

CALIFORNIA COASTAL COMMISSION

SAN DIEGO AREA
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Th 16a

Addendum

July 7, 2009

To: Commissioners and Interested Persons

From: California Coastal Commission
San Diego Staff

Subject: Addendum to **Th 16a**, Coastal Commission Permit Application
#6-08-73 (DiNoto, et. al), for the Commission Meeting of July 9, 2009

Staff recommends the following changes be made to the above-referenced staff report:

1. On Page 1 of the staff report, the last incomplete paragraph shall be revised as follows:

The proposed development has been conditioned to mitigate its impact on coastal resources such as scenic quality, public access and recreation opportunities, and shoreline sand supply. In addition, the applicants are proposing to pay an in-lieu fee of ~~\$42,567.00~~ for the associated impacts of the development on regional sand supply and are proposing the payment of a separate mitigation fee of \$94,000.00 to the City of Solana Beach for

2. On Page 5 of the staff report, the first paragraph of Special Condition #3 shall be revised as follows:

3. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of ~~\$42,567.00~~ \$70,945.00 (based on the cost of sand at \$25.00 per cubic yard) 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. Prior to issuance of the coastal development, if the applicant submits three (3) bids for the cost of sand that average to an amount less or more than \$25.00 per cubic yard and the bids have been reviewed and approved by the Executive Director, this fee may be adjusted accordingly. All interest earned by the account shall be payable to the account for the purposes stated below.

3. On Page 19 of the staff report, the second complete paragraph shall be revised as follows:

Special Condition #3 reflects the applicants' proposal to deposit an in-lieu fee to fund beach sand replenishment of 2,837.8 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective devices on beach sand supply and shoreline processes. ~~In the case of the proposed project, the fee calculates to be \$42,567.00, based on 2,837.8 cubic yards of sand multiplied by the cost of obtaining a cubic yard of sand, as proposed by the applicants' engineer at \$15.00 per cu. yd.~~ The sand fee formula utilized by the Commission requires that the applicants submit 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. In this case, the applicant has not yet provided those three estimates. Estimates provided by other applicants for similar projects in Solana Beach over the last two years have identified the cost to be as high as \$21.50 per cubic yard. Therefore, in order to establish the necessary in lieu fee for the subject project, the applicant must submit three written estimates for the cost of sand and the transportation of the sand. Unless the applicant provides those bids, Special Condition #3 requires the applicant to pay an in lieu fee of \$70,945.00 based on the cost of sand at \$25.00 per cubic yard. The condition allows for an adjustment of the fee if the applicant provides the required three written estimates from local sand suppliers that has been reviewed and approved by the Executive Director.

CALIFORNIA COASTAL COMMISSION

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Th 16a

Filed: 1/20/09
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Staff: G. Cannon-SD
Staff Report: 6/18/09
Hearing Date: 7/8-10/09

REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-08-73

Applicant: Tom DiNoto, Kari de Burgh and Agents: Walt Crampton and
John Cumming Bennett Bloom

Description: Construct approximately 94-ft. long, 35-ft. high seawall, reconstruct portions of upper bluff using geogrid structure below 365 & 367 Pacific Ave., recontour existing geogrid structure below 371 Pacific Ave. and reconstruct patio area on reconstructed bluff below 365 Pacific Ave.

Site: 365, 367 and 371 Pacific Avenue, Solana Beach, San Diego County.
APN 263-301-04, 03 and 02

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: Staff is recommending approval of the proposed shoreline protective devices as the applicants have demonstrated that the three existing blufftop residential structures are in danger from erosion. Due to ongoing bluff collapse and exposure of the clean sand layer below the residences, the applicants' geotechnical representative has performed a slope stability analysis of the overall site and concluded that the blufftop structures are in danger from erosion. Based on the applicants' geotechnical reports, the seawall and geogrid backfill structures are necessary to protect the structures at the top of the bluff. The Commission's staff engineer and geologist have reviewed the applicants' geotechnical assessment and concur with its conclusions. Staff is also recommending that the request to reconstruct a failed section of the patio seaward of the existing bluff edge at 365 Pacific Ave. be eliminated from the project since the reconstructed patio would be located in a hazardous location and is not necessary for the protection of the home.

The proposed development has been conditioned to mitigate its impact on coastal resources such as scenic quality, public access and recreation opportunities, and shoreline sand supply. In addition, the applicants are proposing to pay an in-lieu fee of \$42,567.00 for the associated impacts of the development on regional sand supply and are proposing the payment of a separate mitigation fee of \$94,000.00 to the City of Solana Beach for

the impacts of the development on public access and recreational opportunities. With the proposed sand mitigation and mitigation required by the City, impacts of the proposed shoreline protection on regional sand supply and public access and recreation will be mitigated to the extent feasible. A special condition has been attached which requires the applicants to acknowledge that should additional stabilization be proposed in the future, the applicants will be required to identify and address the feasibility of all alternative measures which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, and would reduce the risk to the blufftop structures and provide reasonable use of the property. Other conditions involve the timing of construction, the appearance of the seawall and geogrid structures, approval from other agencies and submission of final plans documenting that the request for the reconstructed patio seaward of the bluff edge has been eliminated from the plans.

Standard of Review: The City of Solana Beach does not have a certified LCP. Thus, the standard of review is the Chapter 3 policies of the Coastal Act.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; City Resolution No. 2008-128 and Conditional Use Permit #17-08-16; “Coastal Bluff Evaluation and Basis of Design Report” by TerraCosta Consulting Group dated 6/27/08; Coastal Development Permits Nos. 4-87-161/Pierce Family Trust and Morgan; 6-87-371, Van Buskirk; 5-87-576, Miser and Cooper; 6-00-9/Del Mar Beach Club, 6-99-100/Presnell, et. al, 6-99-103/ Coastal Preservation Association, 6-00-66/Pierce, Monroe, 3-02-024/ Ocean Harbor House, 6-02-02/Gregg, Santana, 6-02-84/Scism, 6-03-33/Surfsong; 6-04-83/Cumming, Johnson, 6-05-72/Las Brisas, 6-07-134/Brehmer, Caccavo, and 6-08-122/Winkler.

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: *I move that the Commission approve Coastal Development Permit No. 6-08-73 pursuant to the staff recommendation.*

STAFF RECOMMENDATION OF APPROVAL:

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

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. Standard Conditions.

See attached page.

III. Special Conditions.

The permit is subject to the following conditions:

The permit is subject to the following conditions:

1. **Final Revised Plans.** **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, final plans for the proposed seawall, concrete backfill behind the seawall, reconstructed slope areas that are in substantial conformance with the submitted plans submitted on 1/20/09 by TerraCosta Consulting. Said plans shall first be approved by the City of Solana Beach and be revised as follows:

- a. Reconstruction of the patio area over the bluff edge seaward of 365 Pacific Avenue shall be deleted from the plans.
- b. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall, and the concrete infill behind the seawall. Said plans shall confirm, and be of sufficient detail to verify, that the seawall and limited concrete backfill closely matches the adjacent color and texture of the natural bluffs, including provision of a color board indicating the color of the material.
- c. Sufficient detail regarding the construction method and technology utilized for constructing the geogrid reconstructed bluff area that appears undulating or more natural in its slope so as to blend with the adjacent natural bluff.
- d. Any existing permanent irrigation system located on the bluff top site shall be removed or capped.

- e. All runoff from impervious surfaces on the top of the bluff shall be collected and directed away from the bluff edge towards the street.
- f. Existing accessory improvements (i.e., decks, patios, walls, windscreens, etc.) located in the geologic setback area on the site(s) shall be detailed and drawn to scale on the final approved site plan and shall include measurements of the distance between the accessory improvements and the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at three or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method that enables accurate determination of the location of structures on the site. Any removed accessory structures located within 5 ft. of the bluff edge shall not be replaced in a location within 5 ft. of the natural bluff edge. Any new Plexiglas or other glass wall shall be non-clear, tinted, frosted or incorporate other elements to inhibit bird strikes.

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

2. Landscape Plan. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit, for the review and written approval of the Executive Director, a plan for landscaping the reconstructed bluff slope that has been approved by the City of Solana Beach. The plan shall be prepared by a licensed landscape architect and shall demonstrate that:

- (a) all vegetation planted on the face of the bluff will consist of native, drought-tolerant and non-invasive plants;
- (b) all planting will be completed within 60 days after construction of the reconstructed bluff area;
- (c) all required plantings will be maintained in good growing condition throughout the life of the project, and, whenever necessary, shall be replaced with new plant materials to ensure continued compliance with the landscape plan.

In addition, the plan shall include, at a minimum, the following components:

- (d) the type, size, and location of all plant materials that will be on the reconstructed bluff area and any proposed temporary and limited irrigation for the proposed landscaping.

- (e) the temporary and limited irrigation must be removed within 90 days of plantings.

The permittees shall undertake development in accordance with the approved final landscape plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission 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**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of \$42,567.00 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 developed mitigation plan covers impacts only through the identified 30-year design life of the seawall. No later than 29 years after the issuance of this permit, the permittees or their successor in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall within its initial design life or requires mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 30-year design life. If, within the initial design life of the seawall, the permittees or their successor in interest obtain a coastal development permit or an amendment to this permit to enlarge or reconstruct the seawall or perform repair work that extends the expected life of the seawall, the permittees shall provide mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 30-year design life.

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

4. Mitigation for Impacts to Public Access and Recreational Use. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that the full interim mitigation fee of \$94,000.00 required by the City of Solana Beach to address adverse impacts to public access and recreational use, has been satisfied.

WITHIN 6 MONTHS of approval of the City's economic study of the impacts associated with shoreline devices, the applicants shall submit to the Executive Director for review and written approval, documentation of the final mitigation fee amount required by the City to address impacts of the proposed shoreline protection on public access and recreation. If the amount differs from the interim amount required above, then the applicants shall submit an application for an amendment to this permit to adjust the mitigation fee to be paid to the City to address adverse impacts to public access and recreational use resulting from the proposed development.

5. Monitoring Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a monitoring program prepared by a licensed civil engineer or geotechnical engineer to monitor the performance of the seawall and reconstructed slope which requires the following:

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

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

- d. Each report shall be prepared by a licensed civil, geotechnical engineer or geologist. The report shall contain the measurements and evaluation required in sections a, and b above. The report shall also summarize all measurements and

analyze trends such as erosion of the bluffs or changes in sea level and the stability of the overall bluff face, including the upper bluff area... In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project.

- e. An agreement that the permittees shall apply for a coastal development permit within 90 days of submission of the report required in subsection c. above for any necessary maintenance, repair, changes or modifications to the project recommended by the report that require a coastal development permit.

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

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

- a. No overnight storage of equipment or materials shall occur on sandy beach or public parking spaces at Fletcher Cove. During the construction stages of the project, the permittees shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seawall/slope reconstruction. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot or access road.
- b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.
- c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.
- d. The applicants 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 permittees shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment

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

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

In addition, **within 60 days following construction**, the permittees shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seawall and reconstructed slope have been constructed in conformance with the approved plans for the project.

