

CALIFORNIA COASTAL COMMISSION

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 Commission Action:

STAFF REPORT: REGULAR CALENDAR **W10b**

APPLICATION NO.: **4-97-071**

APPLICANT: **Paul and Judy Schaeffer**

AGENT: Ron Goldman

PROJECT LOCATION: 24612 Malibu Road, City of Malibu, Los Angeles County

PROJECT DESCRIPTION: Demolition of an existing 1390 sq. ft. single family residence; construction of a two-story 3,725 sq. ft. single family residence with a 373 sq. ft. garage, a 580 sq. ft. basement/storage area; construction of a 50 ft. long wooden bulkhead with 41 ft. and 36 ft. long return walls; installation of a septic system and leach field; and, an offer to dedicate a lateral access easement over the southern portion of the lot as measured ten feet seaward from the dripline of the proposed deck area.

Lot area:	6,895 sq. ft. (.16 acres)
Building coverage:	2,590 sq. ft.
Pavement coverage:	360 sq. ft.
Landscape coverage:	none
Parking spaces:	4 spaces
Ht abv fin grade:	28 ft. above min. finished floor elevation

LOCAL APPROVALS RECEIVED: City of Malibu Planning Department Approval in Concept; City of Malibu Environmental Health Department Approval in Concept; Malibu City Council Resolution No. 97-010; and, Approval of Negative Declaration No. 96-023.

SUBSTANTIVE FILE DOCUMENTS: Shown on *Appendix A*

SUMMARY OF STAFF RECOMMENDATION LOCATED ON PAGE 2

SUMMARY OF STAFF RECOMMENDATION:

Staff is recommending approval of the proposed 3,725 sq. ft. single family home with a garage, 580 sq. ft. basement, and septic system. The project is located on Amarillo Beach and includes the construction of a 50 ft. long wooden bulkhead with return walls in order to protect the septic system (septic tank and leachfields) and Malibu Road from shoreline associated hazards.

Amarillo Beach was developed with single family homes between 1924 and the late 1940's. The majority of the 180 structures along the 2.1 mile stretch of Amarillo Beach do not have seawalls protecting their septic systems. However, all of the structures employ, at a minimum, one or more retaining walls in order to protect the road fill that Malibu Road was constructed on and protect the septic tanks. The subject lot is currently developed with a 1390 sq. ft. home which, as proposed, will be demolished. Thus, the proposed project is considered new development. The existing septic system is currently located at a more seaward location than that proposed by the applicant.

The lot to the east is developed with a home and retaining wall that is set back approximately 20 ft. from the location of the applicant's proposed bulkhead; and, the lot to the west is undeveloped. Amarillo Beach contains approximately four (4) undeveloped lots total which are located intermittently between developed lots.

A vertical public accessway, which has been operated and maintained by the County of Los Angeles since the late 1960's, is located approximately 120 ft. east of the subject property. Amarillo Beach is an eroding beach that experiences approximately .25 to 1 ft. of erosion annually. The proposed project raises issue with the Chapter 3 policies of the Coastal Act relative to insuring that beachfront development minimizes its potential to cause erosion which has impacts on beach use due to either temporary or permanent accelerated loss of beach sand. To offset the project's impact on sand supply and the public's ability to use Amarillo Beach, the applicant has proposed to dedicate a lateral public access easement as measured 10 ft. seaward from the project's deck dripline.

There are feasible design alternatives to the proposed project which would lessen the impacts relative to beach scour, end scour effects, retention of beach material and interruption of onshore and longshore processes that would result from the construction of the proposed bulkhead. As explained in the subsequent text, relocating the seawall landward 7 ft. will lessen these adverse impacts of the proposed project.

Staff is recommending approval of the proposed project subject to the following special conditions which would bring the project into conformance with the Coastal Act: 1) construction responsibilities and debris removal; 2) deed restriction by which applicant assumes the risk of development; 3) conformance with engineering and geologic recommendations; 4) deed restriction which indicates the applicant is offering to dedicate lateral access; and, 5) revision of the project plans to relocate the bulkhead landward 7 feet of the proposed location.

STAFF RECOMMENDATION:

The staff recommends that the Commission adopt the following resolution:

I. Approval with Conditions.

The Commission hereby grants, subject to the conditions below, a permit for the proposed development on the grounds that the development, as conditioned, 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, is located between the sea and first public road nearest the shoreline and is in conformance with the public access and public recreation policies 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

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.

III. Special Conditions

1. Construction Responsibilities and Debris Removal

It shall be the applicant's responsibility to assure that the following occurs during project construction: a) that no stockpiling of dirt shall occur on the beach; b) that all grading shall be properly covered, sand-bagged, and ditched to prevent runoff and siltation; and, c) that measures to control erosion must be implemented at the end of each day's work. In addition, no machinery will be allowed in the intertidal zone at any time. The permittee shall remove from the beach and seawall area any and all debris that result from the construction period.

2. Applicant's Assumption of Risk.

Prior to the issuance of the coastal development permit, the applicant as 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 storm waves, erosion or flooding and the applicant assumes the liability from such hazards; and (b) that the applicant unconditionally waives any claim of liability on the part of the Commission and agrees to indemnify and hold harmless the Commission and its advisors relative to the Commission's approval of the project for any damage due to natural hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest.

3. Geology

All recommendations contained in the Wave Uprush Study by Pacific Engineering Group dated April 30, 1996 and in the Preliminary Soils and Engineering Geologic Investigation Report, prepared by California Geosystems dated 1/24/96 shall be incorporated into all final design and construction plans including drainage, septic system, and retaining walls, and all plans must be reviewed and approved by the consultants prior to commencement of development. Prior to issuance of the coastal development permit, the applicant shall submit evidence to the Executive Director of the consultant's review and approval of all final design and construction plans.

The final plans approved by the consultant shall be in substantial conformance with the plans approved by the Commission relative to construction, grading and drainage. Any substantial changes in the proposed development approved by the Commission which may be required by the consultant shall require an amendment to the permit or a new coastal permit.

4. Offer to Dedicate Lateral Public Access

In accord with the applicant's proposal as part of this project of an offer to dedicate, an easement for lateral public access and passive recreational use along the shoreline, the applicant shall be required to complete the following prior to issuance of the permit: the landowner shall execute and record a document, in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a public agency or private association approved by the Executive Director an easement for lateral public access and passive recreational use along the shoreline. The document shall provide that the offer of dedication shall not be used or construed to allow anyone, prior to acceptance of the offer, to interfere with any rights of public access acquired through use which may exist on the property. Such easement shall be located along the entire width of the property from the mean high tide line landward to 10 ft. seaward from the dripline of the first floor deck as illustrated on the site plans prepared by Goldman/Firth/Boccatto Architects dated September 9, 1996 and revised March 3, 1997. The document shall contain the following language:

(a) Privacy Buffer

The area ten (10) feet seaward from the dripline of the first floor deck as illustrated on the site plans prepared by Goldman/Firth/Boccatto Architects dated September 9, 1996 and revised March 3, 1997 shall be identified as a privacy buffer. The privacy buffer shall be applicable only if and when it is located landward of the mean high tide line and shall be restricted to pass and repass only, and shall be available only when no other dry beach areas are available for lateral public access. The privacy buffer does not affect public access should the mean high tide line move within the buffer area.

(b) The remaining area shall be available for passive recreational use.

The document shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest. The offer shall run with the land in favor of the People of the State of California, binding all successors and assignees, and shall be irrevocable for a period of 21 years, such period running from the date of recording. The recording document shall include legal descriptions of both the applicant's entire parcel(s) and the easement area.

5. Revised Plans

Prior to issuance of the permit, the applicant shall submit for the review and approval of the Executive Director revised plans which show the wooden bulkhead relocated at a minimum of seven (7) ft. landward from the current location on the site plans prepared by Goldman/Firth/Boccatto Architects dated September 9, 1996 and revised March 3, 1997. This shall be accomplished by redesigning either the size, location or type of septic system and shall involve, if necessary, the removal or the reduction of the 580 sq. ft. basement/storage area and/or the reduction in the number of bedrooms. The applicant shall submit evidence, for the review and approval of the Executive Director that the revised plans have been reviewed and approved by the City of Malibu Health Department.

IV. Findings and Declarations.

A. Project Description

The applicant is proposing the demolition of an existing 1390 sq. ft. single family residence and the construction of a two-story 3,725 sq. ft. single family residence with a 373 sq. ft. garage and a 580 sq. ft. basement/storage area (*Exhibits 2-7*). The project also involves the construction of a 50 ft. long wooden bulkhead located along the seaward extent of the residence with 41 ft. and 36 ft. long return walls. The applicant is also proposing the installation of a septic system, which includes a septic tank and leach fields (*Exhibit 4*). Additionally, the project includes the proposal to dedicate a lateral access easement over the southern portion of the lot as measured ten feet seaward of the proposed deck dripline, as shown on *Exhibit 3*.

The subject development is located on a 6,895 sq. ft. beach front lot on Amarillo Beach off of Malibu Road. Malibu Road was the original route of State Highway 1, but the right-of-way was relocated further inland as a result of historical erosion and bluff sloughing problems. According to the U. S. Army Corps of Engineers Reconnaissance Study of the Malibu Coast that was prepared in 1994, over 180 homes exist on the 2.1 mile stretch of beach that extends from Puerco Beach upcoast (west) to Amarillo Beach downcoast (east).

Adjacent to the north of the property is Malibu Lagoon State Recreation Area, also known as Bluffs Park. Vertical public access to Amarillo Beach is located approximately 120 ft. east of the subject site.

B. Shoreline Protective Devices

As stated previously, the project involves the construction of a 50 ft. long, wooden bulkhead (described in more detail below). The seaward extent of the

bulkhead will be approximately 62 feet seaward from Malibu Road. The bulkhead is necessary to protect the proposed septic system, the structure and Malibu Road according to Pacific Engineering Group, one of the applicant's consulting civil engineers.

After identifying the applicable Coastal Act sections and LUP policies, the discussion of the impacts of the shoreline protective device will proceed in the following manner. First, the staff report describes the physical characteristics of the Amarillo Beach shoreline. Second, the staff report analyzes the dynamics of the Amarillo Beach shoreline and concludes that it is an eroding beach. Third, the staff report analyzes the location of the proposed shoreline protective device in relation to wave action. Finally, the staff report analyzes whether the proposed shoreline protective device will adversely impact shoreline sand supply and the shoreline processes.

As described in the discussion below, there is evidence that any development along this section of Amarillo Beach will require a shoreline protective device and that such development has the potential to impact the natural shoreline processes. Therefore, it is necessary to review the proposed project for its consistency with Sections 30235, 30250(a) and 30253 of the Coastal Act and with past Commission action.

Section **30235** of the Coastal Act 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.

Section **30253** of the Coastal Act states:

New development shall:

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Section 30250(a) of the Coastal Act states, in part:

New residential, commercial, or industrial development, except as otherwise provided in this division, 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.

