CALIFORNIA COASTAL COMMISSION
SAN DIEGO COAST DISTRICT OFFICE
7575 METROPOLITAIN DRIVE SUITE 103
SAN DIEGO, CA 92108
PHONE: (619) 767-2370
WEB: WWW.COASTAL.CA.GOV

Th20b

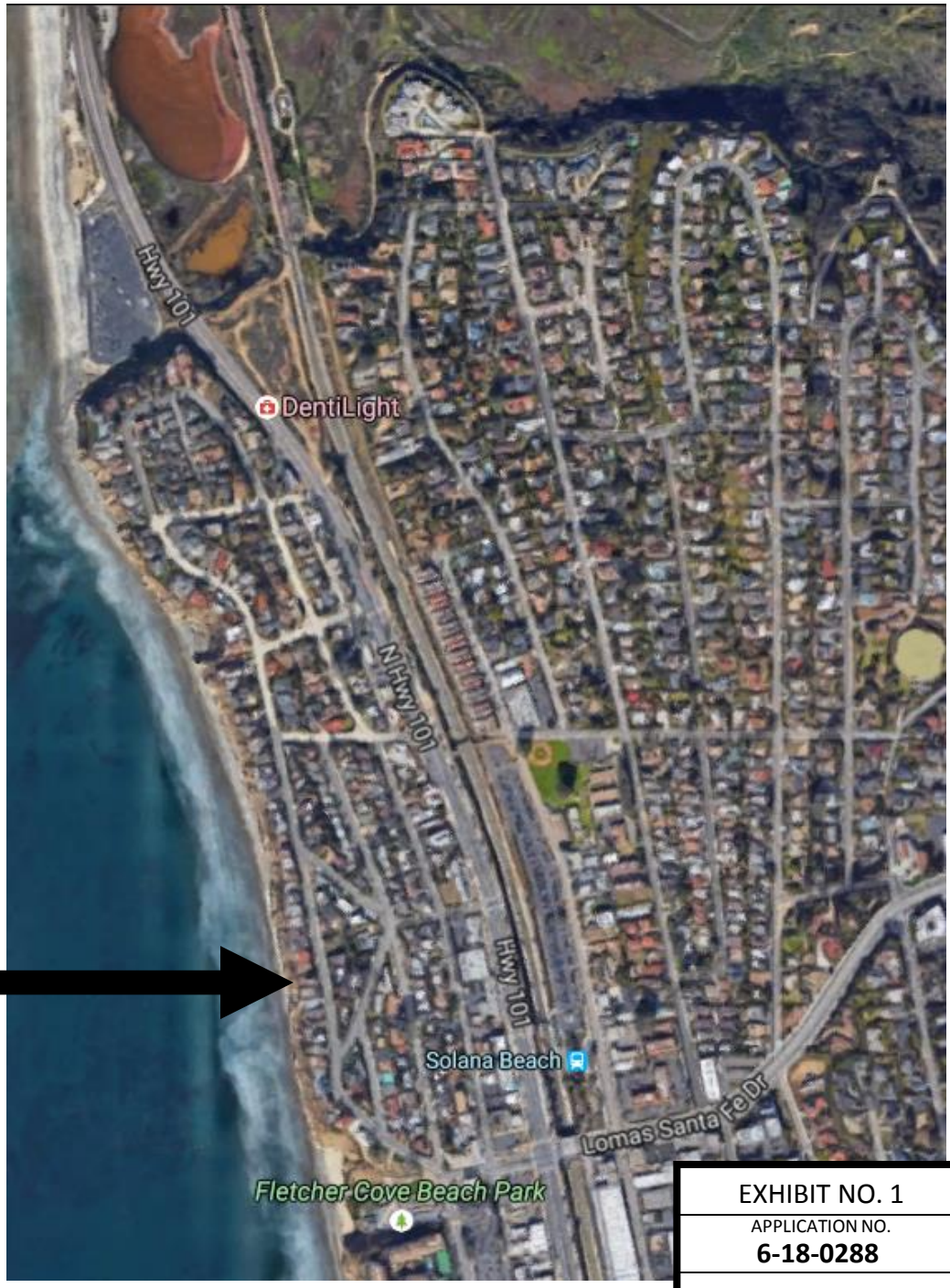
6-18-0288 (DESIMONE ET AL.)

MARCH 7, 2019

EXHIBITS

Table of Contents

PROJECT LOCATION



Project Location

Google Maps

EXHIBIT NO. 1

APPLICATION NO.
6-18-0288

Project Location

California Coastal Commission

AERIAL PHOTOGRAPH

Google Maps

EXHIBIT NO. 2

APPLICATION NO.
6-18-0288

Aerial Photo

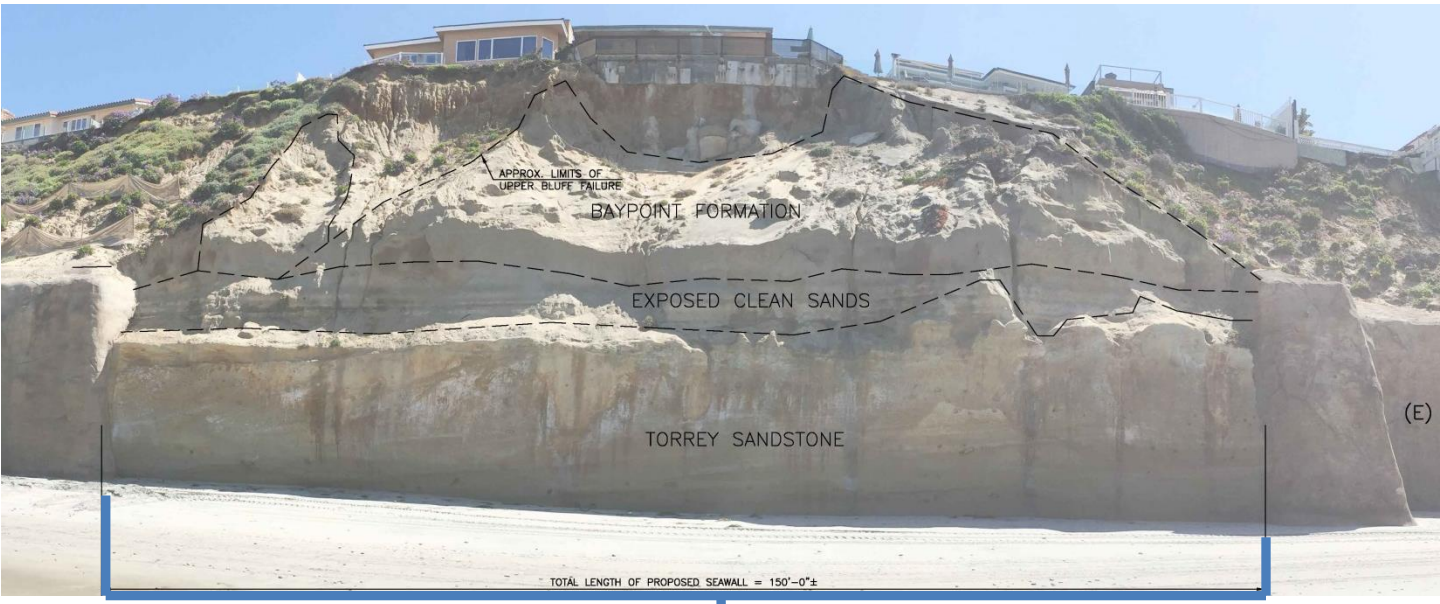
California Coastal Commission

PROPOSED SEAWALL LOCATION PHOTOGRAPH

245 Pacific

241 Pacific

235 Pacific



Proposed 150 Ft. Long Seawall Location

EXHIBIT NO. 3

APPLICATION NO.
6-18-0288

Proposed Seawall

California Coastal Commission

2017 Photo from beach provided by applicant

PROPOSED SITE PLAN

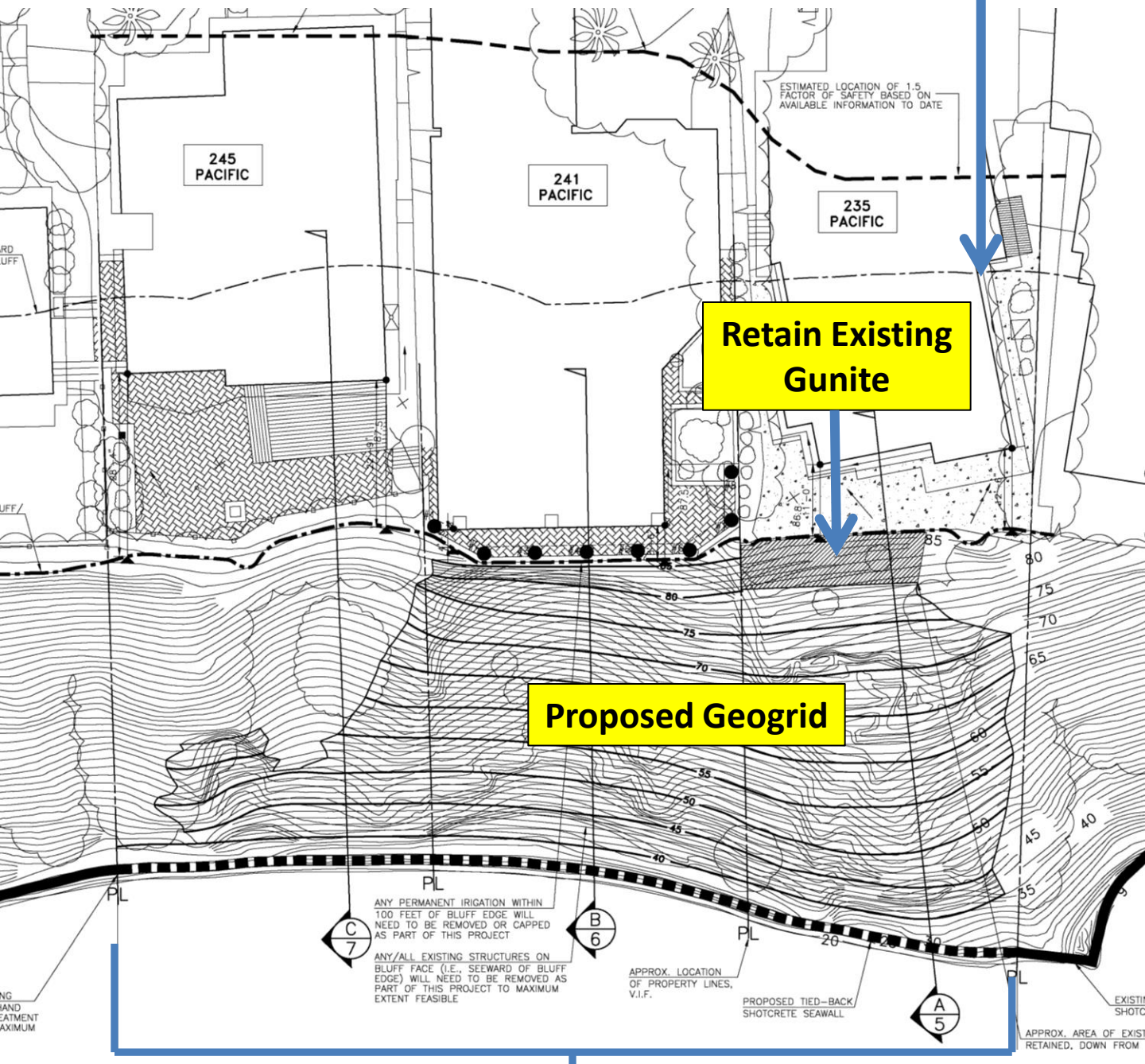
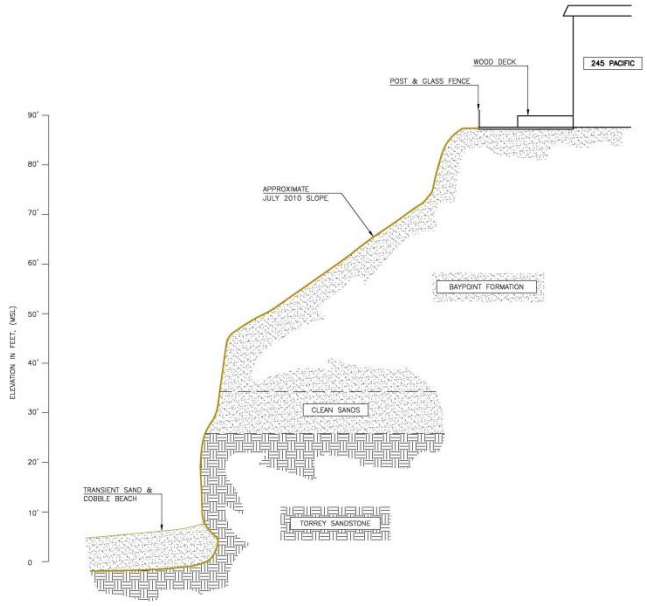
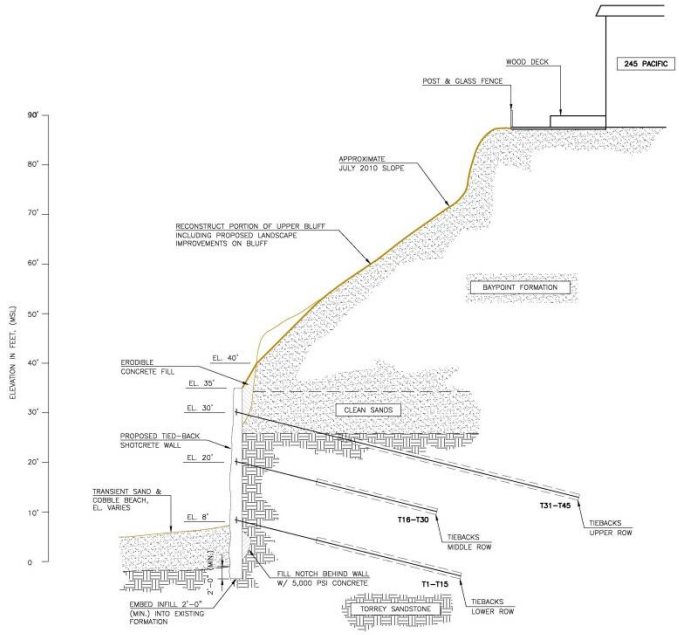