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

9. Future Maintenance. The permittees shall maintain the permitted seawall and reconstructed slope in its approved state. Maintenance of the seawall includes maintaining the color, texture and integrity. Maintenance of the reconstructed slope shall include an assessment of the appearance of the geogrid slope structure. Any change in the design of the project or future additions/reinforcement of the seawall or reconstructed slope beyond exempt maintenance as defined in Section 13252 of the California Code of Regulations to restore the structure to its original condition as approved herein, will require a coastal development permit. **However, in all cases, if after inspection, it is apparent that repair and maintenance is necessary, including maintenance of the color of the structures to ensure a continued match with the surrounding native bluffs, the permittees shall contact the Executive Director to determine whether a coastal development permit or an amendment to this permit is legally required, and, if required, shall subsequently apply for a coastal development permit or permit amendment for the required maintenance.**

10. Other Permits. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the permittees shall provide to the Executive Director copies of all other required local, state or federal discretionary permits for the development authorized by CDP #6-08-73. The applicants 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 applicants obtain a Commission amendment to this permit, unless the Executive Director determines that no amendment is legally required.

11. State Lands Commission Approval. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall submit to the Executive Director for review and written approval, a written determination from the State Lands Commission that:

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

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

13. Assumption of Risk, Waiver of Liability and Indemnity Agreement. By acceptance of this permit, the applicants acknowledge and agree (i) that the sites may be subject to hazards from erosion and coastal bluff collapse; (ii) to assume the risks to the applicants and the properties that are 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.

14. Best Management Practices. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, a Best Management Plan approved by the City of Solana Beach that effectively assures no shotcrete or other construction byproduct will be allowed onto the sandy beach and/or allowed to enter into coastal waters. The Plan shall apply to both concrete pouring/pumping activities as well as shotcrete/concrete application activities. During shotcrete/concrete application specifically, the Plan shall at

a minimum provide for all shotcrete/concrete to be contained through the use of tarps or similar barriers that completely enclose the application area and that prevent shotcrete/concrete contact with beach sands and/or coastal waters. All shotcrete and other construction byproduct shall be properly collected and disposed of off-site.

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

15. Other Special Conditions of the City of Solana Beach CUP #17-08-16. Except as provided by this coastal development permit, this permit has no effect on conditions imposed by the City of Solana Beach pursuant to an authority other than the Coastal Act.

16. Deed Restriction. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and approval documentation demonstrating that the applicants have 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.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description/History. The proposed project involves the construction a 94-ft. long, 35-ft. high seawall and the reconstruction of the upper bluff using a geogrid structure on the bluff and beach below two single-family residences located at 365 and 367 Pacific Avenues. The proposed seawall will be attached to similarly designed seawalls to the north (CDP# 6-04-83/Cumming) and to the south (CDP# 6-02-84/Scism). The applicants for the subject seawall and upper bluff reconstruction includes the property at 371 Pacific Avenue (John Cumming) because the seawall has been designed to protect his property from the lateral migration of the erosion even though the seawall will not be located directly below his home. In addition, the proposed geogrid structure below 365 and 367 Pacific Avenue will extend over to the previously installed and approved geogrid structure below Mr. Cumming's residence at

371 Pacific. In addition, as part of the subject application, Mr. Cumming is proposing to repair the existing geogrid structure fronting his home at 371 Pacific Ave. to make it more natural in appearance. Finally, the application includes a request to reconstruct a failed section of patio on the reconstructed bluff below 365 Pacific Avenue.

365 Pacific Avenue.

The residence at 365 Pacific Avenue is located approximately 15 ft. from the edge of the existing 80 ft.-high coastal bluff. No evidence of previous coastal development permits for the site has been found.

367 Pacific Avenue.

Past Commission action on this site includes a permit granted in July 1997 for demolition of the existing single-family residence on the bluff top, and reconstruction of a new residence, with portions of the existing residence remaining on the site (#6-97-50). Since less than 50% of the existing residence was to remain standing, the Commission reviewed the project as demolition and new construction. In its approval of the project, the Commission gave the applicant the option of either locating all construction at least 40 feet back from the edge of the bluff, or, as proposed by the applicant, keeping the older portions of the home closer than 40 feet from the bluff edge and recording a deed restriction providing that the landowner would not construct any upper or lower bluff stabilization devices (other than preemptive filling of any seacaves located at the base of the bluff), to protect the portion of the residence located closer than 40 feet from the bluff edge. The applicant chose the latter option and constructed the new residence with portions of the home remaining on the site as close as approximately 20 feet from the bluff edge. The recorded deed restriction provides that if erosion proceeds within 10 feet of the residence such that the portion of the principal residence located seaward of the 40 foot blufftop setback is determined to be unsafe for occupancy, the landowner will submit an application for a coastal development permit to remove that portion of the structure in its entirety (Ref. Exhibit 6, CDP #6-97-50/O'Neal). Today the residence is located approximately 18-19 feet from the bluff edge.

In December 1997, the Commission approved the temporary placement and removal of 4-5 ton size riprap boulders along the base of the coastal bluff at the subject site (#6-97-132). A non-material amendment to allow the riprap to remain on the site until May 15, 1998 was approved by the Executive Director in April 1998; and, in May 1998, the Commission approved a second amendment allowing the riprap to remain until June 15, 1998. All of the riprap has subsequently been removed from the site.

In March 1998, the Executive Director approved an emergency permit for the concrete fill of a 22-ft. wide, 10-ft. high and 8 ft. deep seacave located in the bluff below 367 Pacific Ave. (Ref. Emer. Permit 6-98-27-G/O'Neal). On December 10, 1998, the Commission approved the follow-up regular coastal development permit, subject to Special Conditions, for the seacave fill (Ref. 6-98-27/O'Neal). The proposed seawall will cover the face of this previously filled seacave.

371 Pacific Avenue.

The property at 371 Pacific Avenue received Commission authorization to construct a one-story addition to the existing residence in May of 1981 (CDP #F9818/Blackburn). On December 24, 1997, the Executive Director approved an emergency permit for the fill of two seacaves (#6-97-156-G/Blackburn) and a subsequent emergency permit granted February 23, 1998 to fill both the caves and the surrounding undercut area at least 3 feet deep and 12 feet high (#6-98-21-G/Blackburn). On December 10, 1998, the Commission approved a regular coastal development permit as the required follow-up permit to the emergency actions, subject to Special Conditions, authorizing the filling of a 94-foot wide, 12-foot high, maximum 18-foot deep sea cave and undercut area at the base of the bluff below the existing single-family residence, with a colored and textured erodible concrete mixture and riprap (ref. CDP #6-98-21/Blackburn).

In March 2005, the Commission approved a 138 ft.-long, 35 ft. high, 2 ft.-wide colored and textured seawall and geogrid reinforced fill slope on the bluff below 371 and 403 Pacific Avenues (Ref. 6-04-83/Cumming, Johnson). The seawall and geogrid structure were completed; however, the geogrid structure was constructed in a way that did not mimic the contours of the natural bluffs. The subject application includes a request to repair the geogrid structure below 371 Pacific to make it less visually obtrusive.

The project site is located approximately 500 feet south of the public access stairway to Tide Beach Park in the City of Solana Beach. The City of Solana Beach does not yet have a certified Local Coastal Program (LCP) and, 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 do all of the following:

- (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding

area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...

The proposed project involves the construction of an approximately 94 ft.-long, 35 ft.-high, 2 ½ ft.-wide concrete seawall on the beach directly below two single-family residences (365 and 367 Pacific Ave.), the reconstruction of the upper bluff face using a vegetated geogrid structure on the bluff face above the seawall, the repair to an existing geogrid structure below a third residence (371 Pacific Ave.) and the reconstruction of a patio area on the reconstructed bluff seaward of one the other residences (365 Pacific Ave.). The structures as designed (except for the reconstructed patio request) will provide protection to all three residential structures at 365, 367 and 371 Pacific Avenue that are currently threatened by erosion.

The bluffs to the south and north of the subject site have already been afforded protection in the form of seawalls and, in some cases, below-grade retention systems at the top of the bluff and geogrid-reinforcement on the face of the bluffs. Seawalls of similar design to that proposed with this application have been constructed and/or approved for construction for a distance of 358 ft. north of the proposed seawall and 748 ft. to the south. After construction of the subject 94 ft.-long seawall, the interconnecting seawalls along this section of shoreline will comprise a single continuous wall of approximately 1,200 feet in length. In the case of the immediately adjacent properties, a 35 ft.-high seawall and 35 ft. in depth below-grade retention system has been installed seaward of the southern residence at 357 Pacific Ave. (Ref. CDP 6-02-84/Scism) and a 35 ft. high seawall and geogrid-reinforced slope has been constructed below the northern home at 371 Pacific Ave (Ref. 6-04-83/Cumming, Johnson). The property owner at 357 Pacific Ave. has not reconstructed the bluff between the approved seawall and the upper bluff retention system such that the bluff has continued to erode and collapse which, according to the applicants' engineer, currently threatens the subject home at 365 Pacific Ave. However, the Commission has received an application for the construction of a geogrid reinforced slope below 357 Pacific Avenue (Ref. CDP #6-02-84-A1/Scism) which will be scheduled over the next few months and should address these erosion issues at 357 Pacific Avenue. The proposed shoreline protective devices have been designed to connect to both seawalls, the existing geogrid slope below 371 Pacific Ave. and the recently proposed (but not yet approved) geogrid reconstructed bluff below 357 Pacific Ave.

The applicant's geotechnical report identifies that:

Over the past six years, significant amounts of upper bluff erosion have continued at the subject sites to the north and south. In 2004, due to the previous lower bluff failures, a series of upper bluff failures propagated between the subject properties, ultimately requiring the removal of a large portion of overhanging concrete patio at the northwest corner of 365 Pacific Avenue. To the north, the upper failures at 371 Pacific Avenue progressively failed in a series of lateral movements toward 367 Pacific Avenue until the construction of tied-back seawall and geogrid-reinforced upper bluff across that property in 2006. However, despite these improvements,

mid-bluff failures have continued to occur, and threaten these improvements along their southerly margin. Similarly, despite the seawall at 357 Pacific Avenue, the upper bluff failure between 365 and 357 Pacific Avenue has continued to enlarge, undermining the southwest property corner of 365 Pacific Avenue by approximately 5 to 6 feet. (Ref. "Coastal Bluff Evaluation and Basis of Design Report" by TerraCosta Consulting Group dated 6/27/08.)

The applicants' geotechnical report also describes the layer of clean sands lens located between the Torrey Sandstone and Marine Terrace deposits at approximately elevation 25-35 ft. Mean Sea Level (MSL). According to the Commission's staff geologist, the clean sands lens consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, which causes the material to erode easily, making this clean sands layer, once exposed, susceptible to wind blown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together. Geotechnical reports associated with developments near this site have stated that gentle sea breezes and any other perturbations, such as landing birds or vibrations from low-flying helicopters, can be sufficient triggers of small- or large-volume bluff collapses, since the loss of the clean sands eliminates the support for the overlying, slightly more cemented, terrace deposits.