Section 30235 permits the construction of shoreline protective devices¹ when required to serve coastal-dependent uses or to protect existing structures or public beaches where the structures or public beaches are in danger of erosion. The proposed bulkhead does not protect a public beach nor would it serve a coastal-dependent use because residential structures are not coastal dependent.² Nor does the proposed bulkhead protect an existing structure because the project involves demolition of an existing single family residence approximately three times larger than that which currently exists, as well as a new septic system. In interpreting section 30235, however, the Commission has approved shoreline protective devices to protect new development in danger of erosion where the new development constitutes "infill"³ and where the shoreline protective device is designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Therefore, most of this report is devoted to whether the project constitutes "infill" under past Commission policy, and, if so, whether the proposed bulkhead has been designed to eliminate or mitigate adverse impacts on shoreline sand supply.

To assist in the determination of whether a project is consistent with sections 30235, 30253 and 30250(a) of the Coastal Act, the Commission has, in past Malibu coastal development permit actions, looked to the certified Malibu/Santa Monica Mountains Land Use Plan (LUP) for guidance. The Malibu LUP has been found to be consistent with the Coastal Act and provides specific standards for development along the Malibu coast. For example, policies 166 and 167 provide, in concert with Coastal Act section 30235, that revetments, seawalls, cliff retaining walls and other shoreline protective devices be permitted only when required to serve coastal-dependent uses, to protect existing structures or new structures which constitute infill development and only when such structures are designed and engineered to eliminate or mitigate the adverse impacts on the shoreline and sand supply. In addition, Policy 153 indicates that development of sites that are exposed to potentially heavy tidal and wave action shall require

¹ Shoreline Protective Device is also referred to in the findings as a seawall or bulkhead.

² "Coastal-dependent development or use" means any development or use which requires a site on, or adjacent to, the sea to be able to function at all. (Coastal Act Section 30101)

³ The term "infill development" will be discussed in greater detail in section IV.D5., Past Coastal Commission Action.

that development be set back a minimum of 10 ft. landward from the mean high tide line.

1. Amarillo Beach Shoreline and Existing Development

The City of Malibu contains a 27 mile long narrow strip of coast that is backed by the steep Santa Monica Mountains. Unlike most of the California coast, the shoreline in Malibu runs from east to west and forms south-facing beaches. Amarillo Beach is located approximately 2 miles west of Malibu Creek and immediately adjacent to the south of Bluffs State Parkland. Malibu Road, the proposed project and Amarillo Beach are located at the base of coastal bluffs.

a. Existing Development

Amarillo Beach is developed with single family homes. Topographically, the road fill that supports Malibu Road drops approximately 20 feet to the beach at an approximate 1.5:1 slope. The majority of the homes are built on piles and employ one or more retaining walls to stabilize the road fill and to protect the septic tanks that are under these houses. Approximately one fourth of the homes along this beach appear to have been developed with shoreline protective devices in the form of either rock revetments or vertical bulkheads.⁴ In the instances where the shoreline protective devices are located adjacent to one another, they are contiguous with one another.

b. Amarillo Beach Shoreline

Amarillo Beach is located within the Dume Littoral Subcell, which geographically extends from approximately Point Dume to Redondo Beach. The Dume Subcell is part of the larger Santa Monica Littoral Cell. The fluvial sediment from Malibu Creek and Topanga Canyon Creek is the major contributing sediment source in this subcell. Given that Amarillo Beach is upcoast from Malibu Creek and Topanga Canyon Creek, sediment to this beach is predominantly derived from the upcoast Zuma Littoral Subcell, in which approximately 90% of the sediment continues downcoast bypassing the Dume Canyon Submarine Canyon. In contrast to the Dume Littoral Subcell, where the major sediment source is the large streams referenced above, 60% of the sediment from Zuma Cell's net total sediment is derived from beach/bluff erosion and only 40% is derived from the local streams.⁵

The main sources of sediment for bluff backed beaches are the bluffs themselves, as well as the material that has eroded from inland sources and is

⁴ The estimate of one fourth is based on staff observations of 54 contiguous lots (51 of which were developed): 20 downcoast and 34 upcoast.

⁵ Army Corps of Engineers, Los Angeles District, Reconnaissance Study of the Malibu Coast. 1994.

carried to the beach by small coastal streams. While beaches seaward of coastal bluffs follow similar seasonal and semiannual changes as other sandy beaches, they differ from a wide beach in that a narrow, bluff backed beach does not have enough material to maintain a dry sandy beach area during periods of high wave energy. Thus, unlike a wide sandy beach, a narrow, bluff backed beach may be scoured down to bedrock during the winter months. In the case of Amarillo Beach, a road was constructed at the base of the bluff area in the 1920's and has thus altered the natural process of shoreline nourishment in which beaches such as Amarillo would expose the back of the bluff to frequent wave attack as the beach erodes. In a natural setting this wave attack leads to eventual erosion and retreat of the lower portions of the bluff. The dynamic of bluff erosion and retreat results in landward movement of the beach's location and, in turn, establishment of a new beach area. In the case of Amarillo Beach, the back of the beach has been fixed in part by Malibu Road and in part by shoreline protective devices that have been constructed on the beach to protect single family residences.

2. Amarillo Beach Is an Eroding Beach

Having defined Amarillo Beach as a narrow, bluff-backed beach, the next step is to determine the overall erosion pattern of the beach. Determination of the overall beach erosion pattern is one of the key factors in determining the impact of the seawall on the shoreline. In general, beaches fit into one of three categories: 1) eroding; 2) equilibrium; or 3) accreting. The persistent analytical problem in dealing with shore processes in California is distinguishing long-term trends in shoreline change from the normal, seasonal variation.

Two studies regarding long-term trends in shoreline processes were reviewed. First, a U.S. Army Corps of Engineers 1994 Reconnaissance Report regarding the Malibu/Los Angeles County coastline was reviewed. This report concludes that Amarillo Beach is suffering from long-term shoreline retreat which averages a little less than 1 foot per year.⁶ Second, a report prepared for the City of Malibu by Moffatt and Nichols, Engineers dated June 30, 1992 was reviewed. This report also concludes that Amarillo Beach is retreating; however, here the estimated rate of erosion is between .25 and .5 feet per year.

The applicant produced three reports that discussed the proposed project relative to wave uprush and shoreline processes: 1) Wave Uprush Study by Pacific Engineering Group dated April 30, 1996; 2) Response to Coastal Commission Staff Questions by Pacific Engineering Group dated May 27, 1997;

⁶This is based on estimated average vertical and horizontal scour prepared with the assistance of the numerical computer program model "SBEACH".

and, 3) Coastal Impact Analysis by Noble Consultants, Inc. dated September 16, 1997.

The first report produced by the Pacific Engineering Group states that Amarillo Beach is an "oscillating" beach⁷ with an average mean high tide line location that is typically at 133 ft. seaward from the property line, plus or minus 40 feet. Pacific Engineering Group provided no significant analysis or study in support of the conclusory statement that this was an oscillating beach. Pacific Engineering Group, for instance, failed to reference past studies regarding the erosional characteristics of Southern California beaches. Therefore, in order to determine whether the report's conclusions are accurate, staff reviewed the proposed project against the above cited shoreline data (Army Corps of Engineers 1994 Reconnaissance Report and Moffat and Nichols Report dated June 30, 1992) and asked the applicant for supplemental information.

The applicant then retained Noble Consultants. Noble Consultants cited the 1992 Moffatt and Nichol study which stated that the beach is eroding at a rate of .25 to .5 ft. per year. Noble Consultants state that the shoreline changes along this stretch of beach are, ". . . almost entirely due to the effects of episodic fluvial sediment supply, development encroachment, and shoreline structures that have occurred since the early 1900's." The report of Noble Consultants is consistent with the studies of the Corps of Engineers and Moffat and Nichols and contains analysis lacking in the Pacific Engineering Group reports.

Given that Pacific Engineering Group provided no significant analysis or study in support of the conclusory statement that this was an "oscillating" beach and given that the methodology and data collection of Noble Consultants, the Corps of Engineers and Moffat and Nichols has been confirmed to be accurate by staff, the Commission rejects that the conclusions of Pacific Engineering Group are not convincing. Based on the studies about the behavior of Amarillo Beach performed by the U. S. Army Corps of Engineers, the recent analysis of Moffatt and Nichols, Engineers and the Noble Consultants Report, the Commission finds that there is substantial evidence that Amarillo Beach is an eroding beach, not an equilibrium beach.

The Commission notes that, even if the applicant's first consultant (Pacific Engineering Group) was correct that Amarillo is oscillating, many studies performed on both equilibrium and eroding beaches evidence that loss of beach occurs on both types of beaches where a shoreline protective device exists. If studies proved this was an equilibrium beach, the consulting engineers would have to analyze and determine the site specific impacts the proposed shoreline protective device would have on an equilibrium beach. In any event, given that Amarillo Beach is experiencing a long term erosional trend, the Commission concludes that placement of a seawall on this beach will result in an accelerated rate of erosion and loss of sandy beach. Therefore, the Commission's

⁷ Pacific Engineering Group uses the term "oscillating" to mean what coastal engineers would call an equilibrium beach, that is, a beach that is not subject to long term accretion or erosion.

conclusion that Amarillo Beach is eroding for purposes of determining the long-term trends of the shoreline processes is accurate given that the site will be developed with a shoreline protection device and that a loss of beach can be anticipated.

3. Location of the Proposed Shoreline Protective Device in Relation to the Mean High Tide Line and Wave Action

The other key factor in determining the impact of the seawall on the shoreline is the location of the proposed protective device in relationship to the expected wave runup as calculated by the location of the Mean High Tide Line and the beach profile. The 50 ft. long vertical bulkhead will extend along the seaward front of the proposed structure below the deck, at the seaward extent of the structure, and will return back to the road at 41 feet along the western side and 36 feet along the eastern side of the proposed structure. The seaward extent of the bulkhead will be approximately 62 feet from Malibu Road.

a. Mean High Tide Line

The data submitted by the applicant shows that the bulkhead is not located near documented positions of the MHTL. Pacific Engineering Group prepared two reports dated April 30, 1996 and May 27, 1997. The first report illustrates the positions of the surveyed MHTL on January 19, 1996 and 1961 (sic, no month given) which are located approximately 85 ft. and 90 ft. seaward of the proposed bulkhead location. The second reports states that in March 1967 and June 1969, the surveyed MHTL are, "...located 125 feet seaward of the property line," or 63 ft. seaward of the proposed bulkhead and that on January 19, 1996 the MHTL was 83 ft. seaward of the proposed bulkhead. The applicant has submitted a letter from the State Lands Commission (SLC) which states that the SLC at this time does not make any claim that the project encroaches on public lands.

In order to confirm this information staff independently reviewed 12 surveyed mean high tide lines done between 1938 and 1988 performed by the U. S. Army Corps of Engineers and one survey performed by the Coastal Commission's Staff Engineer in 1990. Review of these surveys showed the mean high tide line at various locations, all of which were seaward of the applicant's proposed project. For example, in 1938 the line was located approximately 160 ft. seaward of Malibu Road and in 1988 the line was located approximately 120 ft. seaward of Malibu Road (98 ft. and 58 ft. of the proposed bulkhead).

b. Wave Uprush

With respect to inundation of the beach fronting the seawall during high tide and low beach profile conditions in the winter the profile data prepared by Noble

Consultants, cited in detail below, indicates that such inundation will occur. What remains unclear is the frequency at which the inundation will occur.