EXHIBIT NO. 4
APPLICATION NO. **6-18-0288**
Proposed Site Plan
California Coastal Commission

245 PACIFIC SECTION PLAN – EXISTING AND PROPOSED



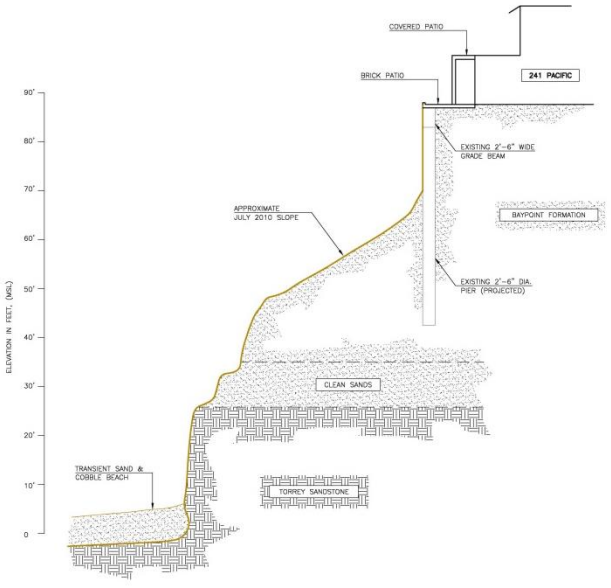
SECTION–EXISTING
245 PACIFIC AVENUE
SCALE: 1"=10'
C/7



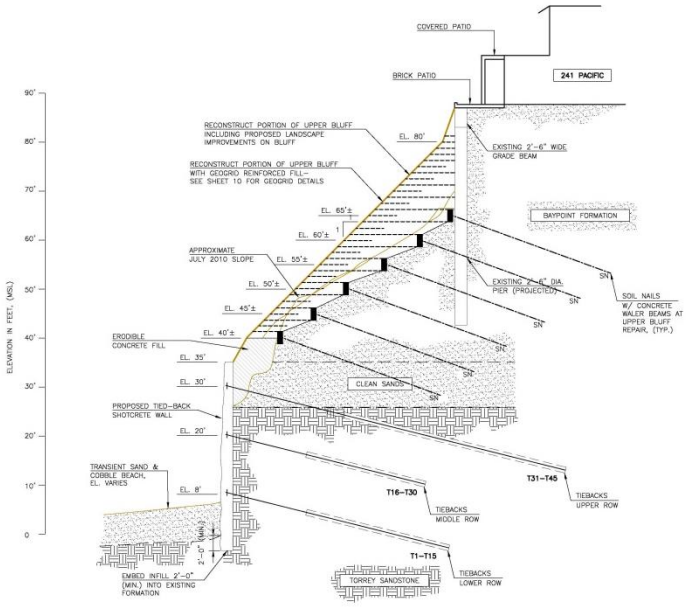
SECTION–PROPOSED
245 PACIFIC AVENUE
SCALE: 1"=10'
C/7

EXHIBIT NO. 5
APPLICATION NO.
6-18-0288
245 Section Plan
California Coastal Commission

241 PACIFIC SECTION PLAN – EXISTING AND PROPOSED



SECTION–EXISTING
241 PACIFIC AVENUE
SCALE: 1"=10'
B
6



SECTION–PROPOSED
241 PACIFIC AVENUE
SCALE: 1"=10'
B
6

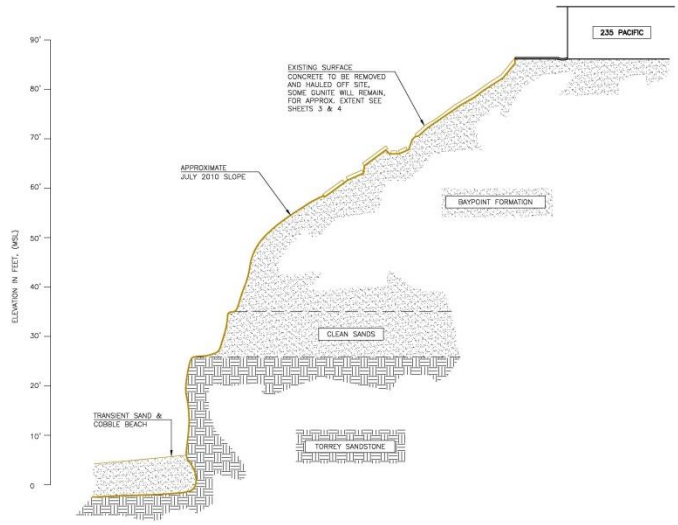
EXHIBIT NO. 6

APPLICATION NO.
6-18-0288

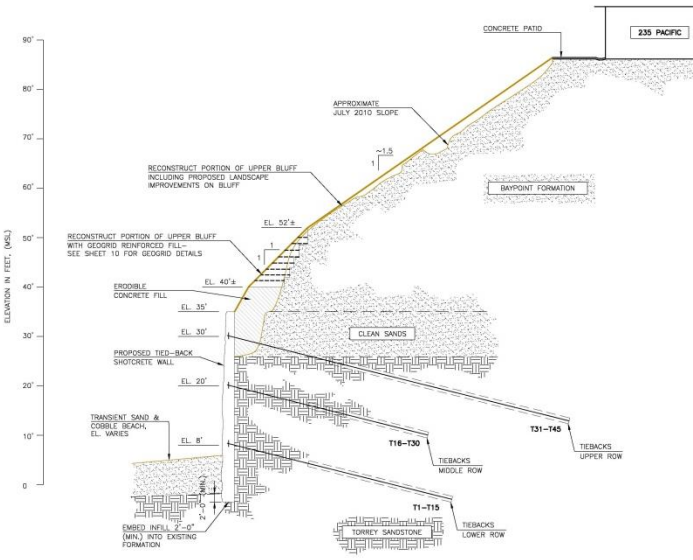
241 Section Plan

California Coastal Commission

235 PACIFIC SECTION PLAN – EXISTING AND PROPOSED



SECTION–EXISTING
235 PACIFIC AVENUE
SCALE: 1"=10'
A
5



SECTION–PROPOSED
235 PACIFIC AVENUE
SCALE: 1"=10'
A
5

EXHIBIT NO. 7

APPLICATION NO.
6-18-0288

235 Section Plan

California Coastal Commission

SAND MITIGATION CALCULATIONS

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way • Carlsbad, California 92010 • (760)438-3155 • FAX(760)931-0915

MEMORANDUM

DATE: November 27, 2017

TO: Bob Trettin

FROM: Mr. David Skelly, PE

SUBJECT: Sand Fee Worksheet 235,241, and 245 Pacific Ave, Solana Beach

---

SAND MITIGATION FEE WORKSHEET

235, 241, and 245 Pacific Ave, Solana Beach
November 27, 2017

150' Seawall

W = 150.00
E = 0 **(project subject to a recreation fee)**
v = 0 .90
R = 0 .4 **(from GeoSoils Coastal Hazard Report, 2017)**
L = 20 yrs.
S = 0.74 **(from USACOE 2015 Solana Beach Study)**
Hs = 35
Hu = 50
Rcu = 0.4
Rcs = 0

Vb = (S x W x L) X [(R x hs) + (1/2hu x (R + (Rcu – Rcs)))] / 27
where (S x W x L) = (.74 x 150 x 20) = 2,220
Vb = (2220) x [((R x hs) + (1/2hu x (R + (Rcu-Rcs)))] / 27
Vb = **2,795.56 cu yds**

Vt = Vb **Vt = 2,795.56**

VAC = Volume of Sand Already Contributed Through Failure*
VAC = 729 cubic yards (985 cubic yards of material lost in failure multiplied by .74)

Vt Final = Vt-VAC **Vt Final = 2,066.66**

M= Vt Final x C C = $13.67**

M = 2066.66 x $13.67 = $28,251.24

* **Soil Engineering Construction, Inc. obtained the lost volume of beach quality sand based on the estimated volume of replacement materials utilized to rebuild the coastal bluff**

** **The value of "C" is based on three (3) attached bids from qualified, licensed contractors.**

Shelby Tucker, Associate General Counsel, SANDAG has noted that the cost to distribute sand to Fletcher Cove in the 2012 SANDAG Regional Beach Sand Project was $6.60 / cubic yard. We therefore question the need to provide payment based on the required bids (as such bids are based on a single project site and a significantly lower volume of sand, therefore increasing costs) and propose a payment of $13,640 ($6.60 x 2,066.66).

Stevens, Eric@Coastal

From:	Bob Trettin <trettincompany@gmail.com>
Sent:	Monday, February 11, 2019 2:24 PM
To:	Stevens, Eric@Coastal
Subject:	235, 241, 245 Pacific; Revised Sand Fee; Calcs Attached
Attachments:	Sand Fee; Calcs for Lost Bluff Materials.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Eric ... Under the Skelly (GeoSoils Inc.) submittal on sand calcs dated 11/27/17, 985 cu. yds. (729 cu. yds. of Beach Quality Sand) were estimated lost to prior failure and subtracted from the total amount.

John Niven (SEC, Inc.) has run calculations and arrived at a slightly lesser number: 845 cu. yds. (625.3 cu. yds. of Beach Quality Sand).

Based on the attached calcs, VT Final = 2,170.26 cu. yds. (2,795.56 - 625.3)

Therefore, the sand mitigation fee should be: $29,667.45 (2,170.26 X $13.67)

I'm not sure why there is a discrepancy in lost sand volumes from the Skelly submittal and John's current calcs, but we are prepared to go with the more conservative, slightly higher fee, based on 2,170.26 cu. yds.