The presence of this clean sands layer within the bluffs along the Solana Beach shoreline has previously been identified in geotechnical reports submitted in conjunction with seawall, seacave and notch infill projects in Solana Beach (ref. CDP 6-00-9/Del Mar Beach Club, CDP #6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation Association, #6-00-66/Pierce, Monroe, #6-02-02/Gregg, Santana, #6-02-84/Scism and #6-03-33/Surfsong; #6-04-83, Cumming, Johnson; #6-05-72/Las Brisas and 6-07-134/Brehmer, Caccavo). According to the Commission's staff geologist, the typical mechanism of sea cliff retreat along the Solana Beach shoreline involves the slow abrasion and undercutting of the Torrey Sandstone bedrock, which forms the sea cliff at the base of the bluffs, from wave action which becomes more pronounced in periods of storms, high surf and high tides. Other contributing factors to sea cliff retreat include fracturing, jointing, sea cave and overhang collapse and the lack of sand along the shoreline. When the lower sea cliff is undercut sufficiently, it commonly fails in blocks. The weaker terrace deposits are then unsupported, resulting in the collapse of the terrace deposits through circular failures. Such paired, episodic failures eventually result in a reduction in the steepness of the upper bluff, and the landward retreat of the bluff edge. Such retreat may threaten structures at the top of the slope. When failures of the upper bluff have sufficiently reduced the overall gradient of the upper bluff, a period of relative stability ensues, which persists until the lower bluff becomes sufficiently undercut to initiate a block failure once more, triggering a repetition of the entire process.

The mechanism of bluff retreat that occurs in conjunction with the exposure of the clean sands 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. Unless the base of the bluff is afforded shoreline protection and the clean sands lens is contained, additional bluff failures can further expose the layer of clean sands and result in a potential upper bluff failure and an immediate threat to the structures at the top of the bluff.

To encapsulate the exposure of this clean sands layer, the applicants propose to construct a 94 ft.-long, 35 ft.-high seawall and reconstruct the bluff face using a geogrid structure that will be planted with native vegetation.

According to the Commission's staff geologist, the best regional estimate of historical long-term bluff retreat for Solana Beach is from a FEMA-funded study summarized in Benumof and Griggs (1999). These authors report an average long-term retreat rate of 0.27 ft/yr for the Solana Beach area over the period 1932 - 1994. Episodic erosion events such as sea cave or notch overhang collapses, and erosion related to severe winter storms, can lead to short-term bluff retreat rates well above the long-term average. These short-term retreat rates are inherently included in the estimation of the long-term retreat rate for Solana Beach and, therefore, are included in the methodology used for the in-lieu fee sand replenishment calculations.

While the existing residences are set back from the bluff approximately 15-19 feet, the slope stability analysis performed by the applicants' engineer indicates that further collapse of the upper and lower bluff would threaten all three residences at the top of the bluff. The factor of safety against sliding along the most likely slide planes is estimated at a range of between 1.00 and 1.28 for 365 Pacific Ave., at 1.21 for 367 Pacific Ave. and at 1.15 for 371 Pacific Ave. (The factor of safety is an indicator of slope stability where a value of 1.5 is the industry-standard value for new development. In theory, failure should occur when the factor of safety drops to 1.0, and no slope should have a factor of safety less than 1.0.) Based on the applicants' geotechnical findings, these low factors of safety demonstrate that all three residences are threatened by erosion. Following construction of the proposed 94 ft.-long seawall and geogrid reconstructed bluff, the applicants' engineer has demonstrated that the factor of safety for the home at 365 Pacific Ave. will be increased to between 1.41 to 1.95, at 367 Pacific Ave. increased to 2.05 and at 371 Pacific Ave. increased to between 1.64 and 2.13. The Commission's staff geologist and coastal engineer have reviewed the applicants' geotechnical assessment of the site and concur with its conclusions and recommendations.

Waiver of Shoreline Protection at 367 Pacific Ave.

As previously described in Section 1 above, in exchange for constructing a new residence located as close as 20 ft. from the bluff edge, the previous middle property owner at 367 Pacific Ave. waived all rights under the Coastal Act to future shoreline protection for the portion of their house located between 20 and 40 feet from the bluff edge, other than seacave fills (Ref. Exhibit 6, CDP 6-97-50/O'Neal). The subject application is formally a

request to construct a 94 ft.-long seawall and geogrid structure to protect the homes located on either side of 367 Pacific Ave. and is not a request to specifically protect the home at 367 Pacific Ave. The applicants' geotechnical report has documented that the adjacent residences at 371 and 365 Pacific Avenues are threatened by the erosion that is occurring in front of the unprotected bluffs below 365 and 367 Pacific Avenue and that the proposed project is the only feasible alternative to address that threat. The property at 371 Pacific Ave. already has a seawall and geogrid structure in front of it (Ref. CDP 6-04-83/Cumming, Johnson); but according to the applicants' geotechnical reports, the lateral erosion of the bluffs below 367 Pacific is threatening the residence at 371 Pacific and will potentially undermine both the existing seawall and geogrid structure. As explained further in the "Alternatives Analysis" section below, the applicants and the Commission's Technical Services staff have examined the potential of designing structures that only protect the threatened residences at 371 and 365 Pacific Ave., but those alternatives would likely lead to an acceleration of the erosion below the unprotected section of bluffs below 367 Pacific Ave. which would also threaten the shoreline protective devices fronting 371 and 365 Pacific Avenue. Therefore, staff is recommending that the Commission approve the proposed structures fronting 367 Pacific Ave. even though the property owner has waived any rights to such structures.

In addition, because the residence at 367 Pacific Ave. will be afforded protection as a result of the shoreline devices that are installed to protect her neighbors, the property owner at 367 Pacific Ave. (Kari de Burgh) has agreed to be a co-applicant in order to facilitate implementation of the special conditions of approval for the subject structures such as the mitigation and monitoring requirements for the portion of the project that lies seaward of her property.

Thus, given the significant bluff collapses that have occurred over the recent years, the potential collapse of the seacave, the presence of the clean sands layer, the extreme erodibility of these sands once exposed, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structures are in danger from erosion. However, there are a variety of ways in which the threat from erosion could be addressed. Under the policies of the Coastal Act, the project must eliminate or mitigate adverse effects on shoreline sand supply and minimize adverse effects on public access, recreation, and the visual quality of the shoreline.

Alternatives

The applicants' geotechnical report includes an alternatives analysis to demonstrate that no other feasible less-environmentally-damaging alternatives exist to address the threats to the residences at the top of the bluff (Ref. "Coastal Bluff Evaluation and Basis of Design" by TerraCosta Consulting Group, dated 6/27/08). The applicants' engineer has identified that removal or relocation of the residential structures are not feasible or practical because of the expense and/or the lack of available area on the lot to setback the structures so as to not be threatened by the ongoing erosion. Maintenance of the existing seacave will also not effectively protect the residences since the current threat to the residence includes the exposure of the clean sands layer on the face of the bluff. Control

of groundwater and irrigation restrictions, while recommended by the applicants' representative as a way of reducing bluff sloughage, will not prevent the bluff collapses that occur at the subject site. Underpinning of the existing residences has also been examined by the applicants; however without controlling the ongoing failures, the underpinnings would soon be exposed. The applicants' engineer has also examined the potential use of chemical grouting of the bluff face to the north and concluded it will not work and poses a substantial safety risk to construction workers.

Finally, both the applicants' engineer and the Commission's Technical Services staff have examined the alternative of not constructing any devices seaward of 367 Pacific Ave. and concluded that such construction would have more adverse impacts to coastal resources than that proposed. For instance, in order to prevent lateral erosion onto the property to the north, one alternative might be the construction of an east/west directed retaining wall that functions as a return wall to the lower seawall. A similar wall could be installed for the proposed seawall below 365 Pacific Avenue, thus leaving the bluff below 367 Pacific Ave. in its natural state. However, that alternative would likely result in accelerated erosion of the bluffs below 367 Pacific Avenue, which according to the applicants' engineer and the Commission's Technical Services staff, would quickly lead to undermining of the east/west perpendicular walls creating a threat to the residences at 371 and 365 Pacific. In addition, the visual appearance of the two east/west facing walls would have significant impacts on the visual resources of the shoreline which could not be adequately mitigated. It is the opinion of both the applicants' engineer and the Commission's geologist and engineer that the proposed development is necessary and is the minimum necessary to protect the residences at 365 and 371 Pacific Avenue.

In summary, given the substantial amount of documented erosion on the sites over the last few years, the presence of the clean sands, the extreme erodibility of these sands, and the low factor of safety on the subject bluff, substantial evidence has been provided to document that the existing primary blufftop structures areas in danger from erosion and that the proposed seawall and geogrid reconstructed bluff are necessary to protect the structures at the top of the bluff from the danger of erosion. In addition, the above-described alternatives presented by the applicants do not suggest there is a less-environmentally-damaging feasible alternative. The Commission's staff geologist and coastal engineer have reviewed the applicants' geotechnical assessment of the site along with their alternatives analysis and concur with its conclusions and recommendations. Therefore, the Commission finds that the proposed seawall and geogrid structure are the least environmentally damaging feasible alternative.

Sand Supply/In Lieu Mitigation Fee

Although construction of the proposed seawall is required to protect the existing residences, Section 30235 of the Coastal Act requires that the shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. There are a number of adverse impacts to public resources associated with the construction of shoreline protection. The natural shoreline processes referenced in Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by

construction of a seawall, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a seawall or other armoring is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Some of the effects of a shoreline protective structure on the beach such as scour, end effects and modification to the beach profile are temporary or difficult to distinguish from all the other actions which modify the shoreline. Seawalls also have non-quantifiable effects to the character of the shoreline and visual quality. However, some of the effects which a structure may have on natural shoreline processes can be quantified. Three of the effects from a shoreline protective device which can be quantified are: 1) loss of the beach 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.

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, 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. Beach nourishment is a method that 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 volume of sand that is calculated by the Beach Sand In-lieu Fee Mitigation Program currently utilized by the Commission is the quantification of the direct impacts to the existing recreational beach from the proposed seawall project. The mitigation that has been proposed by the applicants and recommended as a special condition for this project includes quantification of the impacts from wall and infill encroachments, denial of sand to the littoral cell and passive erosion, as discussed herein. The purpose of the Beach Sand In-Lieu Fee Mitigation Program is to mitigate for the small, persistent loss of recreational beach such as will result from the proposed project by placing funds into a program that will be used for placement of sand on the beach in this area. This Beach

Sand In-Lieu Fee Mitigation Program is administered by the San Diego Association of Governments (SANDAG) and has been in place in San Diego County for many years.