It is important to accurately calculate the potential of wave runup and wave energy to which the seawall will be subject. Dr. Douglas Inman, renowned authority on Southern California beaches concludes that, "The likely detrimental effect of the seawall on the beach can usually be determined in advance by competent analysis." Dr. Inman further explains the importance of the seawall's design and location as it relates to predicting the degree of erosion that will be caused by the seawall. He states:

While natural sand beaches respond to wave forces by changing their configuration into a form that dissipates the energy of the waves forming them, seawalls are rigid and fixed, and at best can only be designed for a single wave condition. Thus, seawalls introduce a disequilibrium that usually results in the reflection of wave energy and increased erosion seaward of the wall. The degree of erosion caused by the seawall is mostly a function of its reflectivity, which depends upon its design and location.⁸

With regard to this issue, all of the reports submitted by the applicant discussed the project's location relative to the wave uprush onto the beach area. The conclusions relative to the location of the bulkhead from the shoreline during severe storm and high tide wave conditions reached by Pacific Engineering Group and Noble Consultants differed considerably.

The applicant has submitted conflicting data relative to whether the proposed bulkhead and support piles intrude on the historical areas of wave run-up and beach sediment transport. As stated previously the applicant submitted a total of three reports: two prepared by Pacific Engineering Group (4/30/96 and 5/27/97) and one prepared by Noble Consultants (9/16/97). Pacific Engineering Group stated that the proposed project will not intrude into the historical areas of wave run-up. Analysis of aerial photos, site visits and the report prepared by Noble Consultants contradict this conclusion. Moreover, the methodology and analysis performed by Noble Consultants has been confirmed by staff, as explained in the preceding section (IVB2. Amarillo Beach is Eroding); whereas staff is in the basis for the conclusions reached by Pacific Engineering Group are questionable and unconvincing with respect to all of the evidence contradicting both conclusions.

Pacific Engineering Group indicated that generally the bulkhead would be landward of the shoreline even during the severe storm and high tide wave conditions. It performed an investigation of "historical shoreline conditions as surveyed by the County of Los Angeles between 1961 and 1974," and used two beach profiles in order to determine a design beach profile to assess the

⁸ Letter dated 25 February 1991 to Coastal Commission staff member and engineer Lesley Ewing from Dr. Douglas Inman.

potential shoreline profile during normal and extreme storm conditions and make bulkhead design recommendations thereto.

As illustrated on Pacific Engineering Group's Wave Uprush and Design Beach Profile Plan dated April 30, 1996 two beach profiles (surveys of mean high tide lines January 19, 1996 and 1961 {sic}) and two wave designs were used to determine the location of where waves would break and the most landward extent of the wave uprush. According to both wave design scenarios, the waves would break seaward of the design shoreline: however, wave uprush would extend 35 and 12 feet seaward from the Malibu Road right-of-way, which would be landward of the proposed location of the bulkhead. In a follow-up response to Commission staff dated May 27, 1997, Pacific Engineering Group cite two additional surveyed mean high tide lines (March 1967 and June 1969) and conclude that, "the bulkhead is landward of the shoreline even during severe storm conditions." Even though the extent of wave uprush is reduced when a back beach berm is present, Pacific Engineering Group does not take into account the likely disappearance of the back beach berm during the winter months. Therefore, the evidence indicates that the calculations of wave up rush are not considered accurate.

Noble Consultants later prepared a more concise review of Amarillo Beach (9/16/97). Noble Consultants state that during the summer 1997 beach condition the back beach berm was at an approximate +12 to +13 feet Mean Sea Level. However, Noble indicates that during the winter months the berm would likely disappear and thereby, "even non-storm wave run-up during high tides can reach both the existing (adjacent) wall and the proposed bulkhead structure."

The Commission finds that the conclusions contained in report prepared by Noble Consultants are more persuasive and accurate than those provided by Pacific Engineering Group because the methodology employed by Noble Consultants takes into account the natural change in the shoreline during normal winter conditions and because the estimate of wave runup also takes into account worst case severe storm events.

Given that there is strong evidence that Amarillo Beach is subject to long-term erosional trends, the frequency of wave exposure will increase as the beach width decreases with time. Furthermore, since "even non-storm wave run-up during high tides can reach both the existing (adjacent) wall and the proposed bulkhead structure," then as the beach erodes annually, the seawall over time will be subject to wave action during a typical storm event.⁹ This condition will only be exacerbated in the future given the documented long term erosional trends.

The Commission finds that there are two basic premises of siting coastal structures on sandy beaches:

⁹ Noble Consultants, September 16, 1997.

1) The most important factor affecting the potential impact of a seawall on the beach is whether there is long-term shoreline retreat. (Note: The U.S. Army Corps of Engineers, Los Angeles District 1994 Reconnaissance Study of the Malibu Coast and site specific survey data spanning the 1928-1996 time frame indicates that Amarillo Beach is suffering long-term shoreline retreat which averages less than 1 foot per year). Such retreat is a function of sediment supply and/or relative sea level change. Where long-term retreat is taking place...and this process cannot be mitigated, then the beaches in front of seawalls in these locations will eventually disappear.¹⁰

2) One of the most critical factors controlling the impact of a seawall on the beach is its position on the beach profile relative to the surf zone. All other things being equal, the further seaward the wall is, the more often and more vigorously waves interact with it. The best place for a seawall, if one is necessary, is at the back of the beach where it provides protection against the largest of storms. By contrast, a seawall built out to or close to the mean high water line may constantly create problems related to frontal and end scour, as well as upcoast sand impoundment.

Based on the above discussion, the Commission finds that the proposed wooden bulkhead at its proposed location encroaches into an area of the beach that will be subject to wave run up. Furthermore, the Commission finds that Amarillo Beach is a narrow beach subject to an erosional trend. Therefore, the following discussion is intended to evaluate the impacts of the proposed seawall on the beach based on the above information which identified the specific structure design, the location of the structure and the shoreline geomorphology.

4. Effects of the Shoreline Protective Device on the Beach

The proposed 50 ft. long wooden bulkhead is proposed to be constructed on the sandy beach approximately 62 ft. seaward of Malibu Road. As is the case here, an engineered bulkhead is typically built along straight sand beaches or low coastal bluffs where fill will be placed landward of the bulkhead with roads and other development constructed on the fill. Therefore, the structure functions as both a retaining structure and as protection from wave attack.

The proposed project involves a shoreline structure that, as a result of wave interaction, will seasonally affect the configuration of the shoreline and the beach profile and which will have an adverse impact on the shoreline. Even though the precise impact of a shoreline structure on the beach is a persistent subject of debate within the discipline of coastal engineering, and particularly

¹⁰ Tait, J.F. and G.B. Griggs, "Beach Response to the Presence of a Seawall: A Comparison of Field Observations," Shore and Beach, 1990, Vol. 58, No. 2, pp 11-28.

between coastal engineers and marine geologists, it is generally agreed that a shoreline protective device will affect the configuration of the shoreline and beach profile whether it is a vertical bulkhead or a rock revetment. The main difference between a vertical bulkhead and rock revetment seawall is their physical encroachment onto the beach. Additionally, rock revetments, unlike the proposed bulkhead, dissipate the wave energy and typically result in less localized beach scour. However, it has been well documented by coastal engineers and coastal geologists that shoreline protective devices or shoreline structures in the form of either a rock revetment or vertical bulkhead will adversely impact the shoreline as a result of beach scour, end scour (the beach areas at the end of the seawall), the retention of potential beach material behind the wall, the fixing of the back beach and the interruption of longshore processes. In order to evaluate these potential impacts relative to the proposed structure and its location on Amarillo Beach, each of the identified effects will be evaluated below.

a. Beach Scour

Scour is the removal of beach material from the base of a cliff, seawall or revetment due to wave action. The scouring of beaches caused by seawalls is a frequently-observed occurrence. When waves impact on a hard surface such as a coastal bluff, rock revetment or vertical bulkhead, some of the energy from the wave will be absorbed, but much of it will be reflected back seaward. This reflected wave energy in combination with the incoming wave energy, will disturb the material at the base of the seawall and cause erosion to occur in front and down coast of the hard structure. This phenomenon has been recognized for many years and the literature acknowledges that seawalls have some effect on the supply of sand. The following quotation summarizes a generally accepted opinion within the discipline of coastal engineering that, "Seawalls usually cause accelerated erosion of the beaches fronting them and an increase in the transport rate of sand along them."¹¹

Ninety-four experts in the field of coastal geology, signed the following succinct statement of the adverse effects of seawalls:

These structures are fixed in space and represent considerable effort and expense to construct and maintain. They are designed for as long a life as possible and hence are not easily moved or replaced. They become permanent fixtures in our coastal scenery but their performance is poor in protecting community and municipalities from beach retreat and destruction. Even more damaging is the fact that these shoreline defense structures frequently enhance erosion by reducing beach width,

11 Saving the American Beach: A Position Paper by Concerned Coastal Geologists (March 1981, Skidaway Institute of Oceanography), pg. 4.

steepening offshore gradients, and increasing wave heights. As a result, they seriously degrade the environment and eventually help to destroy the areas they were designed to protect.¹²

The above 1981 statement signed by 94 respected coastal geologists indicates that sandy beach areas available for public use can be harmed through the introduction of seawalls. Thus, in evaluating an individual project, the Commission assumes that the principles reflected in that statement are applicable. To do otherwise would be inconsistent with the Commission's responsibilities under the Coastal Act to protect the public's interest in shoreline resources and the public's access along the ocean and to the water, as discussed in more detail in the subsequent Section IVE. Public Access.

The impact of seawalls as they are related to sand removal on the sandy beaches is further documented by the State Department of Boating and Waterways:

While seawalls may protect the upland, they do not hold or protect the beach which is the greatest asset of shorefront property. In some cases, the seawall may be detrimental to the beach in that the downward forces of water, created by the waves striking the wall rapidly remove sand from the beach.¹³

Finally this observation was underscored more recently in 1987 by Robert G. Dean in "Coastal Sediment Processes: Toward Engineering Solutions":

Armoring can cause localized additional storm scour, both in front of and at the ends of the armoring...Under normal wave and tide conditions, armoring can contribute to the downdrift deficit of sediment through decreasing the supply on an eroding coast and interruption of supply if the armoring projects into the active littoral zone.¹⁴

It is generally agreed that where a beach is eroding, the erection of a seawall will eventually define the boundary between the sea and the upland. This result can be explained as follows: on an eroding shoreline fronted by a beach, a beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, the entire profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a seawall. While the shoreline on either end of the seawall continues to retreat, shoreline retreat in front of the seawall stops. Eventually, the shoreline fronting the seawall protrudes into the water, with the winter MHTL fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the seawall.