I will continue to point out the Skelly note on the 2017 sand fee calculation sheet provided by GeoSoils, Inc.: **SANDAG noted that the cost to distribute sand to Fletcher Cove in the 2012 SANDAG Regional Beach Sand Project was $6.60/cu. yd. Based on this cost, the applicants at 235, 241, 245 Pacific should be paying a mitigation fee of $14,323.72.**

Let me know if you need anything else ... thanks, BOB

Bob Trettin, Principal
The Trettin Company
560 N. Coast Highway 101, Suite #5
Encinitas, California 92024
Ph: (858) 603-1741
e-mail: trettincompany@gmail.com

BLUFF

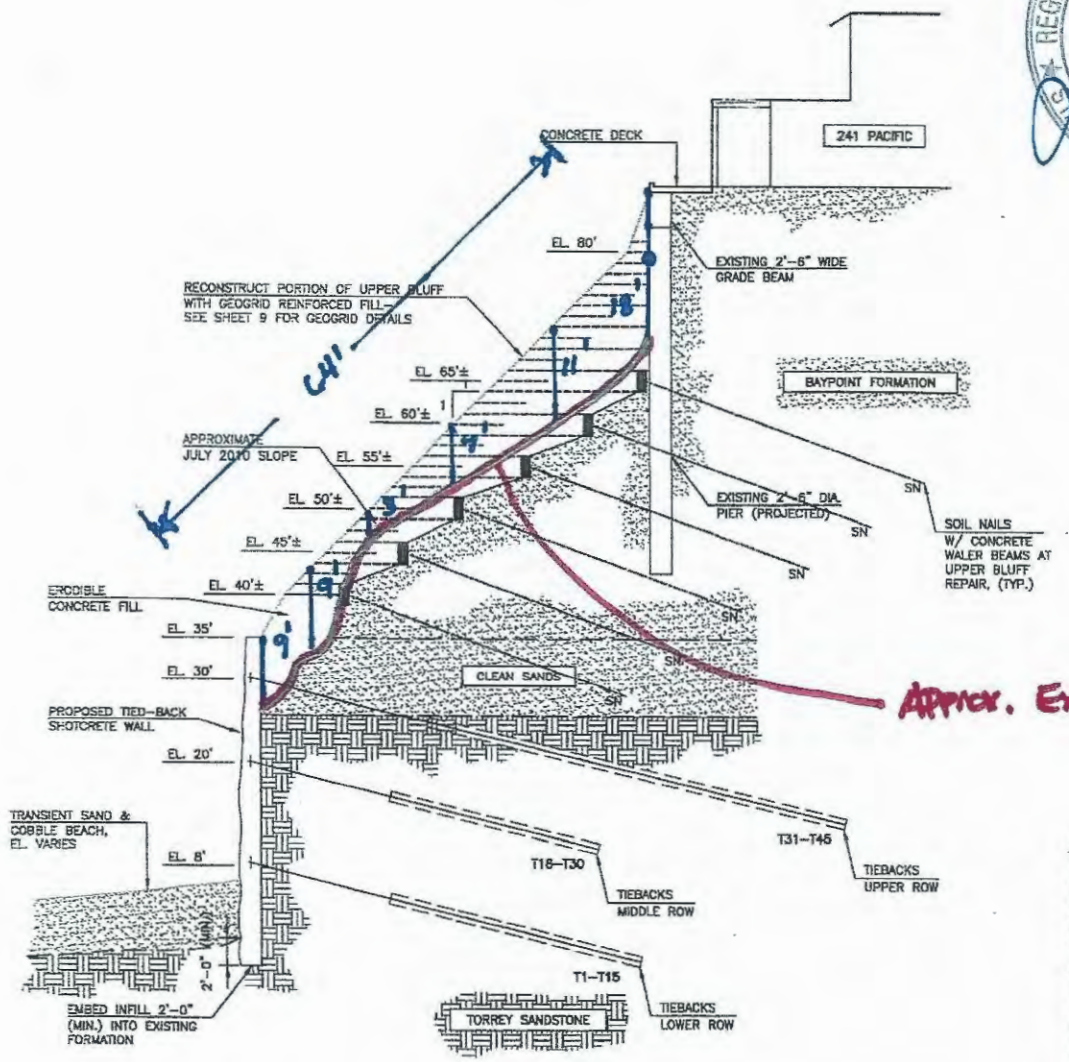
AVE. THICKNESS LOST

WIDTH OF LOT

VOL. SAND LOST = $\frac{9'+9'+3'+7'+11'+18'}{6}$ × 64' × 50' × 0.75 × $\frac{CF}{27CY}$ = 8450 CY

64' ↓ ON SLOPE LENGTH

0.75 ↓ ASSUME BOWL TYPE FAILURE



ABBREVIATIONS:

C.C.	–CENTER TO CENTER
C.O.	–CLEAN OUT
E.W.	–EACH WAY
(E), (N)	–EXISTING, NEW
N.I.C.	–NOT IN CONTRACT
P.T.D.F.	–PRESSURE TREATED DOUGLAS FIR
T.O.G.B.	–TOP OF GRADE BEAM
T.O.W.	–TOP OF WALL
T. & B.	–TOP AND BOTTOM
U.N.O.	–UNLESS NOTED OTHERWISE
V.I.F.	–VERIFY IN FIELD
B.O.W.	–BOTTOM OF WALL
G.B.W.	–GRADE BELOW OF WALL
T.O.C.	–TOP OF CONCRETE
T.O.G.	–TOP OF GRADE
E.F.	–EACH FACE

SECTION–PROPOSED
241 PACIFIC AVENUE (B/5)
SCALE: 1"=10'

0 1" 2" 3"
ORIGINAL DRAWING MEASURE

AS–BUILT
By:_____ Date:_____
R.C.E.:_____ Exp:_____

APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH ENGINEERING DEPARTMENT	DRAWING NO.
By:_____ Date:_____	DESCRIPTION: SDCPS-446 FD 2" BR. DISK IN TC PER ROS 14492 "LAB6118 1980 TRAVERSE POINT LS 4300 COUNTY OF SAN DIEGO"	CROSS SECTIONS–241 PACIFIC AVENUE FOR: 235–245 PACIFIC AVENUE, SOLANA BEACH, CA 92075	SBGR–

PUBLIC RECREATION FEE CALCULATIONS

Table 1 - Public Recreation Impact Mitigation Fee Schedule

Permit Year	Initial Area Rate (Per SF)	Bluff Retreat Rate (Per LF)
2016	$121	$600
2017	$124	$630
2018	$126	$662
2019	$129	$698

Seawall Initial Area = Seawall Width * Seawall Length

Public Recreation Fee = ((Seawall Initial Area * Initial Area Rate) * (Seawall Length * Bluff Retreat Rate) – Interim Deposit Previously Paid)

Seawall Width (ft.)	2.33
Seawall Length (ft.)	150.00
Seawall Initial Area (sq. ft.)	349.50
Initial Area Rate ($/sq. ft.)	129.00
Bluff Retreat Rate ($/linear ft.)	698.00
Interim Deposit Previously Paid ($)	22,000.00
Public Recreation Fee ($)	127,785.50

EXHIBIT NO. 9
APPLICATION NO.
6-18-0288
Rec Mitigation
California Coastal Commission