It is possible to estimate the volume of sand needed to create a given area of dry beach through beach nourishment. The proposed project will result in a loss of 233.75 sq. ft. of beach due to the long-term physical encroachment of the proposed seawall (based on the 93.5-foot long x 2 ½ feet wide). In addition, there will be 841.5 sq. ft. of beach area that will no longer be formed because the back of the beach will be fixed (based on .3 ft. per year of erosion x 93.5 ft. seawall x 30 years). This 1,075.25 sq. ft. of beach area (233.75 + 841.5) cannot be directly replaced by land, but a comparable area can be built through the one-time placement of 967.8 cubic yards of sand on the beach seaward of the seawall as beach nourishment. Further explanation of this calculation is provided below. Thus, the impact of the seawall on beach area can be quantified as 967.8 cubic yards of sand. In addition to the impact on beach area, there is the amount of sand material in the bluff that would have been added to the beach if natural erosion had been allowed to continue at the site, which is calculated to be a volume of 1,870 cubic yards. Therefore, the amount of sand necessary to mitigate for the impacts associated with the seawall construction is estimated to be 2,837.8 cubic yards (967.8 cy. yds. + 1,870 cu. yds.). This estimate is only a “rough approximation” of the impact of the seawall on beach area because a one-time placement of this volume of sand cannot result in creation of beach area over the long term.

Special Condition #3 reflects the applicants’ proposal to deposit an in-lieu fee to fund beach sand replenishment of 2,837.8 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective devices on beach sand supply and shoreline processes. In the case of the proposed project, the fee calculates to be \$42,567.00, based on 2,837.8 cubic yards of sand multiplied by the cost of obtaining a cubic yard of sand, as proposed by the applicants’ engineer at \$15.00 per cu. yd.

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 applicants 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 of 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.

The following is a description of the methodology:

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

$$M = V_t \times C$$

where

M = Mitigation Fee

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 by the applicant representative to be 0.27 ft./year. The use of any alternative retreat rates must be documented by the

applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

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 by the applicant representative to be 0.3 ft./year. The use of any alternative retreat rates must be documented by the applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

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 is 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 Preservation Working Group which is made up of representatives from all the coastal jurisdictions in San Diego County. The Shoreline Preservation Working Group 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 applicants are being required to pay a fee in-lieu of directly depositing the sand on the beach, because the benefit/cost ratio of such an approach would be too low. Many of the adverse effects of the seawall on sand supply will occur gradually. In addition, the adverse effects impact the entire littoral cell but to different degrees in different locations throughout the cell (based upon wave action, submarine canyons, etc.) Therefore, mitigation of the adverse effects on sand supply is most effective if it is part of a larger project that can take advantage of the economies of scale and result in quantities of sand at appropriate locations in the affected littoral cell in which it is located. The funds will be used only to implement projects which benefit the area where the fee was derived, and provide sand to the region's beaches, not to fund operations, maintenance or planning studies. Such a fund will aid in the long-term goal of increasing the sand supply and

thereby reduce the need for additional armoring of the shoreline in the future. The fund also will insure available sandy beach for recreational uses. The methodology, as proposed, ensures that the fee is roughly proportional to the impacts to sand supply attributable to the proposed seawall. The methodology provides a means to quantify the sand and beach area that would be available for public use, were it not for the presence of the seawall.

The above-described impacts on the beach and sand supply have previously been found to result from seawalls in other areas of North County. In March of 1993, the Commission approved CDP #6-93-85/Auerbach, et al for the construction of a seawall fronting six non-continuous properties located in the City of Encinitas north of the subject site. In its finding for approval, the Commission found the proposed shoreline protection would have specific adverse impacts on the beach and sand supply and required mitigation for such impacts as a condition of approval. The Commission made a similar finding for several other seawall developments within San Diego County including an August 1999 approval (ref. CDP No. 6-99-100/Presnell, et. al) for the approximately 352-foot-long seawall project located approximately ¼ mile south of the subject development and a March 2003 approval (ref. CDP No. 6-02-84/Scism) located immediately adjacent to the south side of the subject site. (Also ref. CDP Nos. 6-92-212/Wood, 6-93-36-G/Clayton, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver/Canter and 6-99-41/Bradley; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santana and 6-03-33/Surfsong, 604-83,Cumming, Johnson, 6-05-72 Las Brisas and 6-07-134/Brehmer, Caccavo).

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

Therefore, Special Condition #5 requires the applicants to submit a monitoring report which evaluates the condition and performance of the seawall, and reconstructed slope and overall site stability, and submit an annual report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. In addition, the

condition requires the applicants to perform the necessary repairs through the coastal development permit process.

Special Condition #8 requires that feasible alternative measures must be implemented on the applicants' blufftop properties 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 (along with Special Condition #16) will ensure that future property owners will be aware that any future proposals for additional shoreline protection, such as upper bluff stabilization devices, will require an alternatives analysis similar to the one required for the subject project. If there are feasible alternatives to shoreline protection that would have less impact on visual quality, sand supply, or public access, the Commission (or, where applicable, the City of Solana Beach after the effective certification of its Local Coastal Program) will require implementation of those alternatives. The condition also states that no shore or bluff protection shall be permitted for ancillary improvements located within the blufftop setback area. Through this condition, the property owner is required to acknowledge the risks inherent in the subject property and that there are limits to the structural protective measures that may be permitted on the adjacent public property in order to protect the existing development in its current location.

Special Condition #1 requires the applicants to submit final plans for the project indicating that the seawall conforms to the bluff contours, details the design of the reconstructed bluff area and that demonstrate that any existing irrigation systems on the blufftop have been removed, as these would impact the ability of the seawall and other shoreline protection devices to adequately stabilize the site. In addition, Special Condition #1 requires the applicants to eliminate the proposal to reconstruct the failed portions of the patio below 365 Pacific Ave. and not install any structures within 5 ft. of existing bluff edge. In addition, Special Condition #2 requires the applicants to submit final landscape plans documenting the use of native, drought-tolerant and non-invasive plants in the reconstructed bluff areas. In addition, this condition makes it clear that if needed, only temporary irrigation is permitted to get the plantings established and then must be removed or capped. Submission of final plans will ensure that overall site conditions which could adversely impact the stability of the bluff have been addressed.

Special Condition #9 notifies the applicants that they are responsible for maintenance of the herein approved shore and bluff protection. The condition also indicates that, should it be determined that maintenance of the proposed structures are required in the future, including maintenance of the color and texture, the applicants shall contact the Commission to determine if permits are required.

To assure the proposed shore/bluff protection has been constructed properly, Special Condition #7 has been proposed. This condition requires that, within 60 days of completion of the project, as built-plans and certification by a registered civil engineer be submitted that verifies the proposed seawall has been constructed in accordance with the approved plans.

Special Condition #10 requires the applicants to submit a copy of any required permits from other local, state or federal agencies to ensure that no additional requirements are placed on the applicants that could require an amendment to this permit.

Also, due to the inherent risk of shoreline development, Special Condition #13 requires the applicants to waive liability and indemnify the Commission against damages that might result from the proposed shoreline devices or their construction. The risks of the proposed development include that the proposed shoreline devices will not protect against damage to the residence from bluff failure and erosion. In addition, the structures themselves may cause damage either to the applicants' residence or to neighboring properties by increasing erosion of the bluffs. Such damage may also result from wave action that damages the seawall and the other shoreline protective devices. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the applicants have chosen to construct the proposed shoreline devices despite these risks, the applicants must assume the risks. Special Condition #16 requires the applicants to record a deed restriction imposing the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property. Only as conditioned can the proposed project be found consistent with Sections 30235 and 30253 of the Coastal Act.

In summary, the applicants have documented that the existing blufftop primary residential structures are in danger from erosion and subsequent bluff collapse. In addition, even with the construction of the seawall, the upper bluff will continue to erode and soon will threaten the blufftop homes. Thus, the backfill and reconstructed bluff area using a geogrid/soil structure are also necessary to assure enhanced protection for the existing blufftop residence. As conditioned, there are no other less damaging alternatives available to reduce the risk from bluff erosion. Thus, the Commission is required to approve the proposed protection for the residential structures. Since the proposed seawall and geogrid structure will also deplete sand supply, occupy public beach and fix the back of the beach, Special Condition #3 requires the applicants to pay an in-lieu mitigation fee to offset these impact. Therefore, as conditioned, the Commission finds that the proposed seawall is consistent with Sections 30235 and 30253 of the Coastal Act.

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

Section 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted,

and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212(a): Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects...

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

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

Section 30221: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

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

Section 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

The project site is located on a public beach utilized by local residents and visitors for a variety of recreational activities such as swimming, surfing, jogging, walking, surf fishing, beachcombing and sunbathing. The site is located 500 ft. south of the Tide Beach Park public access stairway and approximately ½ mile north of Fletcher Cove, the City's main beach access location. The proposed seawall will be constructed on sandy beach area that is currently available to the public and will have both immediate and long-term adverse impacts on public access and recreational opportunities.

Although the proposed seawall has been designed to be as narrow as feasible, it will project approximately 2 ½ feet seaward of the toe of the bluff. In addition, although the seaward encroachment of the structures appear at first glance to be minimal, the beach along this area of the coast is narrow and at high tides and winter beach profiles, the public may be forced to walk virtually at the toe of the bluff or the area could be impassable. As such, an encroachment of any amount, including 2 ½ feet for a length of approximately 94 feet, onto the sandy beach reduces the small beach area available for public use and is therefore a significant adverse impact. This is particularly true given

the existing beach profiles and relatively narrow beach where access is sometimes only available at low tides. In addition, however, were it not for the seawall, the seaward face of the bluff would naturally recede, making additional beach area available for public use. During the 30 year life of the seawall, as the beach area available to the public is reduced, dry sandy beach will become less available seaward of the seawall such that beachgoers will not want to sit or lay a towel in this area. In addition, over time as the surrounding unprotected bluffs recede, the seawall structure along with others constructed to the south will likely impede or completely eliminate public access to the beach south of Tide Beach Park at the subject site.

As explained in Section 2 of this report, the proposed seawall improvements will result in the encroachment and the fixing of the back beach, which will result in the immediate loss of 23.75 square feet of beach and after 30 years with no recession of the bluff will result in the loss of a total approximately 1,075.25 square feet of public beach. The sand that would have reached the beach were it not for the proposed seawall is generally mitigated by the applicant's proposal to pay an in-lieu fee for the purchase of an equal amount of sand for future placement. However, the loss of this approximately 1,075.25 sq. ft. of recreational area is not mitigated by the one-time placement of sand since that area will not be available for public use (or placement of sand) over the estimated 30 year life of the seawall. In addition, the effects of sea level rise from global warming may accelerate the loss of beach area resulting from the seawall construction. Since any loss of public beach area will significantly affect public access and recreational opportunities along the beach adjacent to Tide Beach Park, additional mitigation is required.

Development along the shoreline which may burden public access in several respects has been approved by the Commission. However, when impacts can't be avoided and have been reduced to the maximum extent feasible, mitigation for any remaining 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 a private benefit for the property owners, the Commission has found in such cases (in permit findings of CDP #4-87-161, Pierce Family Trust and Morgan; CDP #6-87-371, Van Buskirk; CDP #5-87-576, Miser and Cooper; CDP 3-02-024, Ocean Harbor House; 6-05-72, Las Brisas; 6-07-134/Caccavo; 6-08-122/Winkler) that a public benefit must arise through mitigation conditions in order for the development to be consistent with the access policies of the Coastal Act, as stated in Sections 30210, 30211, and 30212.