12 Saving the American Beach: A Position Paper by Concerned Coastal Geologists (March 1981, Skidaway Institute of Oceanography), pg. 4.

13 State Department of Boating and Waterways (formerly called Navigation and Ocean Development), Shore Protection in California (1976), page 30.

14 Coastal Sediments '87.

Dr. Craig Everts found that on narrow beaches where the shoreline is not armored, the most important element of sustaining the beach width over a long period of time is the retreat of the back beach and the beach itself. He concludes that:

Seawalls inhibit erosion that naturally occurs and sustains the beach. The two most important aspects of beach behavior are changes in width and changes in the position of the beach. On narrow, natural beaches, the retreat of the back beach, and hence the beach itself, is the most important element in sustaining the width of the beach over a long time period. Narrow beaches, typical of most of the California coast, do not provide enough sacrificial sand during storms to provide protection against scour caused by breaking waves at the back beach line. This is the reason the back boundary of our beaches retreats during storms.¹⁵

Dr. Everts further concludes that armoring in the form of a seawall interrupts the natural process of beach retreat during a storm event and that, "A beach with a fixed landward boundary is not maintained on a recessional coast because the beach can no longer retreat."

The Commission has observed this phenomenon up and down California's coast, where a seawall has successfully halted the retreat of the shoreline, but only at the cost of usurping the beach. For example, at La Conchita Beach in Ventura County, placement of a rock revetment to protect an existing roadway has caused narrowing of the existing beach. Likewise, at City of Encinitas beaches in San Diego County, construction of vertical seawalls along the base of the bluffs to protect existing residential development above, has resulted in preventing the bluffs' contribution of sand to the beaches, resulting in narrowing. Although this may occur slowly, the Commission concludes that it is the inevitable effect of constructing a seawall on an eroding shoreline. In such areas, even as erosion proceeds, a beach would be present in the absence of a seawall. As set forth in earlier discussion, Amarillo Beach is eroding and, therefore, the effects of the proposed seawall could potentially have adverse impacts as the beach erodes further landward and as the protective device becomes a dominant component of the shoreline system.

The above cited studies thus confirm that beach scour is a likely result of the placement of seawalls in an area subject to wave runup. In this case, the evidence has demonstrated that Amarillo is an eroding beach. Furthermore, there is evidence that the proposed seawall will be routinely subject to wave action during the winter season.

Originally the applicant indicated that the seawall will rarely be acted upon by waves (Pacific Engineering Group). As stated previously, the estimate of wave runup does not take into account worst case severe storm events or the absence

¹⁵ Letter Report dated March 14, 1994 to Coastal Commission staff member and engineer Lesley Ewing from Dr. Craig Everts, Moffatt and Nichols Engineers.

of a back beach berm in the winter months. If an eroded beach condition occurs with great frequency due to the placement of a seawall, this site would also accrete at a slower rate. In contradiction to Pacific Engineering Group, Noble Consultants state that during the winter season the proposed bulkhead would result in temporary, "localized scouring," in which the beach would, "partially recover soon after the storm event passes." This determination by Noble Consultants was based on its review of pertinent documents, the proposed structural improvement plan, the Wave Uprush Study prepared by Pacific Engineering Group and the Engineering Geologic Investigation Report. Therefore, based on the report prepared by Noble Consultants which cites both the Army Corps of Engineers 1994 Malibu study and the analysis of the Pacific Engineering Group, the Commission finds that the bulkhead would be acted frequently during winter months depending on the wave height and tidal conditions.

The impacts of potential beach scour is important relative to beach use for two reasons. The first reason involves public access. As explained in the subsequent section relating to public access, Amarillo Beach has historically been used by the public. The subject property is located approximately 120 feet from an existing vertical public accessway that has been maintained and operated by Los Angeles County since approximately the 1960's. If the beach scours at the base of the seawall, even minimal scouring in front of the 50 ft. long wall will translate into a loss of beach sand available (i. e. erosion) at an accelerated rate than would otherwise occur under a normal winter season if the beach were unaltered. The second impact relates to the potential turbulent ocean condition. Scour at the face of a seawall will result in greater interaction with the wall and thus, make the ocean along Amarillo beach more turbulent than it would along an unarmored beach area.

Therefore, the Commission finds that the proposed seawall will cause greater erosion than under natural conditions and less rapid beach recovery that under natural beach conditions occurs by way of accretion. Staff consulted in September 1997 with Dr. Chia-Chi Lu of Noble Consultants regarding a seawall design and location that would reduce beach scour. Dr. Lu confirmed that the further landward the bulkhead was located the less beach scour that would result. Moreover, Dr. Lu stated that any re-siting of the proposed seawall to a landward location would likely result in the beach berm area in front of the seawall maintaining its width during winter storms that occurred during low and average tides; thereby, lessening the wave energy when it reached the seawall and minimizing the beach scour in front of the seawall. Therefore, the Commission finds it necessary to relocate the seawall in order to lessen the seawall's impacts on the shoreline.

Staff methodically examined all potential alternatives to the proposed project that would result in locating the proposed seawall landward of the proposed location. As proposed, the seawall extends 62 feet onto the beach as measured from Malibu Road right-of-way and is located 5 feet seaward of the applicant's septic

system. As stated previously, the applicant is proposing to excavate a 580 sq. ft. basement/understory into the slope adjacent to Malibu Road landward of the proposed septic system. In order to minimize and mitigate the project's impacts on the shoreline that are associated with the construction of the proposed seawall, staff reviewed the seawall design in relation to the existing and proposed septic system.

With regard to the existing septic system, staff inquired of Lawrence Young, the Environmental Health Specialist for the City of Malibu as to the current building code requirements for new and expanded septic systems located on the beach. According to Young, individuals who propose changes to an existing septic system or a new septic system must demonstrate that neither the septic tank nor the leachfields or septic pits will not be within the wave uprush zone where it would be subject to wave action. For example, a septic system that was built landward of the house between or within the road right-of-way would likely not be subject to wave uprush. Where any portion of the system is located on the sandy beach area and is also subject to wave uprush, a shoreline protective device to protect the system is required. According to Young, Broadbeach is the only stretch of sandy beach in Malibu where septic systems do not require seawalls because sand dunes seaward of the septic systems prevent waves from reaching it. Therefore, if the applicant chose to perform an extensive remodel of his residence where improvements to the septic system were required, he would be required to construct a seawall since the current system is located on the beach and is subject to wave uprush.

According to the applicant's agent, Mr. Ron Goldman, the current septic system for the existing two bedroom house extends further seaward than that proposed in this project (See *Exhibit 9*). To protect the existing septic system the required location of the bulkhead would be 5 ft. seaward from that proposed in this project. Additionally, Mr. Goldman has indicated that the septic tank component of the septic system can, from an engineering standpoint, be relocated landward, within the slope that supports Malibu Road. However, Mr. Goldman stated that seepage pits which could in theory be located within the road right-of-way cannot be used because the subsurface water elevation is 4 ft. too high to allow the minimum necessary depth. Thus, the proposed project employs leachfields, instead of seepage which require a greater area, and, must be located on the beach.

Staff analyzed the possibility of redesigning the proposed septic system in an effort to minimize the seaward extent of the system. In order to achieve a further landward location of the seawall the project's septic system would have to be redesigned. As confirmed by Mr. Young, the reduction of the seaward extent of the septic system can be achieved in several ways. First, the applicant could relocate the septic tank to the slope area adjacent to the road where the proposed basement is located. Second, the applicant could reduce the total number of bedrooms to three or two which would respectively reduce the size of the leachfields by totals of 150 sq. ft. to 381 sq. ft. Third, the applicant could

employ a bottomless sand filter system which would eliminate the need for a future leachfield area (450 sq. ft.).

As described, the applicant has several septic system design options which could be implemented in constructing the proposed residence. Based on septic system's necessary setbacks from Malibu Road and from the proposed bulkhead, Mr. Goldman stated that he believed that if the applicant were to reduce the size of the septic system to either a three bedroom design or a bottomless sand filter system, the seaward extent of the system could be reduced by 7 ft. Because of their impact on natural shoreline processes, the Coastal Act disfavors the use of shoreline protective devices and permits their approval only when the narrow criteria of section 30235 and other applicable policies have been met. Therefore, section 30235 permits the approval of shoreline protective devices in limited instances and only where the device is designed in its most landward location in relation to the structures that it is designed to protect. In this case, the evidence indicates that the proposed bulkhead could be moved seven ft. landward while allowing the proposed new development to go forward. Although it may be possible to conceive of further redesigning the house and septic system so that the proposed bulkhead might be sited even further landward, the Commission finds that, in the circumstances of this case, modification of the proposed bulkhead an additional seven ft. landward would meet the requirement of section 30235 to eliminate or mitigate adverse impacts on shoreline sand supply. Therefore, in order to minimize the scour effects of the proposed seawall, special condition #5 has been drafted to require the applicant to submit revised plans that will show the bulkhead relocated at a minimum 7 ft. landward from the current location (*See Exhibit 8*).

The Commission finds that relocating the bulkhead landward 7 feet will minimize the beach scour effects of the bulkhead and ensure the project will minimize to the maximum extent feasible any significant adverse impacts on the shoreline. In order to mitigate the impacts of loss of beach sand that results from the scour caused by the proposed seawall, the Commission finds it necessary to require the applicant to record an offer to dedicate lateral public access, as measured 10 ft. from the dripline of the deck. The applicant has proposed this dedication as part of the project and special condition #4 has been recommended in order to insure that the dedication occurs. Therefore, the proposed project as conditioned, is consistent with the applicable Coastal Act sections and with past Commission action.

b. End Effects

End scour effects involve the changes to the beach profile adjacent to the bulkhead or seawall at either end. One of the more common end effects comes from the reflection of waves off of the seawall in such a way that they add to the

wave energy which is impacting the unprotected coastal areas on either end. Coastal engineers have compared the end effects impacts between revetments and bulkheads. In the case of a revetment, the many angles and small surfaces of the revetment material reflect wave energy in a number of directions, effectively absorbing much of the incoming wave rather than reflecting it. Because of the way revetments modify incoming wave energy, there is often less problem with end effects or overtopping than that which occurs with a vertical bulkhead. In the case of a vertical bulkhead, return walls are typically constructed in concert with seawall, and, thus, wave energy is also directed to the return walls causing end erosion effects.

The literature on coastal engineering repeatedly warns that unprotected properties adjacent to the seawall may experience increased erosion. Field observations have verified this concern.¹⁶ Although it is difficult to quantify the exact loss of material due to end effects, in a paper written by Gerald G. Kuhn of the Scripps Institution of Oceanography, he concludes that erosion on properties adjacent to rock seawall is intensified when wave runup is high.