2018 PHOTOGRAPH SHOWING ADJACENT SEAWALLS

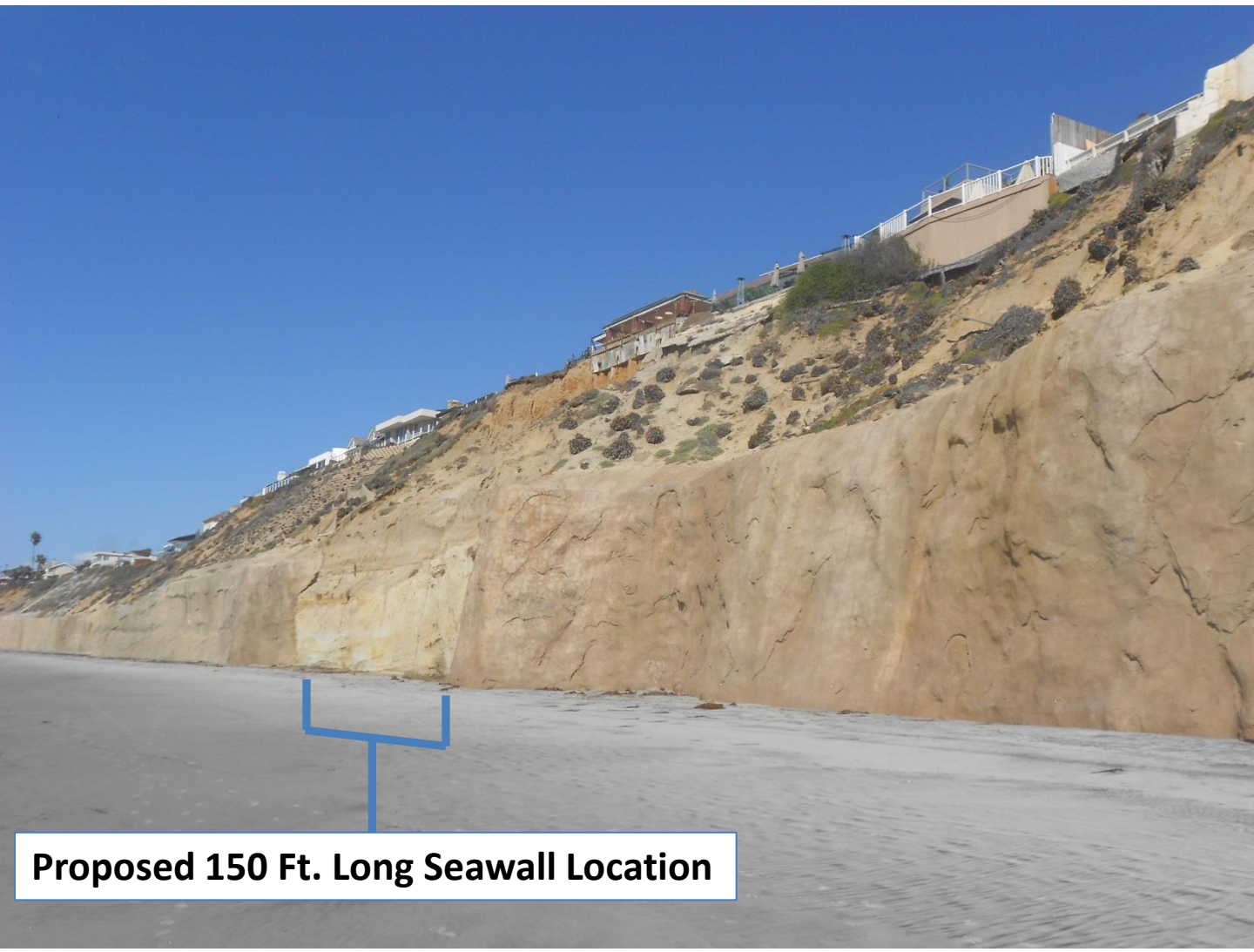


EXHIBIT NO. 10

APPLICATION NO.
6-18-0288

Adjacent Seawalls

California Coastal Commission

2018 PHOTOGRAPH SHOWING EXPOSED CAISSONS AT 241 PACIFIC AVENUE

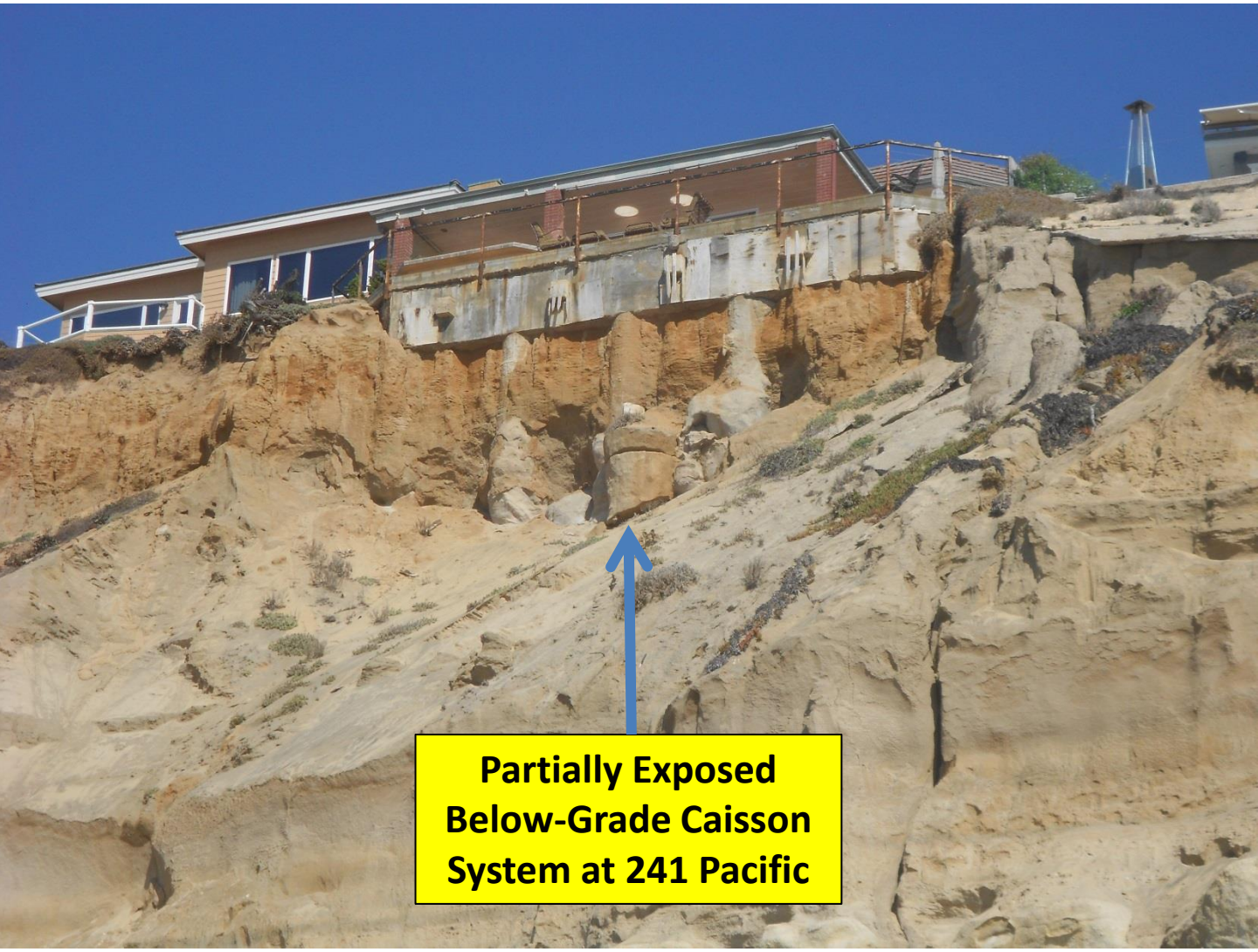


EXHIBIT NO. 11
APPLICATION NO. **6-18-0288**
241 Exposed Caissons
California Coastal Commission

2018 PHOTOGRAPH SHOWING EXISTING GUNITE AT 235 PACIFIC AVENUE

EXHIBIT NO. 12

APPLICATION NO.
6-18-0288

Gunite

California Coastal Commission

CDP 6-96-021/RATKOWSKI (245 PACIFIC AVENUE)

EXHIBIT NO. 13

APPLICATION NO.
6-18-0288

CDP 6-96-021

California Coastal Commission

CALIFORNIA COASTAL COMMISSION

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

Filed:	March 22, 1996
49th Day:	May 10, 1996
180th Day:	September 18, 1996
Staff:	DL-SD
Staff Report:	April 16, 1996
Hearing Date:	May 7-10, 1996

REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-96-21

Applicant: Mr. and Mrs. Donald Ratkowski Agent: Edward M. Eginton

Description: Demolition of an existing 1,135 sq.ft. single-family residence and 186 sq.ft. detached garage and construction of a 3,951 sq.ft., tri-level single-family residence on a blufftop lot.

Lot Area	4,830 sq. ft.
Building Coverage	2,114 sq. ft. (44%)
Pavement Coverage	1,327 sq. ft. (28%)
Landscape Coverage	1,127 sq. ft. (23%)
Unimproved Area	262 sq. ft. (5%)
Parking Spaces	2
Zoning	Medium Residential
Plan Designation	Medium Residential (5-7 du/ac)
Ht abv fin grade	25 feet

Site: 245 Pacific Avenue, Solana Beach, San Diego County. APN 263-312-11.

STAFF NOTES:

Summary of Staff's Preliminary Recommendation:

Staff is recommending approval of the proposed development subject to a special condition which gives the applicant the option of either (1) revising the project such that the new residence would be sited a minimum 40 ft. from the bluff edge or, (2) as proposed by the applicant, allow the new residence to be constructed a minimum of 25 ft. from the top edge of the bluff with recordation of a deed restriction agreeing to waive the right to future shoreline protection and to remove threatened portions of the home in the future rather than construct shoreline protection. Other conditions of approval include deed restrictions relative to the applicant's assumption of risk, future shoreline protective works, and future development on the site; the submittal of final landscape plans; and the identification of the location of export material.

Substantive File Documents: Certified County of San Diego Local Coastal Program (LCP); City of Solana Beach General Plan and Zoning Ordinance; City of Solana Beach Resolution No. 96-13; Southland Geotechnical Consultants, "Addendum to Geotechnical Investigation, Proposed Single-Family Residence, 245 Pacific Avenue," October 19, 1995; Southland Geotechnical Consultants, "Response to Coastal Commission Letter Dated March 1, 1996," March 18, 1996.

PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

I. Approval with Conditions.

The Commission hereby grants a permit for the proposed development, subject to the conditions below, on the grounds that the development will be in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976, 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 of the Coastal Act, and will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

II. Standard Conditions.

See attached page.

III. 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, 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.

b. Foundation plans shall be in substantial conformance with the preliminary foundation plans submitted with this application, which incorporate a foundation design that does not preclude, but facilitates, removal of portions of the home seaward of 40 feet, or other incremental portions of the house, or the entire house in the future.

c. Said plans shall clearly indicate both the 25 ft. and 40 ft. blufftop setback lines (measured from the top of the bluff as depicted on the plans by Edward M. Eginton dated 3/18/96) and reflect compliance by the applicant with one of the following options:

1. Revised site plan shall indicate a minimum 40 ft. setback for all portions of the principal residence from the edge of the bluff as depicted on the plans by Edward M. Eginton dated 3/18/96 (ref. Exhibit #2). Accessory structures permitted seaward of the residence shall be at grade (no extensive footings) and no closer than 5 feet from the bluff edge.

OR

2. Provision of a minimum 25 ft. setback for all portions of the principal residence from the top edge of the bluff, utilizing the bluff edge depicted on the plans by Edward M. Eginton dated 3/18/96, and recordation of a deed restriction pursuant to Special Condition #2 of CDP #6-96-21 below.

2. Deed Restriction. Prior to the issuance of the coastal development permit, and only if the applicant chooses option c.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. That 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 that portion of the residence located seaward of the 40 ft. blufftop setback as depicted on the plans submitted in accordance with Special Condition #1, in the event that such portion of the structure is threatened or subject to damage from erosion, storm wave damage, or bluff failure in the future.

b. That 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 retained by the applicant, that addresses whether any portions of the residence are threatened, and identifies all those immediate or potential future alternative measures necessary or desired to stabilize the principal residence without shore or bluff protection, including, but not limited to, removal or relocation of those portions of the principal residence located seaward of the 40 ft. blufftop setback as depicted on the plans submitted in accordance with Special Condition #1.

c. If erosion or bluff failure proceeds to a point where the edge of the bluff recedes to within 10 feet of the principal residence, and any portion of the principal residence located seaward of the 40 ft. blufftop setback as depicted on the plans submitted in accordance with Special Condition #1 is determined by a geotechnical report and the City of Solana Beach to be unsafe for occupancy, then the landowner shall, in accordance with a coastal development permit, remove that portion of the structure in its entirety.

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 [and landowner] 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. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens.

4. Future Shoreline Protective Works. Prior to the issuance of the coastal development permit, the applicant shall record a deed restriction in a form and content acceptable to the Executive Director, which shall provide that in the event any bluff or shoreline protective work is anticipated in the future to protect those portions of the residence sited inland of the 40 ft. blufftop setback as depicted on the plans submitted in accordance with Special Condition #1, the applicant acknowledges that as a condition of filing an application for a coastal development permit, the applicant must provide the Commission or its successor agency with sufficient evidence enabling it to consider all alternatives to bluff protective works, including, but not limited to, consideration of relocation of portions of the residence that are threatened, structural underpinning, or other remedial measures identified to stabilize the residence that do not include bluff or shoreline stabilization devices. The document shall be recorded free of all prior liens and encumbrances and shall run with the land and bind all successors and assigns.

5. 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 #6-96-21; and that any future additions or other development as defined in Public Resources Code Section 30106 will require an amendment to permit #6-96-21 or will require an additional coastal development permit from the California Coastal Commission or from its successor agency, 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.

6. Landscaping Plan. Prior to the issuance of the coastal development permit, the applicant shall submit a detailed landscape plan indicating the type, size, extent and location of all plant materials, the proposed irrigation system and other landscape features. Drought and salt tolerant native or naturalizing plant materials shall be utilized to the maximum extent feasible. Plans shall also indicate that any existing permanent irrigation system located seaward of the 40 ft. blufftop setback shall be capped or removed and that no landscaping, accessory structures or permanent improvements shall be located within five feet of the bluff edge. Said plan

shall be first approved by the City of Solana Beach and submitted to, reviewed and approved in writing by the Executive Director.

7. Disposal of Graded Spoils. Prior to the issuance of the coastal development permit, the applicant shall identify the location for the disposal of graded spoils. If the site is located within the coastal zone, a separate coastal development permit or permit amendment shall first be obtained from the California Coastal Commission or its successors in interest.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description. Proposed is the demolition of an existing 1,135 sq.ft. single-family residence and 186 sq.ft. detached garage, and construction of a 3,951 sq.ft., tri-level single-family residence. The 4,830 sq.ft. lot is a blufftop lot located on the west side of Pacific Avenue, north of the intersection with Hill Street, in the City of Solana Beach. The existing residence is located as close as 24 feet to the bluff edge. An existing concrete patio on the western side of the site has been undermined by erosion, and the seaward portion of the slab overhangs the bluff by up to 3 feet. The project includes removal of the existing patio.

The new residence is proposed to be located a minimum of 25 feet from the edge of the coastal bluff. A deck will be located on the western side of the residence up to 15 feet from the bluff edge. The applicant has proposed as part of this application to record a deed restriction against the property, waiving future rights to any bluff or shore stabilization to protect any portion of the principal residence located within 40 ft. of the bluff edge (as the edge presently exists) and, that when the bluff erodes to a point at which the portions of the principal residence located seaward of the 40 ft. blufftop setback are threatened, then those portions of the residence will be removed.

Approximately 148 cubic yards of excavation are required to prepare the site for the new construction and the underground garage. Because a location for the disposal of the graded material has not yet been identified, Special Condition #7 requires the applicant to identify the export site and obtain all necessary coastal permits for the deposition.

The site is bounded by single-family residential structures to the north, south, and east, and the Pacific Ocean to the west. The coastal bluff adjacent to the site is approximately 85 feet in height, and generally slopes at a gradient of approximately 45 degrees at the lower portion of the slope, to near-vertical at the uppermost bluff portion. There are no indications of seacave development at the site or on the immediately adjacent lots. The face of the bluff (except for a small upper portion owned by the applicant) and the beach below are owned by the City of Solana Beach. There are no structures on the bluff face.

2. Shoreline/Blufftop Development. The following Chapter 3 policies are applicable to development along the shoreline, and acknowledge the scenic and

recreational values of nearshore areas as unique resources of public and statewide significance worthy of protection. Section 30250 addresses new residential, commercial, or industrial development and provides that "new development shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources."

In addition, Section 30253 of the Act states, that "new development shall minimize risks to life and property in areas of high geologic, flood, and fire hazard" and "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." Further, Section 30253 provides that, where appropriate, new development shall "protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses."