Appropriate mitigation for the subject development would be creation of additional public beach area in close proximity to the impacted beach area. However, all of the beach areas in Solana Beach are already in public ownership such that there is not private beach area available for purchase. In addition to the more qualitative social benefits of beaches (recreational, aesthetic, habitat values, etc.), beaches provide significant direct and indirect revenues to local economies, the state, and the nation. There is little doubt

that the loss of 1,075.25 sq. ft. of sandy beach in an urban area such as Solana Beach represents a significant impact to public access and recreation, including a loss of the social and economic value of this recreational opportunity. The question becomes how to adequately mitigate for these qualitative impacts on public recreational beach use and in particular, how to determine a reasonable value of this impact to serve as a basis for mitigation.

In the past ten to fifteen years, the Commission has approved the construction of shoreline devices in San Diego County when they are necessary to protect an existing primary structure and when mitigation is provided according to a formula that the Commission developed to address some of the more easily quantifiable effects on local sand supply, as required by Section 30235 of the Coastal Act. In each of those decisions, the Commission recognized that the mitigation in the form of an in-lieu fee paid for the purchase of sand to offset the sand lost by the shoreline structure, provided some, but not all, mitigation associated with the adverse impacts of shoreline devices.

In recent years, the Commission has sought additional ways to quantify the adverse impacts to public access and recreation that result from shoreline protective devices and, thereby, develop more appropriate mitigation for those impacts. However, except in a few cases, the Commission has been unable to adequately quantify those impacts and thus has been unable to accurately evaluate the economic loss to public access/recreation associated with necessary shoreline protection projects.

In 2005, the Commission contracted with Dr. Phillip King, Chair of the Economics Department at San Francisco State University, to perform an economic analysis of the loss of recreational values associated with a proposed seawall to be located adjacent to Fletcher Cove Beach Park approximately ½ mile south of the subject site (Ref. CDP #6-04-92/Las Brisas). Since that time, Commission staff have attempted to use Dr. King's study as a basis for evaluating the subject site, but because the character of the beach at Fletcher Cove is different in terms of accessibility, number of users and width of beach, and several other variables, staff has concluded that Dr. King's study cannot be used as a basis for determining impacts to the subject site. For instance, Dr. King estimated the number of beach users at Fletcher Cove on what he described as a "flawed" parking study for the Fletcher Cove parking lot. He also identified that most of the beachgoers place their towels no further than 150 ft. from the Fletcher Cove access ramp. Since these numbers are the only known figures for beach attendance in Solana Beach and are based on a "flawed" parking study and, according to his report, those beach users generally do not go beyond 150 ft. from Fletcher Cove, his report was deemed insufficient for use on the subject seawall project where most users likely use either Tide Beach public access stairway or enter from South Cardiff State Beach at the north. In addition, the City does not have attendance records for beach use at Tide Beach Park or elsewhere along the shoreline.

However, as a filing requirement for seawall applications, applicants have recently been asked to address the adverse impacts of shoreline devices on public access and recreation opportunities and to consider ways those impacts could be mitigated. Mitigation might

be in the form of particular public access or recreational improvements to be located in close proximity to the project or might involve an in-lieu fee to be used sometime in the future for a public access/recreation improvement. To address this issue, the subject applicants are proposing to utilize an in-lieu fee program recently adopted by the City of Solana Beach that addresses impacts of shoreline devices on public access/recreation and on sand supply which, in the case of the proposed approximately 94 ft.-long seawall, will result in the initial payment of \$94,000.00 (\$1,000.00 per lineal foot). In addition, the fee is subject to modification following completion of a City funded study to determine more precisely the economic loss associated with the construction of protective devices along the Solana Beach shoreline. According to the City, the economic study is estimated to be completed in late 2009.

In June of 2007, the City of Solana Beach adopted an interim in-lieu fee program to mitigate the adverse impacts associated with shoreline devices (Ref. Resolution 2007-042, City of Solana Beach). The program has been designed as "interim" in that until the City completes an economic study that more precisely determines the economic costs, the ultimate costs to the property owner are unknown. As such, the City's program requires that a \$1,000.00 per lineal foot fee be assessed in the interim and requires an applicant to agree to modifications to the fee once the economic study is complete and a more site specific fee is assessed. In the case of the proposed development, the City approved a Conditional Use Permit and as a condition of approval of that permit, required the applicants to pay \$1,000.00 per lineal foot of the shoreline device (seawall) so as to mitigate the adverse impacts to public access, recreational use and sand supply resulting from the seawall construction. In addition, the City approval required the applicants to agree to a future modification of that fee following the approval of the City's economic study. According to the City's program, the monies collected through the mitigation program will be directed for City use for public access and recreational projects. The applicants have proposed payment into the City's program as mitigation for adverse impacts of the proposed development on public access and recreation.

As previously identified, the proposed seawall and reconstructed slope will have adverse impacts to public access and recreational opportunities which must be mitigated. Since the site specific information is not currently available to assess those impacts, but is anticipated to be available following completion of the City's economic study, in this particular case, the Commission is accepting the applicants' proposal to mitigate the identified adverse impacts on public access and recreation associated with the proposed approximately 94- ft. long seawall structure through the initial payment of \$94,000.00 to the City of Solana Beach and requiring that the applicants provide the Commission with evidence that the full fee has actually been paid.

The City of Solana Beach is currently working on a draft Local Coastal Program (LCP) Land Use Plan (LUP) which is anticipated to be reviewed by the Commission later this year or in 2010. The City's mitigation program to address loss of sand and public access/recreation will be included as part of the LUP submittal, which the Commission will evaluate when it reviews the City's draft LUP. The Commission's acceptance, in this case, of the applicants' proposed mitigation for the loss of public access and

recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City's mitigation plan or of the City's economic study, as that plan is not before the Commission for evaluation at this time. Instead, due to the lack of sufficient information concerning the economic loss to public access/recreation from the proposed seawall, the Commission agrees to accept the applicants' proposal, and requires it to pay the City's interim fee, until such time that the City completes its economic study and a more accurate economic loss evaluation can be determined. In order to ensure that any subsequent modification of this mitigation fee is consistent with the Chapter 3 policies of the Coastal Act, the Commission imposes Special Condition #4, requiring the applicants to submit an application for an amendment to this permit to the Commission if the final mitigation fee imposed by the City is different than the proposed \$94,000 interim fee. The appropriateness of any increase or reduction in the fee amount will be addressed by the Commission at that time to assure compliance with the Coastal Act and the City's LCP, if certified.

It is anticipated that the City's economic study will provide information such as number of beach users throughout the year, what the economic value of a "day at the beach" is, quantification of beach area lost over time and other information which can assist the Commission to more accurately estimate the economic loss associated with seawall devices. However, while the Commission is accepting payment into the City's program with this application, the Commission has not yet had the opportunity to review and address the City's mitigation program as a whole in the context of the LCP and as such, makes it clear that in approving the applicants' proposed mitigation, the Commission is not approving the City's interim ordinance or the findings of the as yet unfinished economic study.

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 may exist on the property. The seawall may be located on State Lands property, and as such, Special Condition #11 requires the applicants to obtain any necessary permits or permission from the State Lands Commission to perform the work.

In addition, the use of the beach or public parking areas for staging of construction materials and equipment can also impact the public's ability to gain access to the beach. While the applicants have not submitted a construction staging and material storage plan for the subject development, it is likely that beach access to the site will occur via Fletcher Cove which is located approximately ½ mile south of the subject site. Because the applicants have not identified the location of the staging and storage area, Special Condition #6 has been attached to mitigate the impact on public parking areas and public access. Special Condition #6 prohibits the applicants from storing vehicles on the beach overnight, using any public parking spaces within Fletcher Cove overnight for staging and storage of equipment, and prohibits washing or cleaning construction equipment on the beach or in the parking lot. The condition also prohibits construction on the beach during weekends and holidays and during the summer months (between Memorial Day to Labor Day) of any year.

With special conditions that require mitigation for the adverse impacts to public access and recreation, maximum public access during construction and authorization from the State Lands Commission, impacts to the public will be minimized to the greatest extent feasible. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

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

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

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

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

As stated above, the proposed development will occur on the face of a coastal bluff and on the public beach. The bluff face at the subject site remains in its natural state subject to erosion. The bluffs on either side of the subject site have been altered with the construction of seawalls and a geogrid structure has been constructed on the north side of the subject bluffs. Following construction, the natural appearance of the bluffs at this site will be substantially altered. To mitigate the visual impacts of the proposed seawall and geogrid structure, the applicants propose to color and texture the seawall and vegetate the reconstructed bluff. The visual treatment proposed is similar to the visual treatment approved by the Commission in recent years for shoreline devices along the Solana Beach shoreline. (ref. CDP #6-02-84/Scism; 6-02-02/Gregg, Santana; 6-03-33/Surfsong; 6-04-83/Johnson, Cumming; 6-07-134/Brehmer, Caccavo; 6-08-122/Winkler). The technology in design of seawalls has improved dramatically over the last two decades. Today, seawalls typically involve sculpted and colored concrete that upon completion closely mimic the natural surface of the lower bluff face. In the case of the subject seawall request, the specific design methods for coloring and texturing the seawall have not as yet been submitted. It is also not clear whether the concrete backfill just above the seawall is also proposed to be colored and textured to closely match the natural bluff. Therefore, Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seawall and all backfill structures.

In addition, to address other potential adverse visual impacts, Special Conditions Nos. 5 and 9 have been attached which require the applicants to monitor and maintain the proposed seawall and upper bluff geogrid structure in their approved state. In this way, the Commission can be assured that the proposed structures will be maintained so as to effectively mitigate their visual prominence.

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

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

Section 30230

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

Section 30231

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

Section 30232

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

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

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

Special Condition #6 is attached which requires that during the construction of the project, “the permittees shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion”. This is a standard requirement for all seawall projects approved by the Commission. However, based on information supplied by engineers of similar seawall projects in Solana Beach, this special condition has not effectively served to prohibit the contamination of ocean waters by rebounded shotcrete. To assure that the subject development will not result in the pollution of the ocean waters, Special Condition #14 has been attached. Special Condition #14 requires the applicants to submit a Polluted Runoff Control Plan that incorporates structural and nonstructural Best Management Practices (BMPs), for Executive Director approval, for the construction of the proposed seawall. Construction methods must be devised to assure this rebound shotcrete material does not mix with or pollute ocean waters. With appropriate BMPs, the potential for this polluted material from the site making its way into the ocean will be eliminated. Therefore, as conditioned, the Commission finds the proposed development consistent with the marine and water quality protection policies of the Coastal Act.

6 Local Coastal Planning. Section 30604(a) also requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program

(LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The subject site was previously in the County of San Diego's jurisdiction, but is now within the boundaries of the City of Solana Beach. Because of the incorporation of the City, the County of San Diego's LCP never became effectively certified. The City of Solana Beach has prepared a draft LCP Land Use Plan (LUP). In preparation of its LCP, the City of Solana Beach is faced with many of the same issues as the City of Encinitas, located immediately north of Solana Beach, whose LCP was certified by the Commission in March 1995. The City of Encinitas' LCP includes the intent to prepare a comprehensive plan to address the coastal bluff recession and shoreline erosion problems in the City. The plan will include at a minimum, bluff top setback requirements for new development and redevelopment; alternatives to shore/bluff protection such as beach sand replenishment, removal of threatened portions of a residence or the entire residence or underpinning existing structures; addressing bluff stability and the need for protective measures over the entire bluff (lower, mid and upper); impacts of shoreline structures on beach and sand area as well as mitigation for such impacts; impacts for groundwater and irrigation on bluff stability and visual impacts of necessary/required protective structures.

