ALL TIMES WHEN ANY CONSTRUCTION ACTIVITY TAKES PLACE.

THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE SOLANA BEACH FLETCHER COVE RAMP AND PARKING LOT TO THE SATISFACTION OF THE CITY ENGINEER.

CONTRACTOR SHALL COORDINATE WITH CITY OF SOLANA BEACH REGARDING USE OF FLETCHER COVE BEACH ACCESS RAMP FOR CONSTRUCTION EQUIPMENT & SITE ACCESS.

SITE ACCESS & STAGING AREA NOTES (CONT'D)

9. CONSTRUCTION EQUIPMENT AND ACTIVITIES PERFORMED ON THE SANDY BEACH AREA SHALL NOT RESTRICT LATERAL PUBLIC ACCESS.

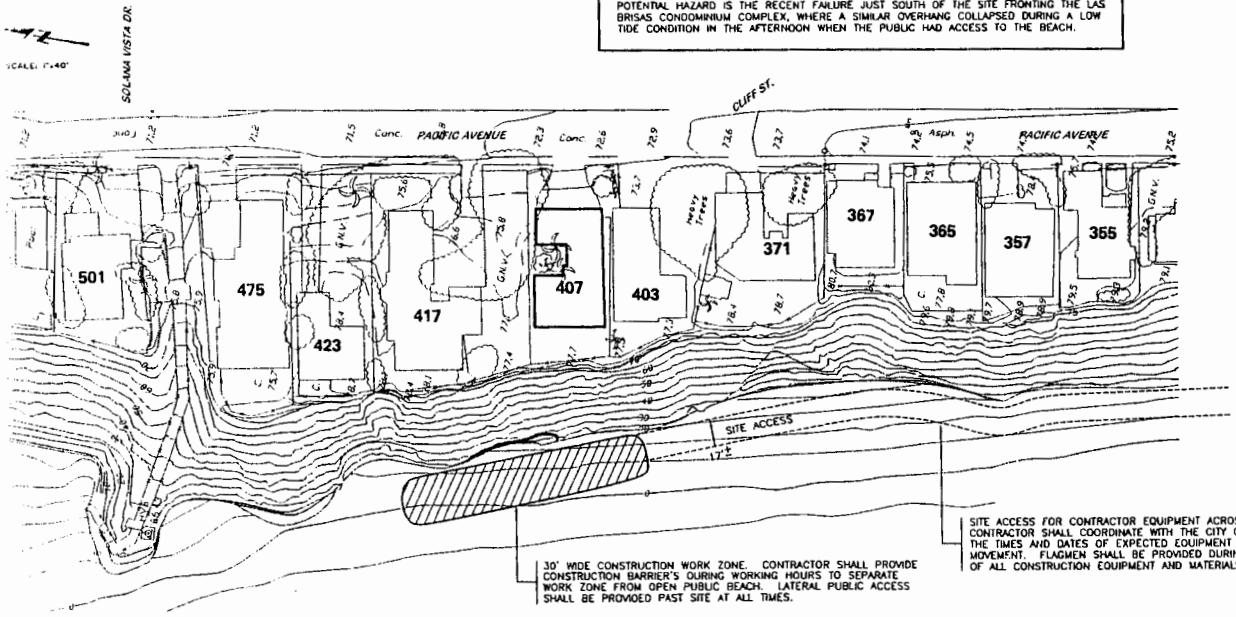
10. CONSTRUCTION SCHEDULE: NO CONSTRUCTION ACTIVITIES MAY OCCUR ON THE BEACH BETWEEN MEMORIAL DAY WEEKEND AND LABOR DAY OF ANY YEAR.

11. DURING CONSTRUCTION OF THE APPROVED DEVELOPMENT, DISTURBANCE TO SAND AND INTERTIDAL AREAS SHALL BE MINIMIZED TO THE MAXIMUM EXTENT FEASIBLE. ALL EXCAVATED BEACH SAND SHALL BE REDEPOSITED ON THE BEACH. LOCAL SAND, COBBLES OR SHORELINE ROCKS SHALL NOT BE USED FOR BACKFILL OR FOR ANY OTHER PURPOSE AS CONSTRUCTION MATERIAL.

12. DURING 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 INFILL. CONSTRUCTION EQUIPMENT SHALL NOT BE WASHED ON THE BEACH.

SITE SAFETY

THE CONTRACTOR IS ADVISED THAT THE LOWER SEA CLIFF IS CONSIDERED UNSTABLE AND SUBJECT TO PROGRESSIVE FAILURE, WITH THE POTENTIAL FOR TENS TO HUNDREDS OF CUBIC YARDS OF BLUFF-TOP AND/OR SEA-CLIFF MATERIALS TO COLLAPSE WITH LITTLE, IF ANY, WARNING. THIS DANGER OF COLLAPSE IS SIGNIFICANTLY HIGHER WHERE VERTICAL JOINTING OF THE CLIFF-FORMING TORREY SANDSTONE EXISTS AND NOTCHING OF THE LOWER SEA CLIFF HAS OCCURRED, SUCH AS IN THE PROJECT AREA. SUFFICE IT TO SAY THAT A HAZARDOUS CONDITION EXISTS FOR CONSTRUCTION WORKERS AT THE BASE OF THE SEA CLIFF AND THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING WHATEVER SAFETY MEASURES HE DEEMS NECESSARY TO MINIMIZE THIS HAZARD. AN EXAMPLE OF THIS POTENTIAL HAZARD IS THE RECENT FAILURE JUST SOUTH OF THE SITE FRONTING THE LAS BRISAS CONDOMINIUM COMPLEX, WHERE A SIMILAR OVERHANG COLLAPSED DURING A LOW TIDE CONDITION IN THE AFTERNOON WHEN THE PUBLIC HAD ACCESS TO THE BEACH.