Further, to address the visual impact of development along the shoreline, Section 30251 states:

> 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. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Therefore, the above policies provide a strong emphasis for permitted development to avoid significant impacts on coastal resources, both individually and cumulatively, and to acknowledge that the scenic value of shoreline areas is a coastal resource of public importance, worthy of protection. There is also an acknowledgment that protective devices that substantially alter natural landforms along bluffs and cliffs should be discouraged, and that new development should be sited and designed to avoid the need for such structures.

Section 30235 addresses when such shoreline protection shall be permitted and states:

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

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

Therefore, there is an acknowledgment of the potential need for shoreline protective devices to address the fact that there is existing development along the shoreline, some of which is pre-Coastal Act and some of which has been approved by the Commission, that may require protection for the remainder of its useful or economic life. However, there is also an acknowledgment that such structures alter natural shoreline processes, and that such impacts to sand supply must be mitigated if such protection is approved.

Further, most of the sandy beach areas in San Diego County, including those adjacent to the subject site, are in public ownership as public parkland. In this particular case, the vertical portion of the bluff below the subject site is owned by the City of Solana Beach as parkland. Section 30240 states that "development in areas adjacent to environmentally sensitive habitat 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." Therefore, there is additional support in this policy to assure that blufftop development, if approved, should not precipitate the need for shoreline structures which would serve to decrease the adjacent public recreational beach area for long-term public use, or degrade the scenic quality of the coastal bluffs for public enjoyment.

Finally, to further support the need to avoid approval of blufftop development which will eventually require shoreline protection, Section 30210 states that "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." This policy suggests the need to consider the impacts of development in the coastal zone on public access and recreational opportunities, taking into consideration not only the right of private property owners to protect their shorefront development, but also the public's right to use a safe, and not overly crowded, sandy beach. Because shoreline protective devices result in the loss to the public of the sandy beach area occupied by the structure, permanently fix of the back of the beach which leads to narrowing and eventual disappearance of the beach in front of the structure, and adverse visual impacts, approval of blufftop development which will eventually require such structures is inconsistent with many of the above cited Coastal Act policies.

In recognition of these concerns, the Commission has in recent permit approvals for blufftop development identified a number of alternatives, including the use of increased setbacks and moving portions or entire structures, as potential feasible alternatives to shoreline protection. Most recently, in review of requests for development proposed closer than 40 ft. from the bluff edge, the Commission has only approved the residence when accompanied by a recorded deed restriction that requires portions of the home that are threatened in the future from erosion and bluff failure to be removed

(ref. CDP Nos. 1-90-142/Lansing, in CDP Nos 6-91-81/Bannasch, 6-91-129/Silveri, 6-93-20/Cramer, 6-93-181/Steinberg, and 6-95-23/Bennett).

This concept, known as "planned retreat", allows the line of development to recede commensurate with bluff retreat. This approach offers the homeowner reasonable use of their property in a hazardous area for a limited period of time, i.e., until the hazardous nature of bluff retreat threatens the residence. It also requires the property owner to recognize there is a limit to the useful life of the residence, and the measures that can be taken to protect the structure in the event it becomes threatened by erosion. The useful life is dictated by the rate of bluff retreat, which cannot be predicted with exact science. Although Section 30235 allows shoreline protective devices when required to protect existing structures, again, as supported above, it cannot be the only policy that is considered in order to find shoreline development consistent with the Coastal Act.

The proposed development is located in a hazardous location atop a coastal bluff in the City of Solana Beach. Continual bluff retreat and the formation and collapse of seacaves have been documented in northern San Diego County, including Solana Beach and the City of Encinitas. The community of Encinitas, located on the northern border of Solana Beach, is located in the same littoral cell as the shoreline of Solana Beach, and bluffs in this location are subject to similar erosive forces and conditions (e.g., wave action, reduction in beach sand, seacave development). As a result of these erosive forces, the bluffs and blufftop lots in the Solana Beach and Encinitas area are considered a hazard area. Documentation has been presented in past Commission actions concerning the unstable nature of the bluffs in this area of the coast and nearby communities (ref. CDP Nos. 6-93-181/Steinberg, 6-92-212/Wood, 6-92-82/Victor, 6-89-297-G/Englekirk, 6-89-136-G/Adams, and 6-85-396/Swift). In addition, a number of significant bluff failures have occurred along the Solana Beach/Encinitas coastline which have led to emergency permit requests for shoreline protection (ref. CDP Nos. 6-93-36-G/Clayton, 6-91-312-G/Bradley, 6-92-73-G/Robinson, 6-92-167-G/Mallen et al, and 6-93-131/Richards et al), including a major bluff failure just over one mile north of the subject site, and a recent substantial seacave collapse on the bluffs approximately 1,200 feet north of the subject site (6-93-181/Steinberg, 6-93-024-G/Wood and 6-92-212/Wood). In light of the instability of bluffs near the applicant's property, the potential exists for significant retreat of the bluff that supports the applicant's property.

Historically, to address the bluff stability problems found along the shoreline of Solana Beach and Encinitas, the Commission has typically required new development to observe a minimum setback of 40 feet from the edge of the bluff, with a reduction to 25 feet allowed only subject to the finding of a certified engineering geologist that bluff retreat will not occur to the extent that the principal permitted structure would be endangered within its economic life (75 years). When the County of San Diego had jurisdiction over the area, the County adopted the Coastal Development Area regulations as part of their LCP Implementing Ordinances, which had similar requirements. The City of Solana Beach has also utilized a 40-foot setback which may be reduced to 25 feet following a discretionary review process which finds that the

construction will not be subject to foundation failure during the economic life of the structure.

However, due to the number of slope failures which have occurred in recent years in the North County coastal bluff area, and the number of requests for permits to construct seawalls, the Commission has questioned the appropriateness of reducing the 40 foot setback to as close as 25 feet. Particularly, some of the failures have been on or adjacent to sites in Encinitas where previous geotechnical studies done for blufftop residences had indicated that a 25 foot setback would be sufficient, and that blufftop construction would not be threatened by erosion (ref. 6-88-515/McAllister, 6-87-678/Morton). The Commission recognizes slope and bluff stability research is an inexact science, and geotechnical reports cannot be considered (nor do they claim to be) infallible.

In the case of the proposed development, the residence is proposed to be located up to 25 feet from the bluff edge. A geotechnical report submitted by the applicant determined that, based on research studies of regional historic bluff retreat, a conservative estimate of bluff retreat at the project site is a maximum of 16.5 to 25 feet over the lifespan of the residence (75 years). However, taking into account site-specific conditions and historic bluff retreat on this particular site, the report estimates that bluff retreat on the project site will be no more than 4.7 feet to 16.5 feet over the next 75 years.

In addition, the report notes that there are no indications of seacave development at the subject property. The nearest seacave to the site is located approximately 90 feet south of the site, and was infilled with concrete in 1992. There is also an approximately 17-foot deep seacave approximately 170 feet north of the site. Monitoring of the stability of this seacave was required through the approval of CDP #6-95-23 for construction of a single-family residence on the blufftop . The orientation of the seacave does not project towards the subject property. The report states that if either or both of these seacaves failed within the next 75 years, their collapse would not impact the subject property. The report concludes that if the new residence is set back a minimum of 25 feet from the top of the bluff, the construction should not be endangered by coastal bluff retreat over the next 75 years.

Nevertheless, the maximum estimated retreat rate of 25 feet of the bluff would bring the location of the bluff edge immediately up to the line of the proposed development. It has been Commission experience that encroachment of the bluff top to within 5 to 10 feet of a dwelling can trigger concern and, in many situations, could place the structure in danger (6-92-212/Wood, 6-91-312-G/Bradley). In addition, while the use of historic data to predict future trends is a valid and established technique, bluff recession tends to be episodic, and it is impossible to predict the exact location of the bluff top at a specific time in the future.

The report notes that there are many factors that influence the rate and magnitude of bluff retreat. Some are favorable, such as proper maintenance of

a bluff-stabilizing vegetative cover, enhanced site drainage, and beach sand replenishment. Other factors can increase the rate of erosion, including misdirected drainage, water line breaks, and very heavy storm precipitation. In fact, the report speculates that some human activity, perhaps misdirected roof/surface drainage or a broken irrigation/water line, may have concentrated blufftop surface waters and directed them over the bluff edge on the southern side of the site, resulting in the undermining of the existing concrete patio.

Although the geotechnical review states that the portions of the residence located 25 feet from the bluff edge will not be endangered, the maximum predicted bluff retreat is 16.5, with a worst-case scenario of bluff failure resulting in as much as 25 feet of erosion. As previously noted, Section 30253 of the Coastal Act requires that new development not in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. In this case, a minimum 40-foot geologic setback is necessary to provide a buffer between new development and the natural bluff erosion process, therby insuring the new development will not require a seawall over the course of its useful life. By definition, the geologic setback area is an area that can erode away over the lifetime of the structure. In requiring the minimum 40 foot setback, the Commission is ensuring the development will not require shoreline protective devices in its useful lifetime. This is a conservative, yet pro-active, approach to addressing the line of new development along an eroding shoreline, with the goal being to avoid the need for substantial bluff and shoreline stabilization measures in the future.

Because the applicant would prefer to construct the residence closer than 40 ft. and remove any portion of the residence that should be threatened rather than adhere to a minimum 40 ft. blufftop setback, the applicant has proposed to record a deed restriction evidencing their agreement to waive their right to shoreline protective devices and to remove portions of the residence as they become threatened. Accordingly, Special Condition #1 gives the applicant two options for siting the residence. The first is to revise the project such that the entire residence is sited a minimum of 40 feet from the bluff edge. The second option allowed under Special Condition #1 reflects the concept of "planned retreat", as described previously.

Utilizing this proposal by the applicant, Special Condition #2 requires a deed restriction be recorded that notifies the owner and subsequent owners that no upper or lower stabilization devices shall be constructed to protect that portion of the residence located seaward of the 40 ft. blufftop setback area in the event that it is threatened from erosion or other natural hazards in the future. The deed restriction also requires that a geotechnical study examining removal of the residence and other alternative measures necessary to stabilize the residence be performed when the bluff erodes to within 10 ft. of the residence (which based on past Commission experience, is the approximate distance from the top of the bluff when applications for bluff stabilization are sought by owners of existing residences along this section of the coastline). The condition further states that when the bluff erodes to a point at which that portion of the principal residence located seaward of the 40 ft. blufftop setback area is determined to be unsafe for occupancy by the

City of Solana Beach and/or a geotechnical report, that a coastal development permit application shall be submitted for removal of the threatened portions of the residence.

The planned retreat approach brings to light the issue of appropriate siting of new development on eroding coastal bluffs. This is a planning issue of concern to the Commission as the bluffs will continue to erode. If setbacks are not increased with new development, and addressed for non-conforming structures, the alternative is massive upper and lower bluff stabilization structures and their documented impacts on public access, visual quality and shore and beach sand supply. Given the proposed special conditions requiring either a minimum 40 ft. setback for the residence or the future removal of that portion of the home seaward of the 40 ft. blufftop setback when it is determined to be unsafe for occupancy, the stability of the coastal bluff at this location shall be protected to the maximum extent feasible, consistent with Sections 30235, 30240, 30250, 30253 and the public access and recreation policies of the Coastal Act.

Because the applicant is proposing development in a geologic hazard area, Special Condition #4 has been proposed to insure the applicant and future owners of the property are aware of the requirements relating to future applications to construct shoreline protective devices. This condition requires the applicant to record a deed restriction against the property, placing the applicant and their successors in interest on notice, that no bluff or shoreline protective devices shall be permitted unless the alternatives described in the condition are demonstrated to be infeasible. Although the applicants have proposed waiving their right to a seawall to protect the portions of the proposed residence seaward of 40 feet from the bluff edge, the condition states that in the event any bluff protective work is anticipated in the future, the applicant acknowledges that as a condition of filing an application for a coastal development permit, the applicant must provide the Commission or its successor agency with sufficient evidence enabling it to consider all alternatives to bluff protective works, including consideration of relocation of portions of the residence that are threatened, structural underpinning, or other remedial measures identified to stabilize the residence that do not include bluff or shoreline stabilization devices.

In addition, in order to implement the above condition, the home must be designed in such a fashion that would accommodate ease of removal in the future, should it be warranted. The submitted preliminary structure and foundation plans indicate a design that would allow for the structure to be removed in the future. Special Condition #1b requires that the final foundation plans be in substantial conformance with the preliminary plans and incorporate a design such that removal would not be precluded in the future.