An extensive literature search on the interaction of seawalls and beaches was performed by Nicholas Kraus in which he found that, while seawalls will have little if any effect on a beach with a large supply of sand, there will be effects to narrow beaches or beaches eroded by storm activity, such as Amarillo. His research indicated that the form of the erosional response to storms that occurs on beaches without seawalls that are adjacent to beaches with seawalls is manifested as more localized toe scour and end effects of flanking and impoundment at the seawall.¹⁷ Dr. Kraus' key conclusions were that seawalls could be accountable for retention of sediment, increased local erosion and increased end erosion. Kraus states:

At the present time, three mechanisms can be firmly identified by which seawalls may contribute to erosion at the coast. The most obvious is retention of sediment behind the wall which would otherwise be released to the littoral system. The second mechanism, which could increase local erosion on downdrift beaches, is for the updrift side of the wall to act as a groin and impound sand. This effect appears to be primarily theoretical rather than actualized in the field, as a wall would probably fail if isolated in the surf zone. The third mechanism is flanking i.e. increased local erosion at the ends of walls.

In addition, preliminary results of researchers investigating the length of shoreline affected by heightened erosion adjacent to seawalls concluded that:

Results to date indicate that erosion at the ends of seawalls increases as the structure length increases. It was observed in both the experimental

16 Paper by Gerald G. Kuhn of the Scripps Institution of Oceanography entitled "Coastal Erosion along Oceanside Littoral Cell, San Diego County, California" (1981).

17 "Effects of Seawalls on the Beach", published in the Journal of Coastal Research, Special Issue #4, 1988.

results and the field data of Walton and Sensabaugh (1978) that the depth of excess erosion is approximately 10% of the seawall length. The laboratory data also revealed that the along-coast length of excess erosion at each end of the structure is approximately 70% of the structure length.¹⁸

A more comprehensive study was performed over several years by Gary Griggs which concluded that beach profiles at the end of a seawall are further landward than natural profiles.¹⁹ This effect appears to extend for a distance of about 6/10 the length of the seawall and represents both a spatial and temporal loss of beach width directly attributable to seawall construction. In the case of this project the scour effects could be as great as 30 ft. to 35 ft. (6/10 of 50 ft. = 30 ft. or 70% of 50 ft. = 35 ft.). These end effects would be expected only when the seawall was exposed to wave attack and, under equilibrium or accreting beach conditions, this scour would disappear eventually during post-storm recovery. However, such cases of renourishment of end areas are rare for erosional beaches.

With respect to the existence of shoreline protective devices on the adjacent properties, the adjacent property downcoast has a retaining wall protecting its septic tank and Malibu Road which is located approximately 20 ft. landward of the proposed bulkhead, the leachfield is unprotected. The adjacent site upcoast is undeveloped and therefore, does not have a shoreline protective device.

The applicant has submitted additional information regarding the potential end effects of the proposed bulkhead. As represented by Noble Consultants, the proposed bulkhead, "should not pose any coastal impacts to the adjacent shoreline and/or property during the summer months." According to Dr. Lu, of Noble Consultants, the general scenario during the winter beach conditions of northerly and northwesterly swells would likely cause end scour effects as long as the waves would be able to propagate and reach the seawall. With respect to the more common north and northwest swell that will occur along Amarillo Beach during the winter season, Dr. Lu stated that he could not cite one example where beach scour end effects would not occur; rather, the unknown would be the varying degree.

The report also discusses the potential impacts of south and southwest swell on the site. The consultants differentiate between southwesterly and southerly storm events during the winter beach conditions to distinguish between potential impacts to adjacent properties because the waves would approach the property at different angles (*See Exhibit 8*). With respect to a southwesterly storm impact on the adjacent downcoast structure's retaining wall the report states that:

18 "Laboratory and Field Investigations of the Impact of Shoreline Stabilization Structures on Adjacent Properties" by W.G. McDougal, M.A. Sturtevant, and P.D. Komar in *Coastal Sediments '87*.

19 "The Interaction of Seawalls and Beaches: Seven Years of Field Monitoring, Monterey Bay, California" by G. Griggs, J. Tait, and W. Corona, in *Shore and Beach*, Vol. 62, No. 3, July 1994.

For incoming waves propagating from the southwest, the existing retaining wall is located within the shadow zone of the proposed bulkhead, which would provide some sheltering effect to the existing structure.

The consultant reviewed the potential end effects that would result from the two proposed return walls which are 41 and 36 ft. in length. The report states that during a southwesterly storm, the proposed bulkhead would also create some localized scouring impact at the two proposed bulkhead return wall corners due to wave gyration. Further, the report states:

The proposed bulkhead, however, would also create some localized scouring occurring at the proposed bulkhead location, induced by storm waves and would be deeper than if the structure were not present, which would result in more intense wave activity at both corners.

Moreover, Noble Consultants state that during a southerly storm event both the proposed bulkhead and the return walls would be directly exposed to wave attack and that, "The localized scouring effect would still occur and its impacts would be similar to the conditions anticipated during the extratropical north/northwest swell events."

In discussing re-siting the bulkhead to a more landward location, staff inquired as to whether the above described scouring effects would be minimized if the bulkhead were located landward by 7 ft. Dr. Lu stated that similar to the 50 ft. long bulkhead, the localized scouring end effects of the bulkhead would be reduced if the bulkhead were relocated landward. Absent a hydrodynamic model, Dr. Lu stated it would be impossible to estimate with any certainty what the extent of the localized scouring would be at the proposed location or one 7 ft. landward. Further, he stated that the scouring would continue to occur as long as the waves would be able to propagate and reach the seawall, even if the seawall were at a more landward location. The landward location of the seawall would only minimize end scour effects, (depending on the waves), during moderate and low tides because the beach berm would theoretically be wider, and, thus, the vertical elevation of the berm would be less. With a reduced vertical elevation, the gentle slope would allow the wave energy to dissipate prior to reaching the return walls and thereby reduce the amount of end scour. However, Dr. Lu stated that during a very severe storm event, the landward location of the seawall would offer no reduction in beach scour, end effects or otherwise. Dr. Lu also noted that another reason for the localized scouring on the ends of the bulkhead is based on the fact that the bulkhead is not proposed to be constructed in a continuous line with the adjacent downcoast retaining wall.

In analyzing the potential end effects of the seawall, staff found that approximately three fourths of all the homes along the vicinity of this beach as measured by 54 lots, appear to have been developed with one or more retaining

walls in order to stabilize the bluff and Malibu Road fill.²⁰ Unlike seawalls, the existing retaining walls allow for some dissipation of wave energy and, as such, reduce the amount of beach scour and end effects because wave run-up can go over the walls.

As set forth in the above discussion regarding beach scour, it is necessary for the applicant to revise the project plans to relocate the bulkhead to a more landward location. Given that Amarillo Beach developed between 1924 and the late 1940's, many of the homes do not have shoreline protective devices but rather retaining walls under the structures supporting Malibu Road and their septic tanks. Many of the leachfields and structures, however, are unprotected by a shoreline protective device. Given that the older homes will likely improve their septic systems at some future date and given that Amarillo beach is eroding, it is likely that these homes will require shoreline protective devices at some future date. Staff has made several site visits and reviewed aerial photos of the beach. The homes located approximately 300 ft. upcoast and 100 ft. downcoast do not have shoreline protective devices that extend as far seaward as that proposed by the applicant.

As discussed above, relocating the seawall to a 7 ft. landward location will reduce beach scour in front of the seawall and at the ends. Therefore, the Commission finds that only as conditioned to revise the project plans to locate the bulkhead at a minimum of 7 feet landward, is the proposed project consistent with the applicable Coastal Act sections and with past Commission action.

c. Retention of Potential Beach Material

A seawall's retention of potential beach material inherently impacts shoreline processes. One of the main functions of a bulkhead or revetment is upland stabilization -- to keep the upland sediments from being carried to the beach by wave action and bluff retreat. In the case of Amarillo Beach, which is located in the Santa Monica Littoral Cell, the back of the beach is fixed at Malibu Road. When the beach in front of the structure disappears, over time the natural shoreward migration of the beach is blocked by the structure. The National Academy of Sciences found that retention of material behind a revetment may be linked to increased loss of material in front of the wall. The net effect is documented in "Responding to Changes in Sea Level, Engineering Implications" which provides :

A common result of sea wall and bulkhead placement along the open coastline is the loss of the beach fronting the structure. This

²⁰ The estimate of one fourth is based on staff observations of 54 contiguous lots (51 of which were developed):20 downcoast and 34 upcoast.

phenomenon, however, is not well understood. It appears that during a storm the volume of sand eroded at the base of a sea wall is nearly equivalent to the volume of upland erosion prevented by the sea wall. Thus, the offshore profile has a certain "demand" for sand and this is "satisfied" by erosion of the upland on a natural beach or as close as possible to the natural area of erosion on an armored shoreline...²¹

As explained, the seawall will protect Malibu Road from continued loss of sediment. However, the result of this protection, particularly on a narrow, eroding beach, is a loss of sediment on the sandy beach area that fronts the seawall. Furthermore, as explained previously, this loss of sediment from the active beach leads to a lower beach profile, seaward of the protective device, where the seawall will have greater exposure to wave attack. In order to mitigate the potential loss of beach sand, the applicant has proposed as part of the project an offer to dedicate lateral public access, as measured 10 ft. from the dripline of the deck. In order to insure that the dedication, which will mitigate these adverse effects, takes place, special condition #4 has been recommended. Only as conditioned to mitigate any potential impacts that may result from the construction of the proposed seawall is the proposed project consistent with the applicable seaward encroachment, shoreline processes, public access and recreation policies of the Coastal Act.

d. Interruption of Onshore and Longshore Processes

If a bulkhead (seawall) is built on an eroding beach and the device eventually becomes a headland jutting into the ocean, the seawall can function like a groin. Thus, the revetment may modify or interrupt longshore transport and may cause the upcoast fillet of deposition and downcoast indenture of erosion which is typical of sand impoundment structures.

The proposed project is located on Amarillo Beach, and, as proposed, the seaward extent of the bulkhead location would range from approximately 62 ft. from Malibu Road. As discussed above, there is evidence that the seawall will be subject to wave action due to its physical location on the beach and due to the beach's erosional trend. In considering the proposed seawall the Commission must review the current development of the beach. Amarillo Beach has been developed with single family homes that were built between 1924 and the late 1940's. Thus, Amarillo is a built out stretch of the Malibu coast.²²

As stated previously, staff has visited the site on several occasions, walked Amarillo Beach and reviewed aerial photographs taken in 1978, 1986 and 1990.

21 National Academy of Sciences, Responding to Changes in Sea Level: Engineering Implications, National Academy Press, Washington D.C., 1987, page 74.

22 Built out beaches within the Malibu area are discussed in greater detail under Section IV. B5.

The homes located within the immediate vicinity do not have seawalls that encroach as far seaward as the bulkhead proposed by the applicant does. Within the immediate vicinity of the project only one fourth of the homes appear to have shoreline protective devices in the form of either bulkheads or revetments. Where seawalls exist on contiguous lots, the structures are constructed in a manner that allows them to be tied together so as not to require a return wall on the adjoining side.