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

As previously described, the draft LUP prepared by the City includes provisions for mitigating the adverse impacts of seawalls on public access, recreational use and sand supply. The Commission has not yet approved the City's draft LUP. Therefore, the Commission's acceptance of the applicants' proposed mitigation for the loss of public access and recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City's mitigation plan or of the City's economic study.

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

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

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

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

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

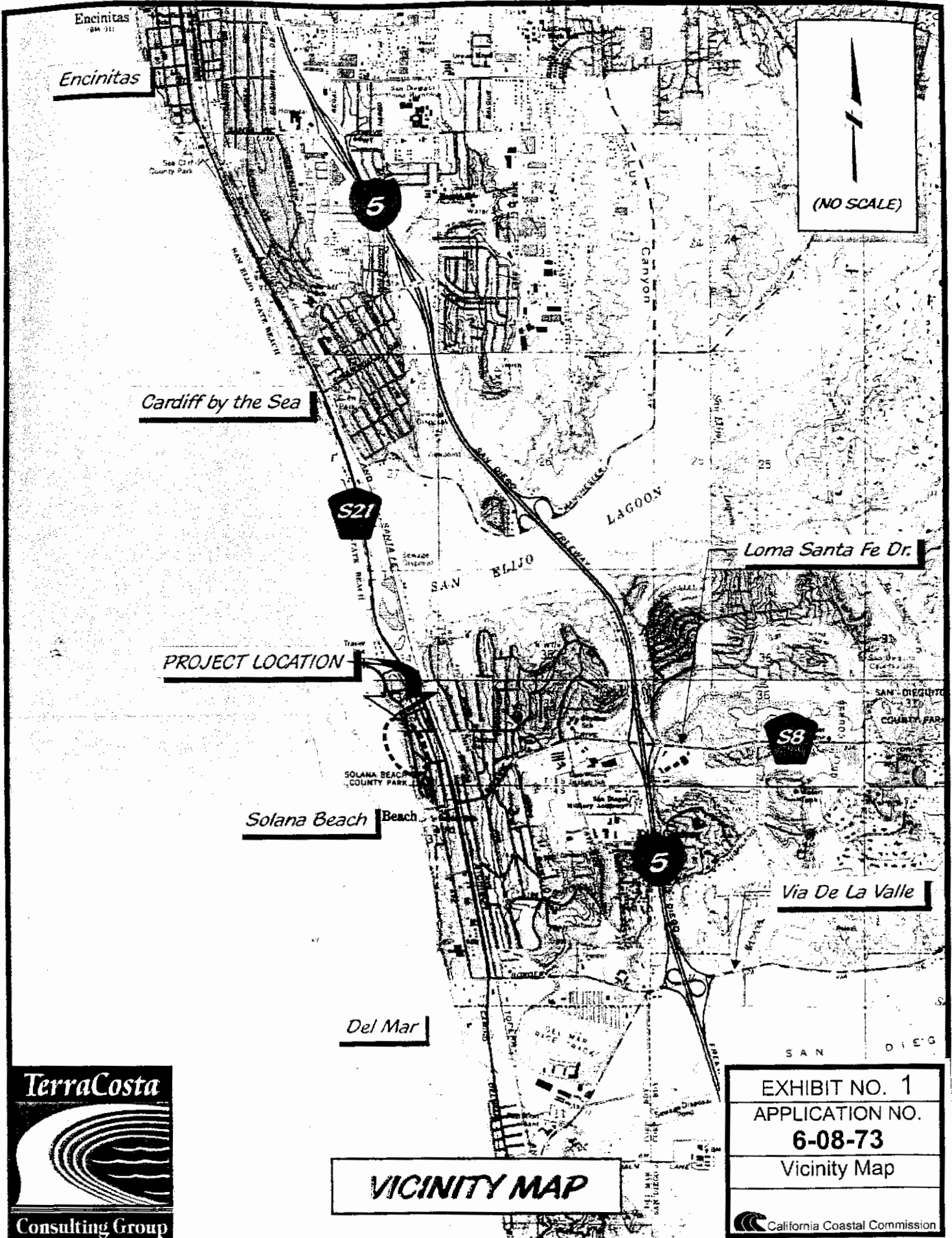
The proposed project has been conditioned in order to be found consistent with the water quality, geologic stability, visual quality, and public access and recreation policies of the Coastal Act. Mitigation measures, including conditions addressing payment of an in-lieu fee for impacts to sand supply, requirements for minimizing impacts to public access and recreation, monitoring and maintenance of the structures over the lifetime of the project, color of construction materials, timing of construction and the use of BMPs 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.



Encinitas
 Encinitas



Cardiff by the Sea

Loma Santa Fe Dr.

PROJECT LOCATION

Solana Beach Beach

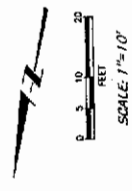
Via De La Valle

Del Mar

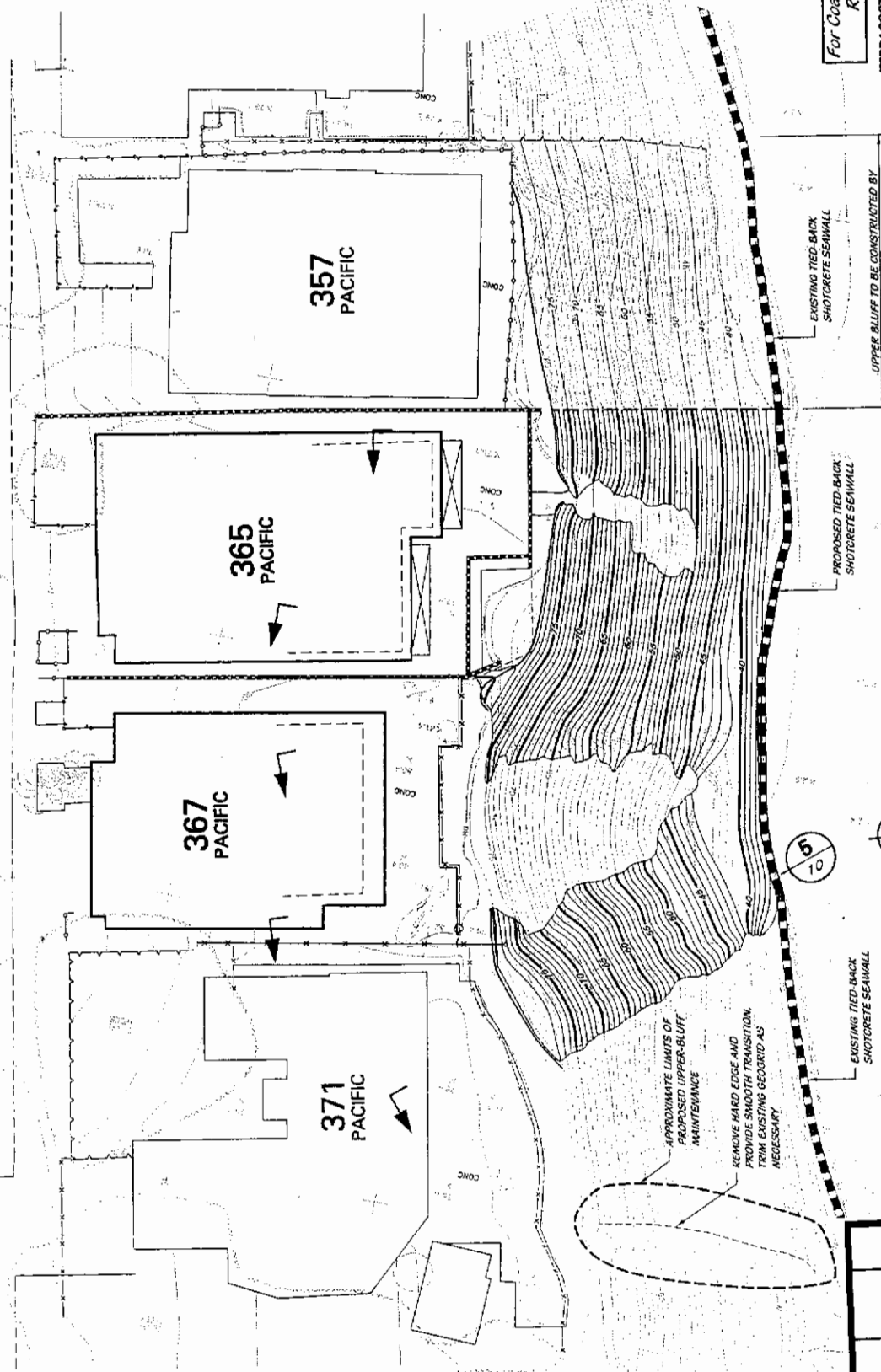


VICINITY MAP

EXHIBIT NO. 1
APPLICATION NO.
6-08-73
Vicinity Map
California Coastal Commission



NOTE: DRAWING IS NOT FULL SIZE (AS SHOWN)
 THIS REDUCE SCALE ACCORDINGLY
 ORIGINAL SCALE IN PARAGRAPHS FOR REDUCED PLANS



For Coastal Commission Review Only
TERRACOSTA CONSULTING GROUP
 ENGINEERS & GEOLOGISTS
 1415 MARSH CANYON ROAD, SUITE 100
 SAN DIEGO, CALIFORNIA 92113
 (619) 573-9800

CITY OF SOLANA BEACH
 PROPOSED REPAIR FOR:
 365 - 371 PACIFIC AVENUE
 SHORELINE STABILIZATION PROJECT

ENGINEERING DEPARTMENT
 SBGR:
 SHEET 5 OF 5

APPROVED FOR CONSTRUCTION
 By: Markus J. Compton, C.E.
 Date: 8/30/08
 M.C.E. 37148 Exp. 8/30/08