Due to the inherent risk of shoreline development and the Commission's mandate to minimize risks (Section 30253), the standard waiver of liability condition has been attached through Special Condition #3. By this means, the applicant is notified of the risks and the Commission is relieved of liability in permitting the development. Pursuant to Section 13166(a)(1) of the Commission's administrative regulations, an application may be filed to remove

Special Condition #3 from this permit if new information is discovered which refutes one or more findings of the Commission regarding the existence of any hazardous condition affecting the property and which was the basis for the condition.

In addition, Special Condition #5 requires recordation of a deed restriction that puts the applicant and subsequent owners of the property on notice that a separate coastal development permit or amendment is required for any future additions to the residence or other development as defined in the Coastal Act on the subject site. Requiring an amendment or new permit for all future development allows the Commission to insure that the placement of structures or alteration of natural landforms will not create or lead to the instability of the coastal bluff or adverse visual impacts. The deed restriction insures that the applicant and all future owners of the property are aware of the Coastal Act permit requirements. Placing the applicant and future owners on notice reduces the liklihood that unpermitted development that could lead to bluff instability or adverse visual impacts will occur. While other types of development, such as additions to the principal structure, are typically visible from the frontage road, development activities in the rear yard immediately adjacent to the coastal bluff can occur unnoticed and without adequate review.

Special Condition #6 would require the submittal of a detailed landscape and irrigation plan for the proposed residence, indicating that drought and salt tolerant plant materials would be utilized in the setback area and that no permanent irrigation system would be installed in that area. The absence of high water demand plantings and irrigation systems will serve to reduce the potential for water-related bluff failures and upper bluff stability problems. No accessory structures, permanent improvements or landscaping would be allowed closer than five feet to the bluff edge consistent with the County's CD area regulations. Only at-grade expendable improvements without substantial footings are permitted within the geologic setback area.

In summary, as conditioned to require either a 40 ft. blufftop setback for the proposed residence or to waive future rights to shoreline protection and agree to remove portions of the home located seaward of the 40 ft. blufftop setback should they become threatened (as proposed by the applicant), the Commission is taking a more prudent approach to addressing development along an eroding shoreline. This approach is supported by the uncertainties surrounding bluff stability and health and safety concerns associated with permitting new development in a known hazard area. Therefore, the Commission finds the subject proposal, as conditioned, meets the requirements of all applicable Chapter 3 policies of the Coastal Act.

3. Public Access. Section 30604 (c) of the Coastal Act states:

> (c) Every coastal development permit issued for any development between the nearest public road and the sea or the shoreline of any body of water located within the coastal zone shall include a specific finding that such development is in conformity with the public access and public recreation policies of Chapter 3 (commencing with Section 30200).

In addition, Section 30211 of the Coastal Act states:

> 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.

The subject site is located between the Pacific Ocean and the first public roadway, which in this case is Pacific Avenue. The project site is located within a developed single-family residential neighborhood. Public vertical access is provided approximately three blocks south of the subject site at the City of Solana Beach Fletcher Cove public beach as well as approximately two blocks north of the site at the City of Solana Beach Tide Park public access stairway.

The subject site property boundary extends slightly seaward of the top edge of the bluff and does not extend onto the beach below. The construction of the residence itself will have no direct impacts upon the public's ability to access the coast at this location. Therefore, the proposed project can be found consistent with all the public access and recreation policies of the Coastal Act.

4. Community Character/Visual Impacts. 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....

The subject proposal, as conditioned, can be found compatible with the character of the surrounding community, which consists of one, two, and tri-level residences of similar size and scale to the proposed project. The subject site is not visible from Highway 101 and no public view blockage will occur as a result of the proposed development. Therefore, the Commission finds the subject proposal consistent with Section 30251 of the Coastal Act.

5. 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 Local Coastal Program (LCP) jurisdiction, but is now within the boundaries of the City of Solana Beach. The City will, in all likelihood, prepare and submit for the Commission's review a new LCP for the area. Because of the incorporation of

the City, the certified County of San Diego Local Coastal Program no longer applies to the area. However, the issues regarding protection of coastal resources in the area have been addressed by the Commission in its review of the San Diego County LUP and Implementing Ordinances. As such, the Commission will continue to utilize the San Diego County LCP documents for guidance in its review of development proposals in the City of Solana Beach until such time as the Commission certifies an LCP for the City.

In preparation of an 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 should also address these items in the context of a comprehensive approach to management of shoreline resources. Within the limits of the proposed project development, and as proposed and conditioned to remove portions of the residence which are threatened by erosion, the project can be found 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.

The project site is designated for medium density single-family residential development in the City of Solana Beach Zoning Ordinance and General Plan, and was also designated for medium residential uses under the County LCP. The subject development adheres to these requirements and the proposed residence will have no effect on the overall density of development for the site. The Commission finds the proposed development, as conditioned, conforms to all applicable Coastal Act Chapter 3 policies. Therefore, as conditioned, the subject development will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program.

6. Consistency with the California Environmental Quality Act (CEQA). Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit application to be supported by a finding showing the application, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(i) 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 impact which the activity may have on the environment.

The proposed project has been conditioned in order to be found consistent with the future development and geologic stability policies of the Coastal Act. Mitigation measures, including recordation of a future development deed restriction, and submittal of final project plans indicating a minimum 40 ft. setback for all new proposed development or a 25 ft. blufftop setback along with recordation of a deed restriction agreeing to waive future rights to shore or bluff protection and an agreement to remove portions of the home if they become threatened in the future, 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, as conditioned to mitigate the identified impacts, is the least environmentally damaging feasible alternative and can be found 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. 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.

IW 110

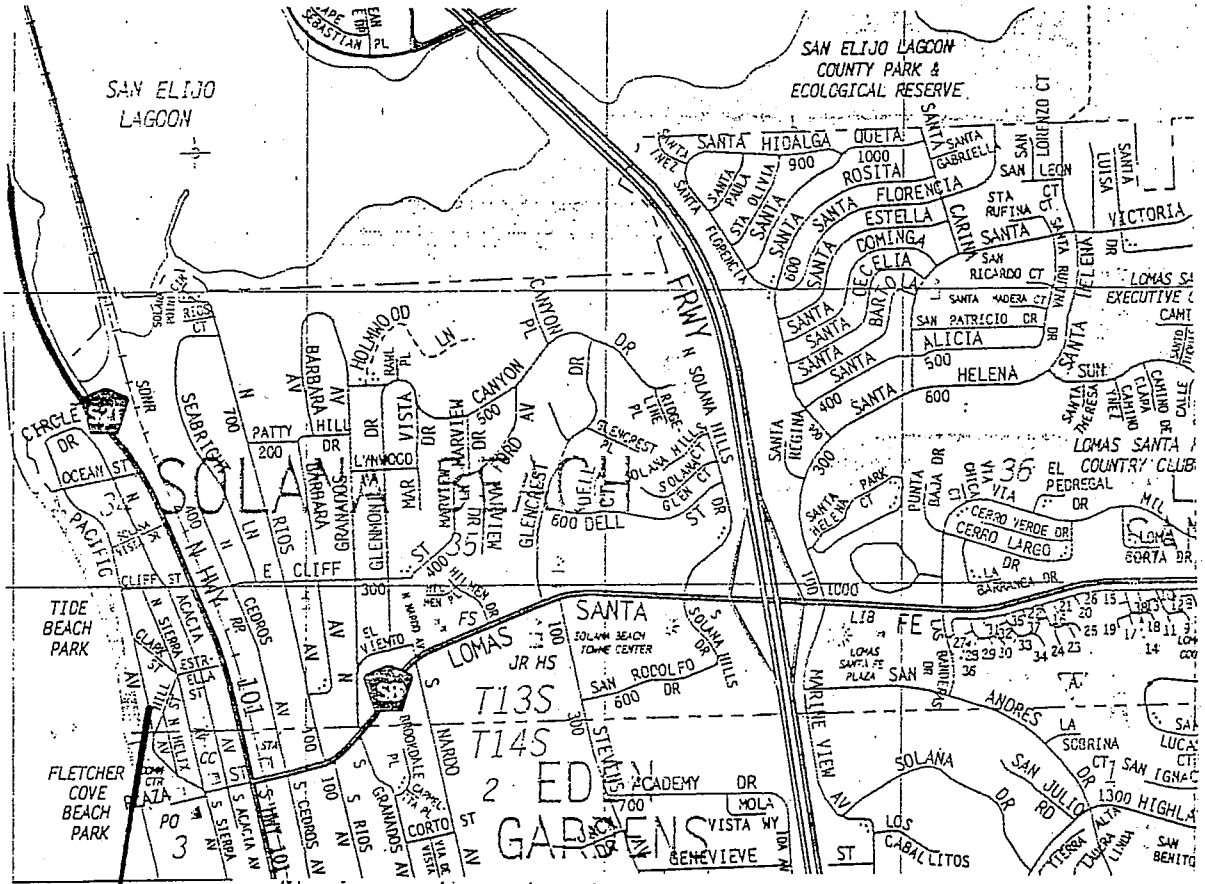


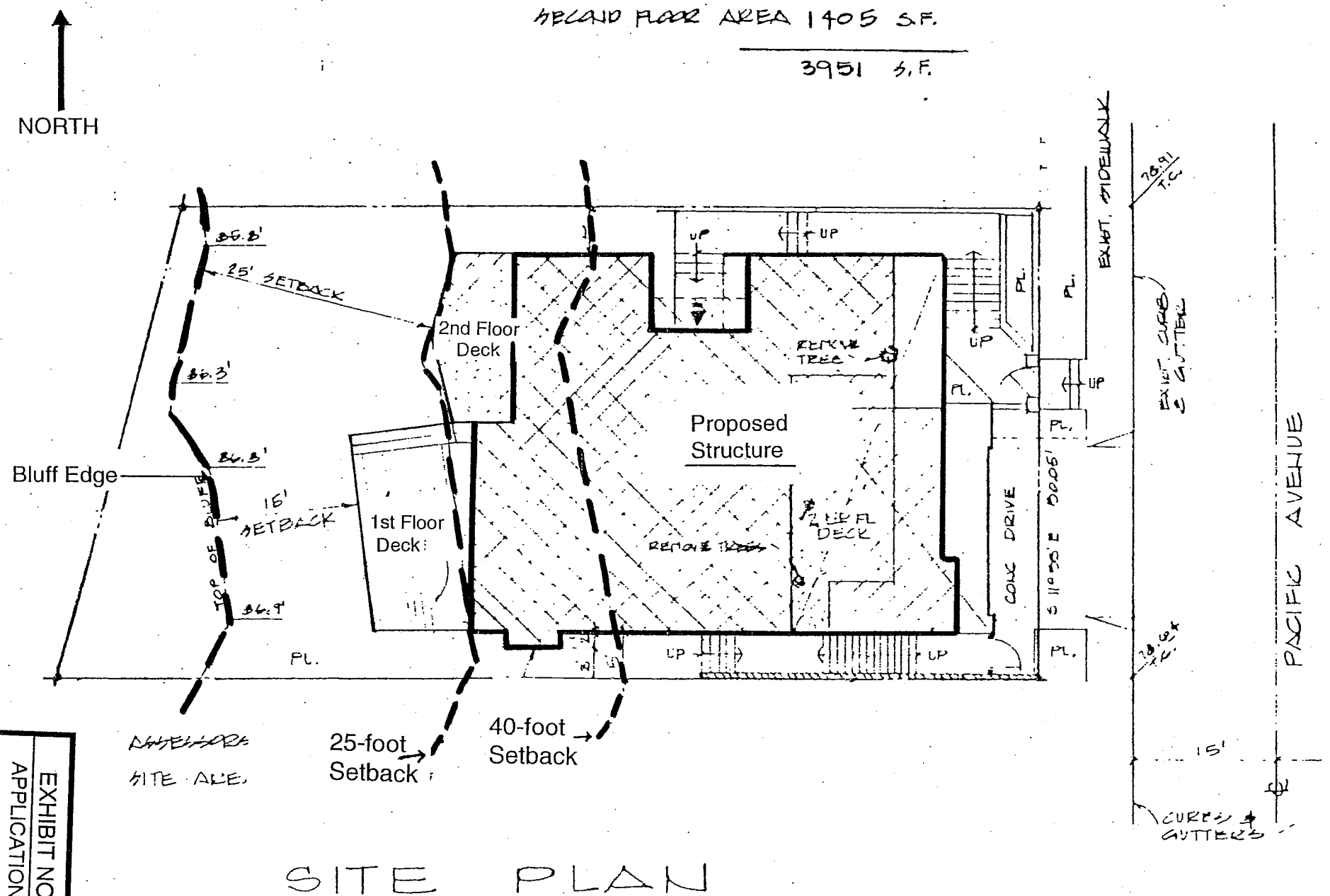
EXHIBIT NO. 1
APPLICATION NO. 6-96-21
Location Maps
California Coastal Commission

GARAGE AREA 667 S.F.