REGISTERED PROFESSIONAL ENGINEER — WILLIAM T. ROBERTS — No. C58903 Exp. 6-30-07 — CIVIL — STATE OF CALIFORNIA

EXHIBIT NO. 5
APPLICATION NO. 6-98-9-A1
Staging Plans
California Coastal Commission

TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJD DRAWN: GDS CHECKED: WFC	REVISIONS REV. / BY / DATE / APP.	407 PACIFIC AVENUE - NOTCH MAINTENANCE INFILL	CITY OF SOLANA BEACH RECOMMENDED FOR APPROVAL BY: ____ R.C.E.: ____ EXP.: ____ DATE: ____ APPROVED FOR CONSTRUCTION BY: ____ CITY ENGINEER R.C.E.: ____ EXP.: ____ DATE: ____	DRAWING NO. C-5 SHEET 5 OF 5 7-31-03 DATE OF PRINT

STAGING & PHASING

218

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COASTAL COMMISSION
SAN DIEGO COAST DISTRICT

CALCULATION OF MITIGATION FEE FOR IMPACTS TO SAND SUPPLY PROPOSED SEAWALL REHABILITATION AND MAINTENANCE OF EXISTING NOTCH INFILL 407 PACIFIC AVENUE SOLANA BEACH, CALIFORNIA

CDP NO. 6-98-9

As indicated on the construction drawings for the maintenance of the notch infill below 407 Pacific Avenue, although the infill at one time spanned the entire 50-foot-wide lot, the current notch maintenance eliminates all of the existing infill that at one time protected the northerly 10 feet of the subject property. Thus, the existing notch maintenance infill will only protect the southerly 40 feet of the subject property. The average notch infill encroachment is estimated to be 3 feet. In view of the past erosion of the existing notch infill, and in recognition of the ongoing need for future maintenance, we have currently used a design life, L, of 20 years in the calculations of the mitigation fee for impacts on sand supply. However, clearly, we anticipate that additional maintenance will be required within the next 10± years.

Basic Equations:

$$M = V_t \times C \quad (1)$$

where,

M = mitigation fee,

V_t = total volume of sand required to replace losses due to the structure, and

C = cost per cubic yard of sand

$$V_t = V_b + V_w + V_e \quad (2)$$

where,

V_b = the amount of beach material that would have been supplied to the beach if natural erosion continued or the long-term reduction in the supply of bluff material to the beach, over the life of the structure; based on the long-term average retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards)

TerraCosta Consulting Group

EXHIBIT NO. 6
APPLICATION NO.
6-98-9-A1
Sand Mitigation Fee
Calculation

V_w= the long-term erosion of the beach and nearshore resulting from stabilization of the bluff face and prevention of landward migration of the beach profile; based on the long-term average retreat rate, and beach and near-surface profiles (cubic yards)

V_e = the volume of sand necessary to replace the area of beach lost due to encroachment by the sea cave infill; based on the infill design and beach and nearshore profiles (cubic yards)

$$V_b = (R \times L \times W \times H \times S) / 27 \quad (3)$$

where,

R = long-term regional bluff retreat rate (ft/yr),

L = design life of armoring without maintenance (yr),

W = width of property to be armored (ft),

H = total height of armored bluff (ft),

S = fraction of beach quality material in the bluff material,

$$V_w = R \times L \times V \times W \quad (4)$$

where,

R = long-term regional bluff retreat rate (ft/yr),

L = design life of armoring without maintenance (yr),

v = volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, and

W = width of property to be armored (ft),

$$V_e = E \times W \times V \quad (5)$$

where,

E = average encroachment of infill, measured from back of notch or back beach (ft),

W = width of property to be armored (ft), and

V = volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the infill.

Site-specific values for equation variables:

C	=	$14/cubic yards to purchase and deliver sand
R	=	0.3 ft/yr
L	=	20 years
W	=	40 feet
S	=	0.75
H	=	77 feet
V	=	0.9 cubic yards per square foot of beach
E	=	3 feet

Utilizing equation (3):

$$V_b = \frac{0.3 \times 20 \times 40 \times 77 \times 0.75}{27}$$

$$V_b = 513.3\ yard^3$$

Utilizing equation (4):

$$V_w = 0.3 \times 20 \times 0.9 \times 40$$

$$V_w = 216.0\ yard^3$$

Utilizing equation (5):

$$V_e = 3 \times 40 \times 0.9$$

$$V_e = 108.0\ yard^3$$

Utilizing equation (2):

$$V_t = 513.3 + 216.0 + 108.0$$

$$V_t = 837.3\ yard^3$$

Utilizing equation (1):

$$M = 237.3\ x\ \$14.00/yd$$

$$M = \$11,722.20$$

Sand Mitigation Fee Parameters for Notch Infill Maintenance

W	=	40
E	=	3 ft
V	=	0.9 cy/sf
R	=	0.3 ft/yr
L	=	20 yr
S	=	75%
H	=	77 ft
C	=	$14/cy