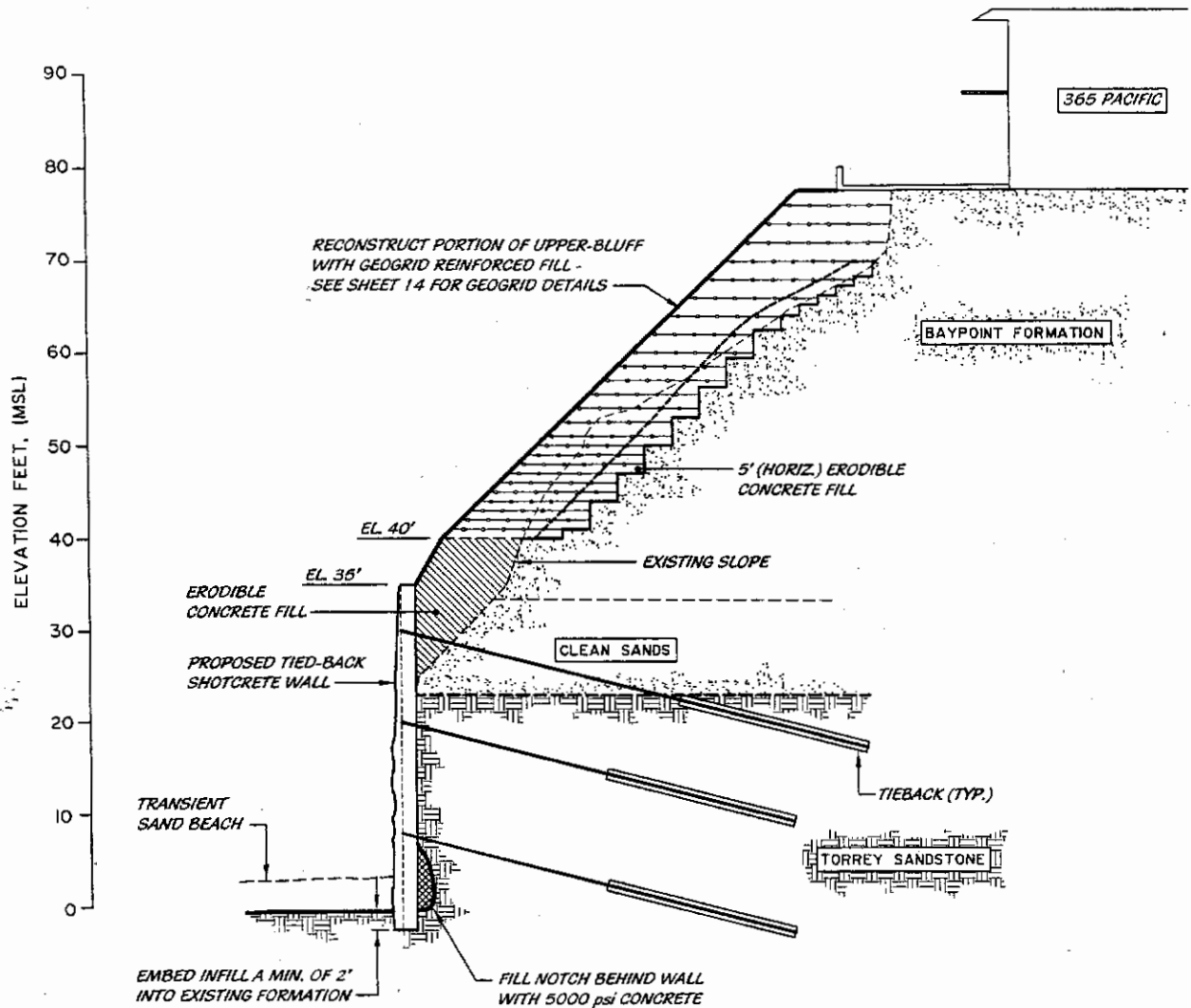
RECOMMENDED FOR APPROVAL
 By: _____ Date: _____
 By: _____ Date: _____

CITY APPROVED CHANGES
 APPROV [] DATE _____
 ENGINEER OF WORK
 By: WALTER F. COMPTON Date: 7-21-08
 R.E.E. 23792 Exp. 12/31/09

COASTAL COMMISSION PERMIT NO. _____
 SHEET NO. _____

EXHIBIT NO. 2
APPLICATION NO.
6-08-73
Site Plan

California Coastal Commission



**PROPOSED SECTION
365 PACIFIC AVENUE**

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

4
SH 5

*For Coastal Co
Review*

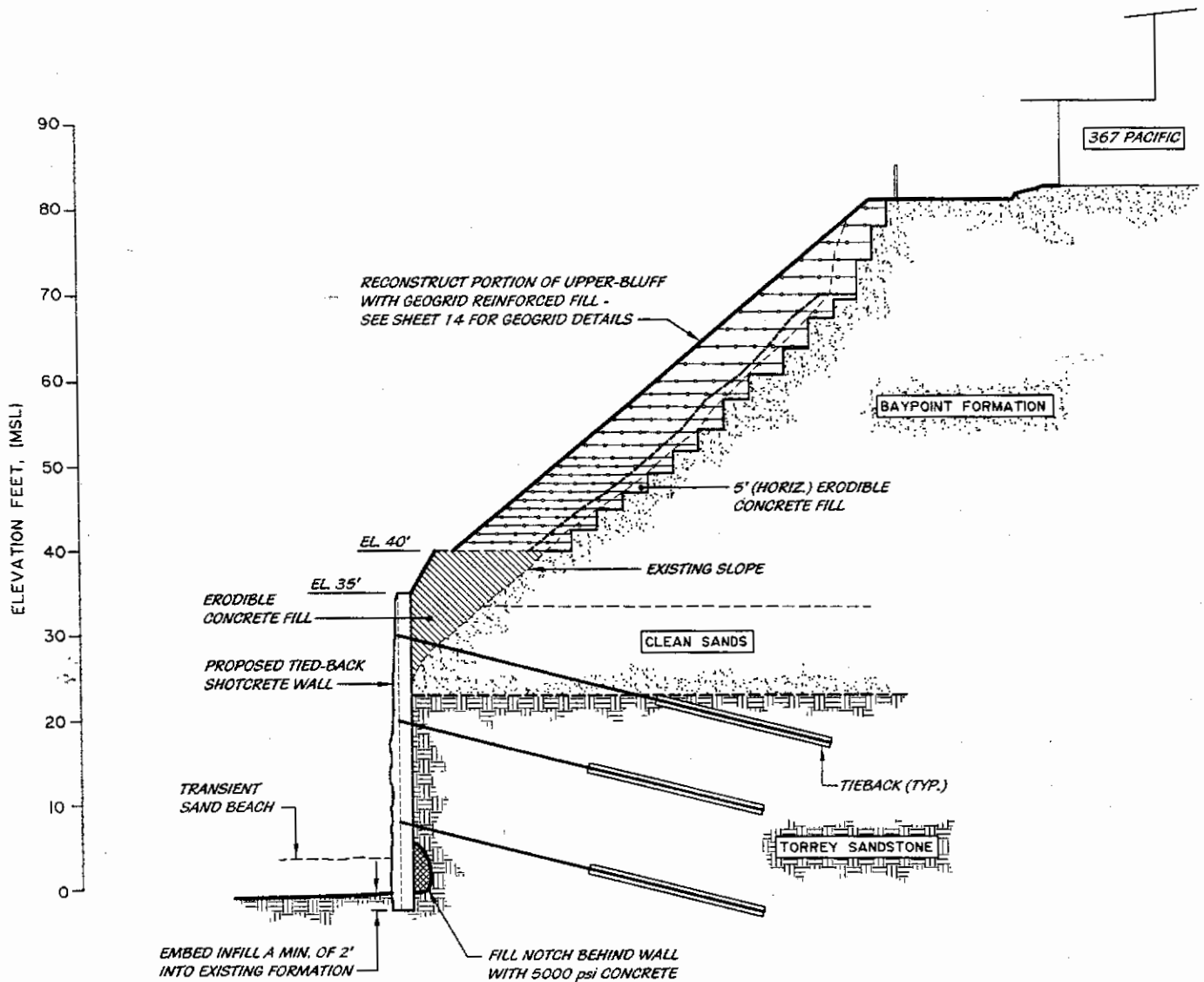
**TERRACOSTA CONSL
ENGINEERS & GEO**
4455 MURPHY CANYON RC
SAN DIEGO, CALIFORNIA
(858) 573-69

**EXHIBIT NO. 3
APPLICATION NO.
6-08-73**

**Cross-Sections for
365 Pacific Ave.**



APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH	CROSS SECTIONS FOR: 365 - 371 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 9 OF 18
By: _____ Date: _____ Mohammad Sammak, City Engineer R.C.E.: 37146 Exp: 8/30/09	SEE DETAILED BLOCK ABOVE LEFT			



PROPOSED SECTION
367 PACIFIC AVENUE
 SCALE: 1"=10' (HORIZ. & VERT.)

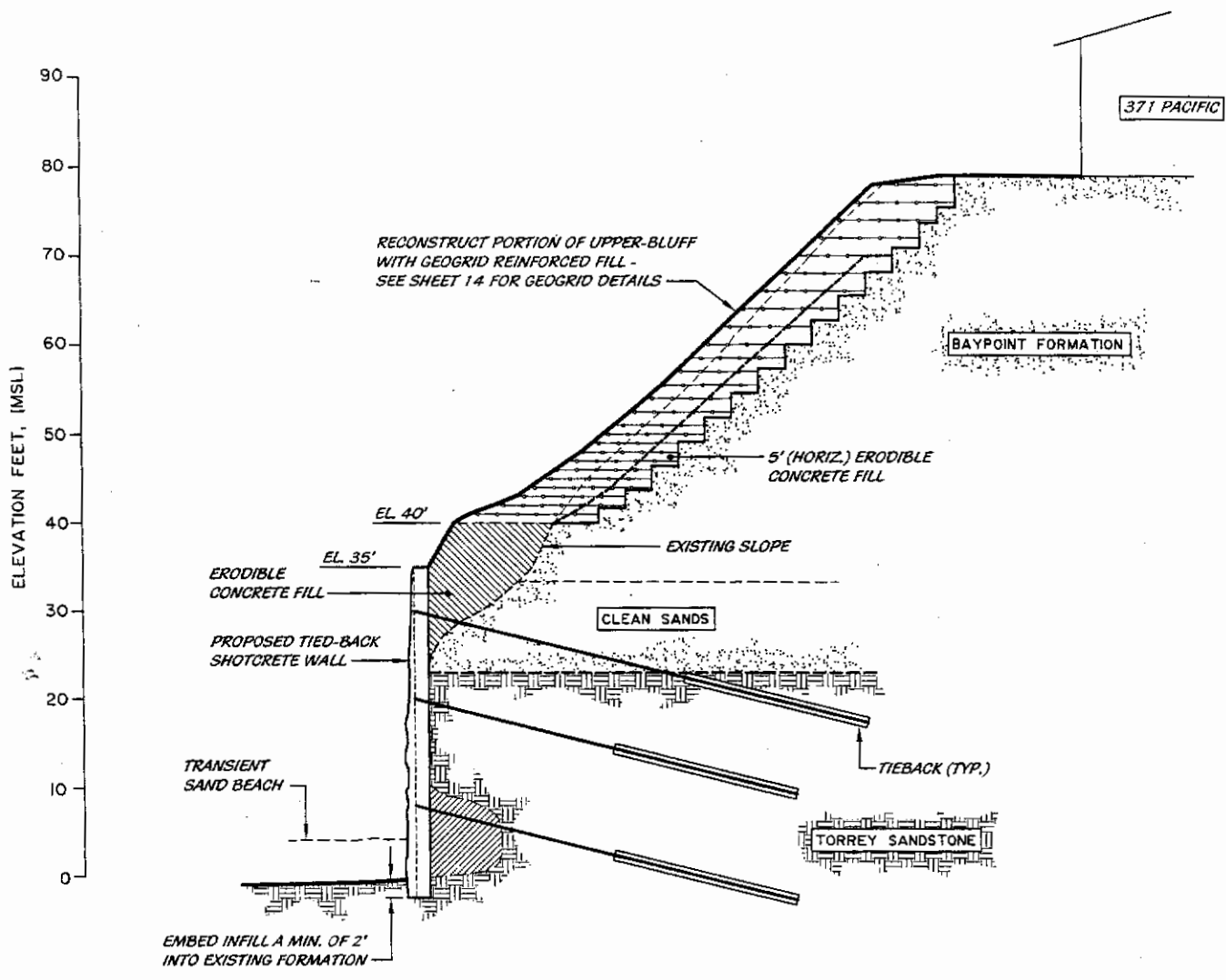
2
 SH 5

For Coastal Commission Review On

TERRACOSTA CONSULT
 ENGINEERS & GEOLOGISTS
 4455 MURPHY CANYON ROAD,
 SAN DIEGO, CALIFORNIA 92121
 (858) 573-6900

EXHIBIT NO. 4
APPLICATION NO.
6-08-73
Cross-Sections for 367 Pacific Ave.
California Coastal Commission

APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH	ENGINEERING DEPARTMENT	DRAWING NO.
By: _____ Date: _____ Mohammad Sammak, City Engineer R.C.E.: 37146 Exp: 6/30/09	SEE DETAILED BLOCK ABOVE LEFT	CROSS SECTIONS FOR: 365 - 371 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT		SBGR- SHEET 7 OF 16



PROPOSED SECTION
371 PACIFIC AVENUE
 SCALE: 1"=10' (HORIZ. & VERT.)