FIRST FLOOR AREA 1879 S.F.

SECOND FLOOR AREA 1405 S.F.

3951 S.F.



SITE PLAN

EXHIBIT NO. 2
APPLICATION NO.
6-96-21
Site Plans

California Coastal Commission

APPENDIX C OF LUP (PUBLIC RECREATION FEE)

APPENDIX C

PUBLIC RECREATION IMPACT FEE

APPENDIX C

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

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

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

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

- The proxy recreational use value per beach visitor per day (Day Use Value) for Solana Beach is $35.56 in the summer months and $21.00 in the non-summer months. The City shall conduct new beach user Travel Cost surveys within 10 years to update the Day Use Value to reflect current practices or new information as an amendment to Appendix C of the LUP.
- The City's useable beach area includes the area from the toe of the coastal bluff to mean sea level existing between the northern and southern City limits. Based on 19 LiDAR datasets collected between 1998 and 2015, the useable beach area in Solana Beach is presently calculated at 15.2 acres. The City shall determine if the beach area has changed every ten years and incorporate any changes as an amendment to the LUP.

- The average annual beach attendance in Solana Beach is estimated to be 134,817 adults per year. Children are not included in the attendance data because of the assumption that consumer surplus of children is captured in the adult consumer surplus use values. The attendance estimate is based on attendance counts undertaken by the City between July 2008 and July 2009 and expansion factors to account for the likelihood that some user groups were underrepresented in the original attendance counts due to the time of day that the original population counts were conducted. Every ten years, the City shall adjust the attendance based on available population growth estimates or through an updated attendance survey. The City shall incorporate any changes to the attendance as an amendment to the LUP.
- The annual use value of the beach within the City is $4,010,581 and is obtained by multiplying the Day Use Value by the number of adults that visit the beach annually and adding the value of the Junior Lifeguard Program, which is $269,501. The City shall update the annual use value of the beach every ten years if there are changes to the beach area or attendance estimates and shall incorporate the change as an LUP amendment.
- The use value of one sq. ft. of beach was calculated to be $6.06 in 2016 and is obtained by dividing the annual use value of the beach by the size of the beach.
- The Initial Area Rate in Table 1 represents the use value of one sq. ft. of beach area over a 20-year period and this use value is multiplied by the total area of encroachment of a Bluff Retention Device (Initial Area) to determine the fee. The use value is increased each year to reflect an estimated 2% Consumer Price Index (CPI). The use value is also subject to a 2% Present Value (PV), which offsets the CPI over the 20-year mitigation period. Table 1 shall be updated every ten years and any changes shall be incorporated as an amendment to the LUP.
- The Bluff Retreat Rate (Per Linear Ft.) in Table 1 is equal to one linear ft. (Bluff Retreat Length) multiplied by 20 years of estimated erosion multiplied by the use value of one sq. ft. of beach. It represents the use value of the expected beach area that would otherwise be available for public use through passive erosion if the Bluff Retention Device was not constructed. An erosion rate of 0.4 ft. per year is assumed between 2016 and 2025 and an erosion rate of 0.673 is assumed between the years 2026 and 2046. Any change to the estimated erosion rate will require an amendment to the certified LUP. The use value increases each year to reflect an estimated 2% CPI.

The Public Recreation Fee shall be imposed as a condition of approval on any Coastal Development Permit for a Bluff Retention Device, which does not propose comparable or greater project specific in-kind mitigation. The decision-making entity (Coastal Commission or City of Solana Beach) for the Coastal Development Permit shall calculate the Public Recreation Fee on a project- specific basis during the Coastal Development Permit approval process. The entire fee shall be submitted to the City prior to issuance of the Coastal Development Permit and shall be assessed in 20-year increments starting on the building permit completion certification date.

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

LUP Policy 4.50 requires that Public Recreation Fees shall be expended for public beach access and public recreation as a first priority, and may be expended for sand replenishment and retention if the City determines that a near-term priority public recreation or public access project is not identified. All

projects funded by the Public Recreation Fees shall be located directly along the coast and projects shall result in direct improvements to coastal recreation or beach access. As an alternative allowed by LUP Policy 4.50, project applicants have the option of proposing an in-kind public coastal recreation or beach access project in lieu of payment of Public Recreation Impact Fees to the City. At the City's discretion, project specific in-kind mitigation may be accepted if the applicant can demonstrate that the project would provide a comparable or greater coastal recreation or beach access benefit to the general public.

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

Table 1 - Public Recreation Impact Mitigation Fee Schedule

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

APPENDIX C

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

The formula to calculate the Total PRF = (Initial Area x Initial Area Rate) + (Bluff Retreat Length x Bluff Retreat Rate)

Definitions:

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

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

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

Initial Area Rate - The Initial Area Rate shall be the amount identified in Table 1, under the Column titled Initial Area Rate dependent on the Permit Year. The Initial Area Rate is based on the value of one sq. ft. of beach area over a 20-year period.

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

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

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

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

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

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

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

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

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

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

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

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

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

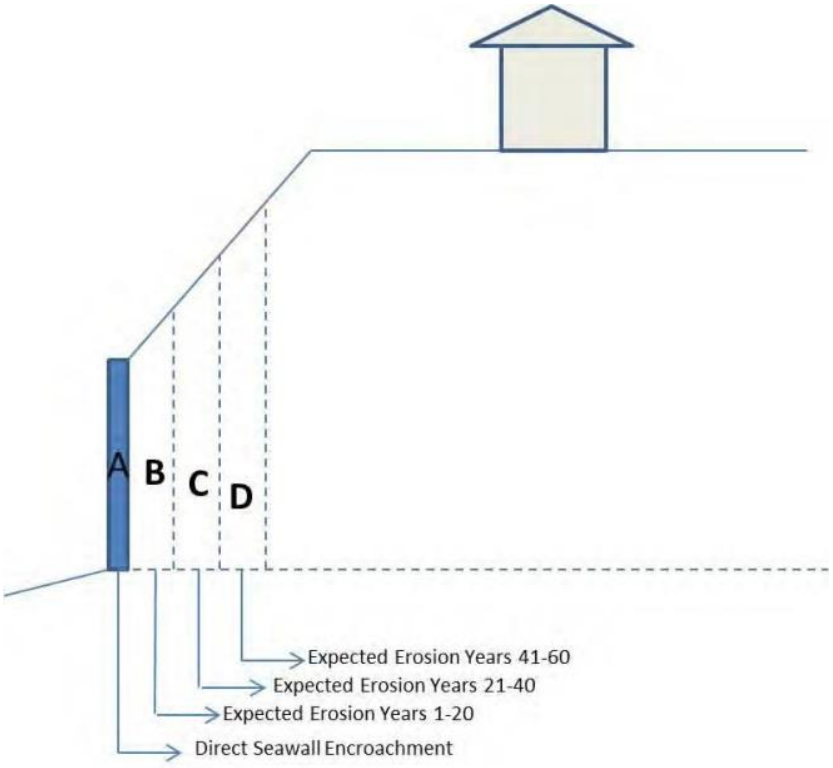
Example 5: In the year 2016, construction of a 2 ft. deep by 20 ft. long seacave/notch with non-erodible concrete.

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

Subsequent Mitigation Periods:

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

Figure 1



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

TECHNICAL MEMORANDUM BY DRS. JOSEPH STREET AND LESLEY EWING

EXHIBIT NO. 15
APPLICATION NO.
6-18-0288
CCC Staff Memo
California Coastal Commission

CALIFORNIA COASTAL COMMISSION
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February 21, 2019

GEOTECHNICAL REVIEW MEMORANDUM

To: Eric Stevens, Coastal Program Analyst

From: Joseph Street, Staff Geologist
Lesley Ewing, Senior Coastal Engineer

Re: 235, 241 and 245 Pacific Ave., Solana Beach (DeSimone, Schrager and Jokipi Residences), Coastal Development Permit No. 6-18-0288

Summary

Based on our review of the applicants' geotechnical reports and other relevant information, we conclude that the principal structures at 235 and 241 Pacific Ave., and the seaward portion of the house at 245 Pacific Ave., are, or soon will be, in imminent danger from on-going bluff erosion and slope failures, and that shoreline protection and/or bluff stabilization measures are warranted. Furthermore, we agree with the additional analysis demonstrating that bluff failures originating on the 245 Pacific Ave. property could threaten existing structures on the neighboring properties at 241 and 249 Pacific. A project alternative which does not include the proposed lower bluff seawall and geogrid structure at 245 Pacific Ave. would eventually require the inland extension of shore protection on neighboring properties.

Introduction

In connection with the above-referenced coastal development permit application, we have reviewed the following documents directly related to the subject properties:

1) Soil Engineering Construction, Inc. (SEC), 2009, "Repairs to Upper Bluff, Hawkins Residence, 241 Pacific Avenue, Solana Beach, California 92075", as-built project plans dated August 23, 2009, signed by R.D. Mahony.
2) TerraCosta Consulting Group, Inc. (TerraCosta), 2010, "Coastal Bluff Evaluation and Basis of Design Report, 235 – 249 Pacific Avenue, Solana Beach, California", report dated November 4, 2010, and signed by D.B. Nevius, B.R. Smillie and W. F. Crampton.
3) TerraCosta, 2012, "Coastal development permit application, Proposed shoreline stabilization, 245-249 Pacific Avenue, Solana Beach, California", letter report dated July 6, 2012 and signed by W.F. Crampton.
4) GeoSoils, Inc., (GeoSoils) 2017a, "Coastal Hazard Discussion for Proposed Shore Protection 235, 241 and 245 Pacific Avenue, Solana Beach, San Diego County, California", dated November 6, 2017, signed by D.W. Skelly.
5) SEC, 2017a, "Emergency Repairs to Coastal Bluff, 235 – 245 Pacific Avenue, Solana Beach, CA 92075", project plans, dated June 30, 2017, signed by R.D. Mahony.
6) SEC, 2017b, "Response to 3rd Party Review by Geopacifica Dated October 16, 2017, Repairs to Coastal Bluff – Shoreline Stabilization, 235, 241, 245 Pacific Avenue, Solana Beach", dated November 24, 2017, signed by J.W. Niven and R.D. Mahony.

7) GeoSoils, 2017b, "Memorandum – Sand Fee Worksheet 235, 241 and 245 Pacific Avenue, Solana Beach", dated November 27, 2017, signed by D.W. Skelly.
8) SEC, 2018a, "Response to 3rd party Review by Geopacifica Dated February 26, 2018, Repairs to Coastal Bluff – Shoreline Stabilization, 235, 241, 245 Pacific Avenue, Solana Beach", dated February 28, 2018, signed by J.W. Niven and R.D. Mahony.
9) SEC, 2018b, "2018 Upper Bluff Retention System/Coastal Bluff Monitoring Report, 241 Pacific Avenue, Solana Beach, California 92075", report dated June 5, 2018, signed by J. Niven and B. Trettin.
10) GeoSoils, 2018, "Response to California Coastal Commission (CCC) May 16, 2018 Letter Concerning CDP #6-18-0288, Proposed Shore Protection 235, 241 and 245 Pacific Avenue, Solana Beach, San Diego County, California", dated June 15, 2018, signed by D.W. Skelly.
11) SEC, 2019, "Additional Slope Stability Analyses – Justification for Bluff Stabilization Measures, 235 – 245 Pacific Avenue, Solana Beach, California", dated January 3, 2019, and signed by J. Niven.