The adjacent upcoast site is undeveloped and the adjacent downcoast site is developed with a retaining wall that is located 20 ft. landward of the proposed bulkhead. As explained in the discussion of end scour effects, the majority of the homes along this stretch of beach were built over 50 years ago and therefore employ retaining walls only and not shoreline protective devices. Given that the older homes will likely improve their septic systems at some future date and given that Amarillo beach is eroding, it is likely that these homes will require shoreline protective devices at some future date. At such time when future seawalls are proposed, siting these structures close together, in line with one another would be the environmentally preferred alternative. Therefore, it remains critical that where a seawall is developed between two lots which do not contain seawalls, that the structure is setback as far landward as possible so as to not predetermine a seaward location of a future seawall.

For the reasons previously given, special condition #5 requires the applicant to revise the location of the proposed bulkhead landward by 7 ft. Given that the proposed seawall, as conditioned, will be sited as far landward as is possible, the project's ability to act as an artificial headland will be lessened. Additionally, the setback of the structure will serve to minimize the interruption of the onshore and longshore processes because the seawall will be 7 ft. closer to the base of the coastal bluff. Additionally, the required lateral access will serve to mitigate the loss of sandy beach that may be impounded by the structure. Therefore, for all the reasons explained above, the Commission finds that, as conditioned, the proposed project will mitigate the adverse impacts on shoreline sand supply to the greatest extent feasible and is consistent with the applicable policies of the Coastal Act referenced above.

e. Conclusion

In conclusion, the Commission finds that the proposed 50 ft. long wooden bulkhead will potentially have adverse impacts on the shoreline processes if the bulkhead is not relocated to a more landward location. In addition, there is substantial evidence that the seawall as proposed could adversely impact sand supply and public access as a result of beach scour, end scour effects, retention of potential beach material and interruption of onshore and longshore processes. As conditioned to relocate the seawall 7 ft. landward, the proposed

project will minimize and lessen the projects adverse impacts on the shoreline processes and on sand supply. Additionally, the applicant is proposing lateral public access to mitigate any potential adverse impacts the proposed development may have on shoreline processes and public access. Given the proposed project's impacts on sandy beach, the project has also been conditioned to require this dedication. Therefore, the Commission finds that, only as conditioned, the proposed project is consistent with the applicable Chapter 3 policies of the Coastal Act.

5. Past Commission Actions on Residential Shoreline Development

Many portions of the Malibu coastline are intensely developed with single family residences. The eastern portion of the Malibu coastline including Las Tunas, Big Rock, La Costa and Carbon beaches, form an almost solid wall of residential development along a five mile stretch of the shoreline. This residential development extends over the sandy and rocky beach in many areas and most of the residences have shoreline protective devices such as rock revetments and concrete or timber seawalls. This residential development and the associated protective devices prevent access to the coast, obscure the views to the beach and water from Pacific Coast Highway, interrupt shoreline processes and impact the fragile biological resources in these areas.

Just west of Malibu Lagoon, where the subject site is located, there is another stretch of residential development extending approximately three miles along the coastline including the Malibu Colony area and the residential development along Malibu Road. Here again, residential development forms an almost continuous wall of houses along the shoreline protected by seawalls. From Corral Beach west there is less development on the shoreline due to high bluffs and public beach areas. However, there are two pockets of residential development in western Malibu that extend over the sandy beach and also have shoreline protective devices: the Malibu Cove Colony and Escondido Beach road area just east of Point Dume and the mile long stretch of homes on Broad Beach²³ just west of Zuma Beach.

Given Malibu's close proximity to the Los Angeles metropolitan area it is understandable why the Malibu coastline has experienced such intensive development of its coastline over the past 50 years. The vast majority of this development took place prior to the passage of Proposition 20 which established the Coastal Commission and the 1976 Coastal Act. As previously stated, section 30235 of the Coastal Act allows for the construction of protective devices where the device serves to protect coastal dependent uses, or to protect existing

²³ Staff notes that homes located along the eastern end of Broadbeach are protected by natural, existing coastal dune fields rather than by shoreline protective devices.

structures or public beaches in danger from erosion. The construction of protective devices to protect new residential development is generally not allowed under this Coastal Act section. The majority of the residential development described above was built prior to the Coastal Act and required some type of shoreline protective device in order to be developed. Therefore, it is safe to assume under this policy and the other resource protection policies of the Coastal Act that this type of development along Malibu's coastline would either not have been approved or would be developed in a much different configuration or design than it is today.

The Commission has previously permitted a number of new residential developments with protective devices on the Malibu coast, but only when that development was considered "infill" development. The developed portions of the Malibu coastline include a number of vacant parcels between existing structures. Typically, there are no more than one to two vacant lots between existing structures. Infill development can be characterized as the placement of one to two residential structures on one to two lots with protective structures.

The term "infill development", as applied by the Commission in past permit decisions, refers to a situation where construction of a single-family dwelling (and/or in limited situations a duplex) on a vacant lot or the demolition of an existing SFD and construction of a new SFD is proposed in an existing, geographically definable residential community which is largely developed or built out with similar structures. When applied to beachfront development, this situation typically is applied to an existing linear community of beach-fronting residences where the vast majority of lots are developed with single-family dwellings and relatively few vacant lots exist. In other words, within the linear stretch of developed beachfront lots there is an occasional undeveloped lot or two which can be expected to be developed in a similar fashion. By nature of this description an "infill development" situation can occur only in instances where roads and other services are already existing and available within the developed community or stretch of beach. Typically, the term "infill development" would not be applied to a large or long stretch of undeveloped beach (i.e. several lots or a large lot which is not similar in size and character to developed lots in the community or areas which do not contain existing roads and infrastructure).

Another characteristic of largely developed beachfront communities is that many, but not all, existing SFDs have some form of shoreline protective device. In Malibu all beachfront homes utilize a septic system which, when determined to be subject to wave uprush by a coastal engineer, are required to have a shoreline protective device to protect the system. This requirement of assessing wave uprush applies to all new development, extensive remodels and/or reconstruction and anytime changes to a septic system or a new septic system is required or proposed.

In "infill development" situations only, as described above, the Commission has found in past permit decisions in Malibu pursuant to Section 30235 of the Coastal Act, that seawalls, revetments or other types of shoreline protective devices can be permitted to protect existing structures or new structures which constitute infill development and when designed and engineered to eliminate or mitigate adverse impacts on the shoreline (certified Malibu LUP policies 166 and 167). The Commission has also found, in past permit decisions in Malibu, that in beach areas largely committed to residential development having shoreline protective devices, the construction of new protective devices should tie into adjacent seawalls where appropriate or possible (Malibu LUP policy 251).

In permitting the construction of shoreline protective devices for new development constituting infill in Malibu, the Commission recognized that beaches containing existing seawalls presented a unique situation represented by the fact that the existing seawall often (or sometimes) caused unintended effects or adverse impacts on adjacent properties. These unintended effects include scouring or increased erosion for a distance laterally along the adjacent unprotected properties. Therefore, the Commission found that if the adverse end scour effects would be eliminated on adjacent properties if a shoreline protective device was permitted to protect a new structure proposed on one of the few remaining existing lots. The Commission's goal is that ultimately, as these beach communities reach full build out (all infill lots developed), the seawalls will eventually be connected thereby eliminating or reducing adverse effects on shoreline sand supply from end scouring. This goal, or policy approach, does not eliminate or reduce to applicant's responsibility to demonstrate the need for the shoreline protective device, that it is designed and engineering to eliminate adverse impacts on the shoreline, and that it is not located on lands subject to the public trust and will not interfere with the public's right of access to the ocean.

To the maximum extent feasible, protective structures are required to tie into adjacent protective structures. Depending on the past development that has occurred on developed beaches, requiring seawalls to form one contiguous line is not always possible. This is based in part on the age of the structures, (which would indicate whether the septic system required a larger leachfield area and required a seaward location of the seawall) and is based in part on type of shoreline protective device used. In addition, many of the protective devices that were constructed on these beaches were under emergency situations where it is difficult to place the seawall under an existing structure. Therefore, the majority of the developed beaches along the eastern end of the Malibu, which include Las Tunas, Las Flores, Carbon and La Costa Beaches consist of a patchwork of protective devices ranging from wooden bulkheads, rock revetments, shotcrete or gunite walls and a combination of a bulkhead and

revetment. Thus, the seawalls do not always tie into adjacent structures at every location on a developed beach.

The Commission recognized that the infilling of residential development between existing structures would not result in significant adverse impacts to coastal resources within these existing developed shoreline areas. The Commission also acknowledged that the gaps these vacant parcels created between protective devices focused wave energy between these structures resulting in erosion of the vacant property between the structures and potentially endangering infrastructure along Pacific Coast Highway or adjacent frontage roads and endangering adjacent structures. Faced with the prospect of denying beach front residential development with protective devices due to inconsistency with section 30235 of the Coastal Act the Commission established the "infill" policy through permit actions on beach front development in Malibu. The Commission found that infilling these gaps would prevent this type of focused shoreline erosion and would not significantly further impact shoreline processes or adversely impact other coastal resources given the prevailing development pattern along these sections of the Malibu coast.

On Amarillo Beach there are approximately 180 homes along a 2.1 mile long stretch of sandy beach. The area of the proposed development can only be characterized as a developed beach. The proposed development of one single family residence with a wooden bulkhead, and septic system as presented by the facts in this application and as conditioned to be relocated here, is considered to be an infill development within an existing developed area.

a. Seaward Encroachment

In 1981 the Commission adopted the "District Interpretive Guidelines" for Malibu/Santa Monica Mountains area of the coastal zone. These guidelines established specific standards and criteria for shoreline development along the Malibu Coast. The guidelines included the "stringline" policy for the siting of infill development:

In a developed area where new construction is generally infilling and is otherwise consistent with Coastal Act policies, no part of a proposed new structure, including decks and bulkheads, should be built further onto a beach than a line drawn between the nearest adjacent corner of the adjacent structures. Enclosed living space in the new unit should not extend farther seaward than a second line drawn between the most seaward portions of the nearest corner of the enclosed living space of the adjacent structure.

In 1986 the Commission certified the Los Angeles County Malibu/Santa Monica Mountains Land Use Plan which also contains specific policies addressing infill shoreline development:

Policy 153 ...In a developed area where new construction is generally considered infilling and is otherwise consistent with LCP policies the proposed new structure may extend to the stringline of the existing structures on each side.

Policy 166 ...Revetments and seawalls shall be permitted when required to serve coastal dependent uses or to protect existing structures or new structures which constitute infill development.

The intent of the stringline policies was to limit infill development to only existing developed shoreline areas and limit the encroachment of new structures out onto the beach. In past permit actions in Malibu the Commission has typically limited infill development to the construction of one to two structures on one to two vacant parcels between existing structures.

In this case, staff has spent considerable time reviewing the deck stringline for consistency with the Coastal Act and the Commission's past action relating to implementing the stringline policy. As depicted on Exhibit 2, the adjacent owner to the east (downcoast) has a uniquely configured deck area where the section of deck that is closest to the subject project site consists of a 3 ft. wide walkway that abuts the main deck area. Therefore, it is appropriate to draw the deck stringline from the corner of the nearest adjacent deck corner as proposed by the applicant and not to the corner of the adjacent walkway.