5
 SH 5

*For Coastal Commission
 Review Only*

TERRACOSTA CONSULTING
 ENGINEERS & GEOLOGISTS
 4455 MURPHY CANYON ROAD, SUITE 100
 SAN DIEGO, CALIFORNIA 92121
 (858) 573-6900

EXHIBIT NO. 5
APPLICATION NO. 6-08-73
Cross-Sections for 371 Pacific Ave.
California Coastal Commission

APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH	ENGINEERING DEPARTMENT	DRAWING NO.
By: <u>Mohammad Sammak, City Engineer</u> R.C.E.: 37146 Exp: 6/30/09	SEE DETAILED BLOCK ABOVE LEFT	CROSS SECTIONS FOR: 385 - 371 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT		SBGR-
				SHEET 10 OF 16

CALIFORNIA COASTAL COMMISSION

SAN DIEGO COAST AREA
 3111 CAMINO DEL RIO NORTH, SUITE 200
 SAN DIEGO, CA 92108-1725
 (619) 521-8036

COASTAL DEVELOPMENT PERMIT NO. 6-97-50Page 1 of 4

On July 10, 1997, the California Coastal Commission granted to
Nancy O'Neal

this permit for the development described below, subject to the attached
 Standard and Special Conditions.

Description: Demolition of an existing one-story single-family residence and
 construction of a new two-story, 3,568 sq.ft. single-family
 residence on a bluff-top lot.

Lot Area	4,400 sq. ft.
Building Coverage	1,883 sq. ft. (43%)
Pavement Coverage	1,317 sq. ft. (30%)
Landscape Coverage	400 sq. ft. (9%)
Unimproved Area	800 sq. ft. (18%)
Parking Spaces	2
Zoning	Medium Residential
Plan Designation	Medium Residential (5-7 du/ac)
Ht abv fin grade	25 feet

Site: 367 Pacific Avenue, Solana Beach, San Diego County. APN
 263-301-03.

Issued on behalf of the California Coastal Commission by

PETER DOUGLAS
 Executive Director
 and

Signature on file

IMPORTANT: THIS PERMIT IS NOT VALID UNLESS AND UNTIL A COPY OF THE PERMIT
 WITH THE SIGNED ACKNOWLEDGEMENT HAS BEEN RETURNED TO THE COMMISSION OFFICE.

ACKNOWLEDGEMENT

The undersigned permittee acknowledges
 receipt of this permit and agrees to
 abide by all terms and conditions
 thereof.

Date _____ Si _____

EXHIBIT NO. 6
APPLICATION NO. 6-08-73
CDP 6-98-27
Page 1 of 4
California Coastal Commission

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgement. 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. Compliance. All development must occur in strict compliance with the proposal as set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
5. Inspections. The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.
6. 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.
7. 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.

SPECIAL CONDITIONS:

The permit is subject to the following conditions:

1. Final Project Plans. Prior to the issuance of the coastal development permit, the applicant shall submit for review and written approval of the Executive Director, final building, foundation, drainage and grading plans, stamped and approved by the City of Solana Beach, which shall include the following:
 - a. All surface drainage shall be collected and directed away from the edge of the bluff towards the street.

SPECIAL CONDITIONS, continued:

b. Said plans shall clearly indicate both the 19.5 ft. and 40 ft. blufftop setback lines and reflect compliance by the applicant with one of the following options:

1. Revised plans indicating a minimum 40 ft. setback from the edge of the bluff (as depicted on the plans by Stephen W. Adams dated 4/3/97) for all portions of the proposed residence.

OR

2. Plans shall be in substantial conformance with the preliminary plans submitted with this application, and shall provide a minimum 40 ft. setback from the edge of the bluff (as depicted on the plans by Stephen W. Adams dated 4/3/97) for all new construction, and retention of a portion of the existing structure up to 19.5 ft. from the top edge of the bluff. Plans shall reflect a design that facilitates removal of the portion of the home closer than 40 feet from the bluff edge in the future, and which allows the portion of the home farther than 40 feet from the bluff edge to stand independently of the seaward portion of the residence. Modifications to the non-conforming portion of the residence which will remain seaward of the 40 foot setback shall be minimal, as shown on the submitted plans, and shall not include any modifications to the foundation or replacement of exterior walls. (This option requires recordation of a deed restriction pursuant to Special Condition #2 of CDP #6-97-50 below).

2. Deed Restriction. Prior to the issuance of the coastal development permit, and only if the applicant chooses option b.2 of Special Condition #1 above, the applicant shall record a deed restriction in a form and content acceptable to the Executive Director, which shall provide the following:

a. The applicant acknowledges that the portion of the residence proposed to remain closer than 40 feet to the bluff edge is proposed in an area which may require shoreline protection within the life of the structure. However, new development which would in any way require the construction of protective devices that would substantially alter natural landforms along bluffs is not in conformance with Section 30253 of the Coastal Act. Therefore, the homeowner has agreed to the limitations set forth in this deed restriction.

b. The landowner waives all right to construct any upper or lower bluff stabilization devices (other than "preemptive" filling of seacaves at the base of the bluff as approved through a coastal development permit) to protect any portion of the residence or accessory structures located closer than 40 feet to the bluff edge, as depicted on the plans by Stephen W. Adams dated 4/3/97, in the event that the residence is threatened or subject to damage from erosion, storm wave damage, or bluff failure in the future.

SPECIAL CONDITIONS, continued:

c. In the event the edge of the bluff recedes to within 10 feet of the principal residence, a geotechnical investigation shall be prepared by a licensed coastal engineer and geologist, that addresses whether any portion of the residence is threatened. The report shall address removal of the portion of the residence located closer than 40 feet to the bluff edge, as depicted on the plans by Stephen W. Adams dated 4/3/97, and shall identify all immediate or potential future alternative measures necessary or desired to stabilize the entire residence without shore or bluff protection, including, but not limited to, underpinning of the structure and removal of all threatened portions of the entire residence.

d. If erosion or bluff failure proceeds to a point where any portion of the residence located closer than 40 feet from the bluff edge, as depicted on the plans by Stephen W. Adams dated 4/3/97, is determined by a geotechnical report or the City of Solana Beach to be unsafe for occupancy, then the landowner shall remove that portion of the structure in its entirety. The removal must be approved through a coastal development permit.

The document shall be recorded free of all prior liens and encumbrances and shall run with the land and bind all successors and assigns.

3. Assumption of Risk: Prior to the issuance of the coastal development permit, the applicant shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which shall provide: (a) that the applicant understands that the site may be subject to extraordinary hazard from bluff retreat and erosion and the applicant assumes the liability from such hazards, and (b) the applicant unconditionally waives any claim of liability on the part of the Commission or its successors in interest for damage from such hazards and agrees to indemnify and hold harmless the Commission, its offices, agents, and employees relative to the Commission's approval of the project for any damage resulting from such hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens.

4. Future Development. Prior to the issuance of the coastal development permit, the applicant shall execute and record a document, in a form and content acceptable to the Executive Director, stating that the subject permit is only for the development described in the coastal development permit #6-97-50; and that any future additions or other development as defined in Public Resources Code Section 30106 will require an amendment to permit #6-97-50 or will require an additional coastal development permit from the California Coastal Commission or from a local government pursuant to a certified LCP, unless such development is explicitly exempted under the Coastal Act and the Commission's Code of Regulations. The document shall be recorded as a covenant running with the land binding all successors and assigns in interest to the subject property.

CALCULATION OF MITIGATION FEE FOR IMPACTS TO SAND SUPPLY
PROPOSED NOTCH INFILL
365 - 371 PACIFIC AVENUE
SOLANA BEACH, CALIFORNIA

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

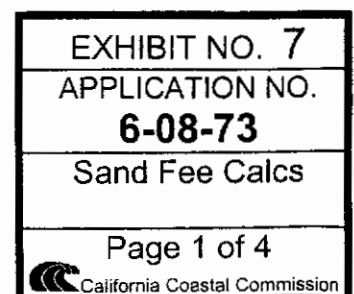
$$V_t = V_b + V_w + V_e \quad (2)$$

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)

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 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:

$$C = \$15.00 \text{ per cubic yard to purchase and deliver sand}$$

$$R = 0.3 \text{ ft/yr}$$

$$L = 30 \text{ years}$$

$$W = 93.5 \text{ feet}$$

$$S = 0.75$$

$$H = 80 \text{ feet}$$

$$V = 0.9 \text{ cubic yards per square foot of beach}$$

$$E = 2.50 \text{ feet}$$

Utilizing equation (3):

$$V_b = \frac{0.3 \times 30 \times 93.5 \times 80 \times 0.75}{27}$$

$$V_b = 1870 \text{ yard}^3$$

Utilizing equation (4):

$$V_w = 0.3 \times 30 \times 0.9 \times 93.5$$

$$V_w = 757.4 \text{ yard}^3$$

Utilizing equation (5):

$$V_e = 2.50 \times 93.5 \times 0.9$$

$$V_e = 210.4 \text{ yard}^3$$

Utilizing equation (2):

$$V_t = 1870 + 757.4 + 210.4$$

$$V_t = 2837.8 \text{ yard}^3$$

Utilizing equation (1):

$$M = 2837.8 \times \$15.00/\text{yd}$$

$$M = \$42,567$$

Sand Mitigation Fee Parameters

W	=	93.5 ft
E	=	2.50 ft
V	=	0.9 cy/sf
R	=	0.3 ft/yr
L	=	30 yr
S	=	75%
H	=	80 ft
C	=	\$15/cy