We have also reviewed a previous review memorandum (dated April 22, 2014) prepared by the Commission's retired staff geologist, Dr. Mark Johnsson, in relation to a prior CDP application (#6-13-0437) involving the property at 245 Pacific Ave. In addition, Dr. Street has visited the base of the coastal bluff at this site, most recently on October 10, 2018.

The purpose of this memo is to evaluate the degree of danger from erosion and bluff instability to the principal structures across the three subject properties, and to provide commentary on a possible project alternative that would exclude the construction of the lower bluff seawall and geogrid structure at 245 Pacific Ave.

Geologic Background

TerraCosta (2010) (Ref. 2) provides a description of the geologic conditions and erosional threats to the principal structures at 235 - 245 Pacific Avenue. Typical of the Solana Beach coastline, the coastal bluff at these sites consists of a lower bluff approximately 25 - 30 feet high composed of relatively dense, well-cemented bedrock of the Eocene-aged Torrey Sandstone, overlain by an upper bluff consisting of less consolidated sands and gravels, collectively referred to as marine terrace deposits. The lower ten feet of these deposits are comprised of very well-sorted, unconsolidated, cohesionless sands that form very unstable slopes when exposed in the coastal bluff. Overlying this "clean sand lens" are approximately 50 feet of late Pleistocene-aged sands and gravels, often referred to as the Bay Point Formation or "older paralic deposits."

Cycles of bluff retreat in Solana Beach are typically triggered by wave-driven notching and collapse of the Torrey Sandstone bedrock, followed by the exposure and failure of the much weaker clean sand lens immediately above the bedrock. Once exposed, the clean sand lens is extremely vulnerable to subaerial erosion (e.g., wind & runoff), leading in relatively quick succession to the progressive failure of the overlying terrace deposits. Many structures north and south of the subject sites have required protection from this cycle of bluff failure through the construction of seawalls, usually designed to protect the bluff toe from marine erosion and encapsulate the clean sand lens, and/or upper bluff retention devices.

At the subject site, the applicants have proposed the construction of a 150-foot long, 35-foot high lower bluff seawall and an approximately 45- to 130-foot wide, approximately 50-foot high upper bluff geogrid structure in order to protect against marine erosion and on-going upper bluff instability.

Existing Site Conditions & Danger from Erosion

The need for the proposed bluff protection is justified in the applicants' geotechnical reports by the ongoing nature of upper bluff failures on all three parcels and quantitative slope stability analyses which show low factors of safety for cross sections through all three properties. To varying degrees, each of the three properties has experienced on-going upper bluff erosion and periodic slope failures related to the surface exposure of the mid-bluff clean sand lens. However, as described in greater detail below, the degree of threat to the principal structures is not uniform across the project site.

235 & 241 Pacific Ave.

TerraCosta (2010) (Ref. 2) reports that the 241 Pacific Ave. property, in particular, experienced severe lower bluff erosion during 1997-98 winter storms, which subsequently exposed the clean sand lens and triggered progressive upper bluff failure. In 2008, the Commission approved emergency and regular CDPs for a drilled-pier upper bluff retention system intended to stabilize the upper bluff and protect the existing home at 241 Pacific Ave. However, the Commission recognized at the time of approval that there was a high likelihood that additional protective measures would be needed in the future. The zone of upper bluff failure at 241 Pacific Ave. has subsequently expanded both landward and laterally across the bluff face below both 235 and 245 Pacific Ave. (Refs. 2, 6, 9). SEC (2018b) (Ref. 9) has documented 8 to 12 feet of retreat in the clean sand lens and upper bluff below 241 Pacific over the past decade, and reports that the drilled piers have been exposed to depths of over 20 feet, with visible flanking of the system occurring on either side. The expanding slope failure has also severely undermined and fractured a pre-Coastal Act gunite surface covering a portion of the upper bluff below 235 Pacific Ave. (Ref. 2).

TerraCosta (2010) (Ref. 2) provides the results of a slope stability analysis for a bluff cross-section at 235 Pacific Ave. This analysis, using the Modified Bishop Method, indicates that the bluff at this site may be vulnerable to slope failures originating in the mid-bluff clean sand lens, with a minimum factor of safety of 1.22 under static conditions, and 0.95 under pseudostatic (or seismic) conditions, assuming a ground-shaking intensity of 0.15g. The modeled critical failure surfaces daylight approximately eight feet inland of the bluff edge, and just a few feet seaward of the existing house at 235 Pacific Ave. based on the project plans provided in Ref. 5. The slope stability analysis indicates that the bluff at this site is only marginally stable, and that the next major slope failure could undermine the seaward portion of the existing home.

Slope stability analyses conducted for 241 Pacific Ave. provided by TerraCosta (2010) (Ref. 2) and SEC (2018a) (Ref. 8) report low minimum factors of safety (1.12 static / 0.90 seismic; Ref. 8) along critical surfaces daylighting approximately 20 feet inland of the bluff edge, which, as noted above, had by 2018 retreated to the margins of the existing drilled pier system (Ref. 10). Neither of these analyses included the existing piers and any stability benefits the system may still afford,[1] making it difficult to evaluate the actual stability of the bluff under existing conditions. Nonetheless, the balance of the available evidence, including the low calculated factors of safety, the continued exposure of the clean sand lens, the recent upper bluff failures which have exposed the upper portions of the caissons, the fact that the caissons were originally embedded to an elevation (+40 feet MSL) that is above the elevation of the clean sand lens (Ref. 1), and the observed degree of undercutting at the bluff toe (3 – 4 feet, Ref. 9), indicate that the site remains very vulnerable to erosion and slope failure. Further undercutting or collapse of the lower bluff is likely to occur in the foreseeable future, triggering cycles of upper bluff instability that could undermine the caisson

[1] SEC (2017b) (Ref. 6) states that the caisson system has reached its "maximum design exposure", and that the slope stability analyses "assume that the existing upper bluff retention system … would be undercut in a bluff collapse rendering it useless in protecting the residential structure above."

system and threaten the existing house, which is located less than five feet inland of the bluff edge (Ref. 5).

Based these considerations we concur that the principal structures at 235 and 241 Pacific Ave. are at presently at risk from erosion, and that shoreline protection at these sites is warranted.

245 Pacific Ave.

Similar to the neighboring properties, the bluff at 245 Pacific Ave. has in recent decades experienced lower bluff notching and block failures, exposure of the clean sand lens, and progressive sub-aerial erosion of the upper bluff (Ref. 2). The slope stability analysis provided by TerraCosta (2010) (Ref. 2) indicates a high risk of slope instability, with minimum factors of safety of 0.99 and 0.80 for the static and seismic conditions, respectively. In contrast to the neighboring sites, where the existing houses are located closer to the bluff edge, the house at 245 Pacific Ave. (constructed in 1996) is currently 22 to 28 feet inland of the bluff edge. The critical failure planes with the minimum factors of safety daylight only 7 to 8 feet landward of the bluff edge, indicating that the most likely bluff failure would still leave the new bluff edge some 14 to 21 feet from the principal structure. Thus, the degree of risk to the house at 245 Pacific Ave. may be less than at the neighboring properties. However, we also note that the calculated factors of safety remain very low (1.06 static/0.83 seismic) along a modeled failure plane daylighting approximately 20 feet inland of the bluff edge (Ref. 2), suggesting that the bluff at the seaward edge of the house remains vulnerable to a large slope failure event, with a factor of safety well below the 1.2 (static) threshold often used by the Commission in assessing slope stability hazards. TerraCosta (2012) (Ref. 3) reports that the failure plane corresponding to a 1.2 factor of safety daylights approximately 40 feet inland of the bluff edge.

In summary, though the most likely slope failure at this site would not appear to threaten the principal structure at 245 Pacific Ave., we conclude that the seaward portions of the house are presently at risk from a larger slope failure, and that a series of smaller failures could place the seaward edge of the house at risk within the next several years. At this juncture, we do not see any evidence that the more landward portions of the house (greater than 40 feet from the bluff edge) face imminent danger from erosion or slope instability.

Vulnerability of Neighboring Sites to Bluff Failures at 245 Pacific Ave.

At the request of Commission staff, SEC (2019) (Ref. 11) provided an additional slope stability analysis to evaluate the degree to which the stability of the principal structures at 241 and 249 Pacific Ave. would depend on the construction of a lower bluff seawall and bluff retention at 245 Pacific Ave.[2] SEC evaluated slope stability along oblique cross-sections intersecting the base of the bluff at 245 Pacific, and the top of the bluff at 241 and 249 Pacific, respectively. The analysis indicates that there is currently a minimum factor of safety (static) of 1.11 along the 245 - 241 Pacific cross-section, and a minimum factor of safety of 1.16 along the 245 – 249 Pacific cross-section. In both cases, the critical failure planes daylight inland of the seaward edge of the existing structures. SEC concludes that a "bluff failure through the clean sand lense at 245 will cause a significant adverse impact to the residential structures at 241 & 249 Pacific." Based on the provided analysis, we agree that, absent other remedial measures, constructing the seawall and geogrid structures only at 235 –

[2] Per the special conditions of CDP #6-96-021, the house at 245 Pacific Ave. is not entitled to construct any upper or lower bluff stabilization devices to protect the portion of the residence located seaward of the 40 ft. blufftop setback, and the construction of a seawall across the unprotected "gap" at this property would only be allowable if (a) it is necessary to alleviate an imminent threat to structures on the neighboring properties, and (b) if the seawall were the least damaging feasible alternative.

241 Pacific Ave. and leaving an unprotected "gap" in the shoreline armoring at 245 Pacific would leave the structures on the neighboring properties vulnerable to bluff failure.

Alternative to Shore Protection at 245 Pacific Ave.

One alternative to the proposed seawall and geogrid structure, which would cross all three of the subject properties, would be to provide armoring for only 235 and 241 Pacific Ave., leaving an approximately 50-foot wide gap in the shore protection along the 245 Pacific Ave property. Such a gap is easier to address at the time that the adjacent structures are being constructed, but it is not necessary that the gap always be part of the armoring design. The following discussion about ways to maintain protection for the properties on either side of the gap, while allowing the gap to erode, is general in nature and should not be the basis for design decisions. The actual measures to maintain the gap while protecting the adjacent properties would be designed to address the circumstances that occur at the site.

While the gap appears to be a linear opening in a line of armoring, the opening will eventually become a three-dimensional space as the shoreline at the gap segment continues to retreat inland in response to marine erosion. The lower bluff will erode inland of the up- and down-coast seawalls, and eventually some form of protection to prevent scour and erosion of the material behind the seawalls will be needed. This protection would most likely consist of a vertical seawall that would be perpendicular to the main wall and that could be extended overtime to address further inland retreat.

The proposed lower bluff shore protection will go up to about elevation +35' NAVD, and should be high enough to encompass the exposed clean sand lens. It is likely that the protection within the gap would likewise be high enough to enclose the clean sands. This protection of the clean sand layer should help minimize retreat of the upper bluff material, but it is not likely to prevent all upper bluff retreat. Eventually the protective side walls within the gap would likely need to extend higher to protect the upper bluff material or other measures might be needed, such as plugs of erodible concrete.

Conclusion

In summary, we concur with the applicants' analysis that the principal structures at 235 and 241 Pacific Ave. are in danger from bluff erosion and slope failure, and that shoreline protection and bluff stabilization measures are necessary. We also conclude that the seaward portion of the house at 245 Pacific Ave. is in danger from erosion and slope failure. The additional analysis provided by SEC (2019) (Ref. 11) demonstrates that structures at 241 and 249 Pacific Ave. are at risk from bluff failures originating on the slope at 245 Pacific. As a result, a project alternative which does not include the proposed lower bluff seawall and geogrid structure at 245 Pacific Ave. would eventually require the inland extension of shore protection on neighboring properties.

Please do not hesitate to contact us with any further questions.

Sincerely,

Joseph Street, Ph.D., PG
Staff Geologist

Lesley Ewing, Ph.D., PE, F.CE
Senior Coastal Engineer