Relative to the proposed seawall, special condition #5 has been drafted to require the applicant to relocate bulkhead the 7 ft. landward for all of the reasons discussed above. As stated previously, the adjacent property downcoast does not have a shoreline protective device protecting the leachfield and structure and the property upcoast is undeveloped. The Commission notes that should either adjacent property owner apply for a coastal development permit involving a seawall, such structures, if approved, should be sited to conform to a stringline as drawn from the corners of the seawall proposed under this application. Therefore, the Commission finds that the proposed development, relative to seaward encroachment, is consistent with the relevant sections of the Coastal Act.

6. Conclusion

Coastal Act sections 30235, 30253 and 30250(a) set forth the Commission's mandate relative to permitting shoreline protective devices and beachfront development. In order for the Commission to permit the proposed project, which

includes a 50 ft. long wooden bulkhead, it must find the project consistent with the Chapter 3 policies of the Coastal Act. Therefore, the proposed project must be evaluated against each of these applicable Coastal Act sections.

Coastal Act section 30235, which is cited above, states that shoreline protective devices, such as revetments and other construction that would alter natural shoreline processes, shall be permitted when those structures are necessary to serve coastal-dependent uses or to protect existing structures or to protect public beaches in danger from erosion and when they are designed to eliminate or mitigate adverse impacts on local shoreline sand supply. In addition to the consideration of section 30235, the Commission has approved new development on the beaches where such development is consistent with the Commission's "infill development" policy described in detail above. In the case of this project, the applicant is proposing lateral access. In addition, the project meets the Commission's interpretation of infill development as defined in past permit decisions. As conditioned, the project will be designed to mitigate adverse impacts on shoreline sand supply.

Coastal Act section 30253, (also cited above) mandates that new development shall neither create nor contribute significantly to erosion, or contribute to 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 statute further specifies that new development shall minimize risks to property in areas of hazard. As conditioned to revise the location of the seawall landward, the proposed project will minimize any erosional impacts that may result from developing on the beach.

Section 30250(a) of the Coastal Act states, in part, that new development not adversely affect, either individually or cumulatively, coastal resources. As explained in the preceding section regarding past Commission action on residential development and seaward encroachment, the proposed project is located on a developed stretch of beach and is considered infill. Therefore, the Commission finds that the proposed project is consistent with sections 30235, 30253 and 30250 of the Coastal Act.

D. Hazards and Geologic Stability

Coastal Act Section 30253 states in part:

New development shall:

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

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

Section 30253 of the Coastal Act mandates that new development provide for geologic stability and integrity and minimize risks to life and property in areas of high geologic, flood, and fire hazard. In addition to section 30253 of the Coastal Act, the certified Malibu/Santa Monica Mountains LUP contains several policies and standards regarding hazards and geologic stability. These policies have been certified as consistent with the Coastal Act and used as guidance by the Commission in numerous past permit actions in evaluating a project's consistency with section 30253 of the Coastal Act. For example, Policy 147 suggests that development be evaluated for impacts on and from geologic hazards. Policy 165 suggests that no permanent structures be permitted on bluff faces.

Storm, Wave and Flood Hazard

The Malibu coast has been subject to substantial damage as a result of storm and flood occurrences, geological failures and firestorms. Therefore, it is necessary to review the proposed project and project site against the area's known hazards. The proposed project involves the development of an infill lot located on a developed stretch of Amarillo Beach.

The site is susceptible to flooding and/or wave damage from storm waves and storm surge conditions. Past occurrences have resulted in public costs (through low-interest loans) in the millions of dollars in the Malibu area alone.

Along the Malibu coast, significant damage has also occurred to coastal areas from high waves, storm surge and high tides. In the winter of 1977-78, storms triggered numerous mudslides and landslides and caused significant damage along the coast.

The southerly and southwesterly facing beaches in the Malibu area were especially hard hit by waves passing through the open windows between offshore islands during the 1978 and 1980 storms. These waves broke against beaches, seawalls, and other structures, causing damages of between \$2.8 and \$4.75 million to private property alone. The amount of erosion resulting from a storm depends on the overall climatic conditions and varies widely from storm to storm. Protection from this erosion depends largely on the funds available to construct various protective structures that can withstand high-energy waves.²⁴

²⁴ "Coastal Winter Storm Damage, Malibu, Los Angeles County, Winter 1977-78", part of the National Research Council proceedings, George Armstrong.

The "El Nino" storms in 1982-83 caused additional damage to the Malibu coast, when high tides of over 7 feet were combined with surf between 6 and 15 feet. These storms caused over \$12.8 million in damage to structures in Los Angeles county, many located in Malibu. Due to the severity of the 1982-83 storm events, they have often been cited as an illustrative example of an extreme storm event and used as design criteria for shoreline protective structures. Damage to the Malibu coastline was documented in an article in California Geology. This article states that:

In general, the storms greatly affected the character of the Malibu coastline. Once quiet, wide, sandy beaches were stripped of their sand and high surf pounded residential developments The severe scour, between 8 to 12 feet, was greater than past scour as reported by "old timers" in the area. Sewage disposal systems which rely on the sand cover for effluent filtration were damaged or destroyed creating a health hazard along the coast. Flotsam, including pilings and timbers from damaged piers and homes, battered coastal improvements increasing the destruction. Bulkhead failures occurred when sand backfill was lost due to scour exceeding the depth of the bulkhead sheeting, or scour extending beyond the return walls (side walls of the bulkhead which are extended toward the shore from the front wall of the bulkhead).²⁵

Other observations that were noted included the fact that the storm's damage patterns were often inconsistent. Adjacent properties suffered different degrees of damage sometimes unrelated to the method or age of construction. The degree of damage was often related to past damage history and the nature of past emergency repairs. Upcoast (west) of Amarillo Beach, walls at Zuma Beach and the parking lots were damaged by wave uprush and scour. Debris was deposited onto the margin of Pacific Coast Highway (*Exhibit 1*).

Storms in 1987-88 and 1991-92 did not cause the far-reaching devastation of the 1982-83 storms, however, they too were very damaging in localized areas and could have been significantly worse except that the peak storm surge coincided with a low tide rather than a high tide.

As proposed, the residence would be an elevated structure with an approximate 580 sq. ft. understory. The residence will be built on caissons to protect the structure from storm waves and storm surge. Malibu Road, the structure and the leachfields are intended to be protected from storm events by the proposed bulkhead. Presently the site is developed with a one level single family residence that is built on caissons and has no seawall protecting the structure or

²⁵ "Assessment of 1982-83 Winter Storms Damage Malibu Coastline", by Frank Denison and Hugh Robertson, in California Geology, September 1985.

septic system. The site has a retaining wall underneath the house to support Malibu Road. Given that the size of the residence is increasing, the capacity of the current septic system is not adequate and is not in compliance with current plumbing code requirements. Therefore, the applicant is proposing the expansion of the septic system and the construction of a bulkhead in a more seaward location to protect the system. Experience from historic storm events in Malibu indicates that this protection is essential to the long-term viability of both the road and leachfield.

The applicant's submittal includes a Preliminary Soils and Engineering Geologic Investigation prepared by California Geosystems dated 1/24/97, A Wave Uprush study prepared by Pacific Engineering Group dated 4/30/97 and a Coastal Impact Analysis prepared by Noble Consultants dated 9/16/97. The Wave Uprush Report dated 1/24/97 concludes that, "The construction of a new single family residence on the subject property is feasible from a coastal engineering perspective provided that the following recommendations are complied with. . ."

During the winter season, the proposed bulkhead will extend into an area exposed to wave attack, flooding, and erosion hazards that in the past have caused significant damage to development along the California coast, including the Malibu coastal zone and the beach area nearby the subject property. The Coastal Act recognizes that new development, such as the proposed wooden seawall and beachfront home, may involve the taking of some risk. Coastal Act policies require the Commission to establish the appropriate degree of risk acceptable for the proposed development and to determine who should assume the risk. When development in areas of identified hazards is proposed, the Commission considers the hazard associated with the project site and the potential cost to the public, as well as the individual's right to use his property.

The Commission finds that due to the unforeseen possibility of wave attack, erosion, and flooding, the applicant shall assume these risks as a condition of approval. Because this risk of harm cannot be completely eliminated, the Commission is requiring the applicant to waive any claim of liability on the part of the Commission for damage to life or property which may occur as a result of the permitted development. The applicant's assumption of risk, when executed and recorded on the property deed, will show that the applicant is aware of and appreciated the nature of the hazards which exist on the site, and which may adversely affect the stability or safety of the proposed development.

Site Geologic Stability

Beachfront development and development at the base of a coastal bluff raise issues relative to a site's geologic stability. As stated previously, Malibu Road, which abuts the subject property, is at the base of a coastal bluff. Malibu Road was the original route of State Highway 1, but the right-of-way was relocated further inland as a result of historical erosion and bluff sloughing problems.

The Malibu shoreline has experienced coastal damage regularly from geologic instability induced by winter rains and heavy surf conditions. For instance, in *Living with the California Coast*, Griggs and Savoy discuss development at the seaward base of a cliff on the Malibu coastline and note that:

"As the amount of land along the immediate shoreline was consumed by subsequent housing, however, more and more structures were built on pilings in potentially dangerous locations at the base of crumbling bluffs ... Over the past 60 years, therefore, the pattern of beach erosion has grown in significance until many houses formerly built at the rear of broad backshores now find themselves stranded high above eroding foreshores, the waves periodically pummeling the underlying bluffs that connect the houses to the highway. The management problems facing this coast can only increase with time, as society as a whole has to pay the penalty for unwise, uncoordinated, and irrational developments of the past."
(emphasis added)²⁶

These problems associated with geologic instability are particularly serious in older subdivisions. Developments at the base of natural slopes within older subdivisions suffered severe damage in the 1977-78 winter storms, where a series of intense rainstorms triggered numerous mudslides and landslides. Within the City of Los Angeles alone, losses to public and private property were estimated to be \$100 million. Slosson and Krohn stated that:

"Damage from debris flows and mudflows appears to be increasing in magnitude and is caused, in part, by the increased construction of homes at the base of natural slopes or partial natural slopes associated with older subdivisions. Most severely hit appear to be those sites or lots that were a part of pre-1963 or even pre-1952 subdivisions but were not built upon until recent years. ... The potential for mudflow and debris flow hazard is easily recognized, but few consultants will acknowledge evidence unless required by code."²⁷

As stated previously, the applicant submitted a Preliminary Soils and Engineering Geologic Investigation prepared by California Geosystems dated 1/24/97. The report states that the project site will not be affected by hazards. The report further concludes that the proposed project, "... will be safe and that the site will not be affected by any hazard from landslide, settlement or slippage and the completed work will not adversely affect adjacent property. . ." In addition, the applicant has submitted an Approved Geology and Geotechnical Engineering Review Sheet from the City of Malibu dated March 27, 1997.

²⁶ Living with the California Coast, Griggs and Savoy

²⁷ "Southern California Landslides of 1978 and 1980" by James Slosson and James Krohn, in *Storms, Floods and Debris Flows in Southern California and Arizona 1978 and 1980*, Proceedings of a Symposium by the National Research Council.

As set forth in Section 30253 of the Coastal Act new development shall assure structural integrity neither creates nor contributes significantly to erosion, geologic instability, or destruction of the site or surrounding area. The Commission finds that the development is consistent with Section 30253 of the Coastal Act so long as the geologic consultant's geologic recommendations are incorporated into project plans. Therefore, the Commission finds it necessary to require the applicant to submit project plans that have been certified in writing by the consulting Engineering Geologist and Coastal Engineer as conforming to their recommendations.

The proposed development, with its excavation of terrace deposits, debris, and with beach level construction activity, would result in disturbance of the offshore kelp beds through erosion and siltation. Furthermore, this construction activity, if not properly mitigated, would add to an increase of pollution in the Santa Monica Bay.

To avoid this possibility, the Commission finds that it is necessary to require the applicant to assure: a) that no stockpiling of dirt shall occur on the beach; b) that all grading shall be properly covered, sand-bagged, and ditched to prevent runoff and siltation; and, c) that measures to control erosion must be implemented at the end of each day's work. The applicant is also responsible to ensure that no machinery will be allowed in the intertidal zone at any time and that all debris resulting from the construction period is removed from the beach and seawall area.

Therefore, the Commission finds that as conditioned, the proposed development is consistent with section 30253 of the Coastal Act.

E. Public Access.

One of the basic mandates of the Coastal Act is to maximize public access and recreational opportunities along the coast. The Coastal Act has several policies which address the issues of public access and recreation along the coast.

Section **30210** of the Coastal Act states:

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

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.

Section **30212** of the Coastal Act states (in part):

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

....

(2) adequate access exists nearby...

Section **30220** of the Coastal Act states:

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

Coastal Act sections 30210 and 30211 mandate that maximum public access and recreational opportunities be provided and that development not interfere with the public's right to access the coast. Likewise, section 30212 of the Coastal Act requires that public access to the sea be provided adequate to allow use of dry sand and rocky coastal beaches. Section 30220 of the Coastal Act requires coastal areas suited for coastal recreational activities, that cannot be provided at inland water areas, be protected.

The major access issue in this permit is the occupation of sand area by a structure, in contradiction of Coastal Act policies 30211 and 30221. Section 30211 requires that development shall not interfere with access:

As proposed this project would extend out onto a sandy beach area approximately 75 ft. (including deck area). As stated in the preceding section, the site is located on Amarillo Beach within 120 ft. of an existing public accessway that has been owned and operated by the County of Los Angeles since before the 1960's. All projects requiring a coastal development permit must be reviewed for compliance with the public access and recreation provisions of Chapter 3 of the Coastal Act. Based on the access, recreation and development sections of the Coastal Act, the Commission has required public access to and along the shoreline in new development projects and has required design changes in other projects to reduce interference with access to and along the shoreline.

As noted above, interference by the proposed seawall has a number of effects on the dynamic shoreline system and the public's beach ownership interests. First, changes in the shoreline profile, particularly changes in the slope of the profile which results from a reduced beach berm width, alter the usable area under public ownership. A beach that rests either temporarily or permanently at a steeper angle than under natural conditions will have less horizontal distance between the mean low water and mean high water lines. This reduces the actual area in which the public can pass on their own property. The second effect on access is through a progressive loss of sand as shore material is not available to nourish the bar. The lack of an effective bar can allow such high wave energy on the shoreline that materials may be lost far offshore where it is no longer available to nourish the beach. The effect of this on the public are again a loss of area between the mean high water line and the actual water. Third, shoreline protective devices such as revetments and bulkheads cumulatively affect public access by causing accelerated and increased erosion on adjacent public beaches. This effect may not become clear until such devices are constructed individually along a shoreline and they reach a public beach. Fourth, if not sited landward in a location that insures that the seawall is only acted upon during severe storm events, beach scour during the winter season will be accelerated because there is less beach area to dissipate the wave's energy. Finally, revetments and bulkheads interfere directly with public access by their occupation of beach area that will not only be unavailable during high tide and severe storm events but also potentially throughout the winter season.

Due to the aforementioned adverse impacts of shoreline protective structures on public access, the proposed seawall must be judged against the public access and recreation policies of the State Constitution, Sections 30210, 30220, and 30211 of the Coastal Act. Along the California coast, the line between land and ocean is complex and constantly moving.

The State Owns Tidelands, Which Are Those Lands Below the Mean High Tide Line as it Exists From Time to Time. By virtue of its admission into the Union, California became the owner of all tidelands and all lands lying beneath inland navigable waters. These lands are held in the State's sovereign capacity and are subject to the common law public trust. The public trust doctrine restricts uses of sovereign lands to public trust purposes, such as navigation, fisheries, commerce, public access, water-oriented recreation, open space and environmental protection. The public trust doctrine also severely limits the ability of the State to alienate these sovereign lands into private ownership and use free of the public trust. Consequently, the Commission must avoid decisions that improperly compromise public ownership and use of sovereign tidelands.

Where development is proposed that may impair public use and ownership of tidelands, the Commission must consider where the development will be located

in relation to tidelands. The legal boundary between public tidelands and private uplands is known as the ordinary high water mark. (Civil Code, § 830.) In California, where the shoreline has not been affected by fill or artificial accretion, the ordinary high water mark of tidelands is determined by locating the existing "mean high tide line." The mean high tide line is the intersection of the elevation of mean high tide with the shore profile. Where the shore is composed of a sandy beach whose profile changes as a result of wave action, the location at which the elevation of mean high tide line intersects the shore is subject to change. The result is that the mean high tide line (and therefore the boundary) is an "ambulatory" or moving line that moves seaward through the process known as accretion and landward through the process known as erosion.

Consequently, the position of the mean high tide line fluctuates seasonally as high wave energy (usually but not necessarily) in the winter months causes the mean high tide line to move landward through erosion, and as milder wave conditions (generally associated with the summer) cause the mean high tide line to move seaward through accretion. In addition to ordinary seasonal changes, the location of the mean high tide line is affected by long term changes such as sea level rise and diminution of sand supply.²⁷

The Commission Must Consider a Project's Direct and Indirect Impact on Public Tidelands. In order to protect public tidelands when beachfront development is proposed, the Commission must consider (1) whether the development or some portion of it will encroach on public tidelands (i.e., will the development be located below the mean high tide line as it may exist at some point throughout the year) and (2) if not located on tidelands, whether the development will indirectly affect tidelands by causing physical impacts to tidelands.

In order to avoid approving development that will encroach on public tidelands during any time of the year, the Commission, usually relying on information supplied by the State Lands Commission, will look to whether the project is located landward of the most landward known location of the mean high tide line. In this case, the State Lands Commission presently does not assert a claim that the project intrudes onto sovereign lands. In addition, the proposed development does not encroach below any of the mean high tides lines that were surveyed by Moffat and Nichol and reviewed by Noble Consultants.

Even structures located above the mean high tide line, however, may have an impact on shoreline processes as wave energy reflected by those structures

²⁸ The legal location of the tidelands boundary is the subject of pending litigation involving the Coastal Commission, the State Lands Commission and an owner of private uplands. The private owner in that case contends that the boundary should be a permanently fixed line that is determined by a mathematical average of multiple mean high tide line surveys. (*Lechuza Villas West v. California Coastal Commission*, California Court of Appeal No. 2 Civil B105571.)

contributes to erosion and steepening of the shore profile, and ultimately to the extent and availability of tidelands. That is why the Commission also must consider whether a project will have indirect impacts on public ownership and public use of shorelands. As discussed elsewhere in the Commission's findings (see Section IVB Shoreline Protective Devices), there is substantial evidence that this project will result in indirect impacts on tidelands because the bulkhead is located in an area that is subject to wave attack and wave energy.

The Commission Also Must Consider Whether a Project Affects Any Public Right to Use Shorelands That Exists Independently of the Public's Ownership of Tidelands. In addition to a development proposal's impact on tidelands and on public rights protected by the common law public trust doctrine, the Commission must consider whether the project will affect a public right to use beachfront property, independent of who owns the underlying land on which the public use takes place. Generally, there are three additional types of public use that have been identified: (1) the public's recreational rights in navigable waters guaranteed to the public under the California Constitution and state common law;²⁹ (2) any rights that the public might have acquired under the doctrine of implied dedication based on continuous public use over a five-year period; and (3) any additional rights that the public might have acquired through public purchase, offers to dedicate and the like.

In this case, the State Lands Commission presently does not assert claims that the project would lie in an area that is subject to the public easement in navigable waters. Nor is there evidence that the public may have acquired rights of use under the doctrine of implied dedication. There is evidence that the project may have impact on the existing vertical access easement and the sandy beach area in front of the project. In addition, there is evidence that the project would generate adverse individual and cumulative impacts on sand supply, beach profile, and ultimately, public access as a result of localized beach scour, retention of beach material and interruption of the longshore and onshore sand transport process. The analysis further indicates that there is a strong possibility that the shoreline is eroding and that the seawall will be subject to wave uprush. This too would limit the availability of sandy beach area and public access and recreation use.

These use rights are implicated as the public walks the wet or dry sandy beach below the mean high tide plane. This area of use, in turn moves across the face of the beach as the beach changes in depth on a daily basis. The free movement of sand on the beach is an integral part of this process, and it is here that the effects of structures are of concern.

²⁹ The existence and extent of this right is also being litigated in the *Lechuza Villas West* case.

The beaches of Malibu are extensively used by visitors of both local and regional origin and most planning studies indicated that attendance of recreational sites will continue to significantly increase over the coming years. The public has a right to use the shoreline under the public trust doctrine, the California Constitution and California common law. The Commission must protect those public rights by assuring that any proposed shoreline development does not interfere with or will only minimally interfere with those rights. Here, there is a high probability that the proposed bulkhead will generate a permanent loss of sandy beach over time as a result of both the direct placement of the seawall on the beach, the change in the beach profile or steepening which is likely to result over time, and the presence of the residential structure out over sandy beach. Presently, this shoreline remains open and can be used by the public for access and general recreational activities.

In the case of this project, the site is located approximately 120 ft. west of a vertical public accessway that has historically been used by the public to access Amarillo, Puerco and Malibu Beaches. Additionally, there are approximately five other vertical accessways that lead from Malibu Road to Amarillo and the adjacent upcoast Puerco Beach. Based on both historic and recent observations of beach use here, it is clear that measures to insure the protection of the public's ability to laterally access the area must be asserted.

As stated previously, this application was complete on July 22, 1997 and scheduled for the August 12-15, 1997 Commission hearing. In response to staff's inquiry relating to the proposed seawall's impacts on public access (and on adjacent properties), the applicant amended the project description to include an offer to dedicate lateral access of the southern section of the lot as measured 10 feet from the proposed dripline of the deck to the mean high tide line.

As stated above, the applicant has submitted both a Wave Uprush Study and a Preliminary Soils and Engineering Investigation Report which state that the project will not adversely affect adjacent properties provided that the recommendations are followed. The applicant submitted a subsequent Coastal Impact Analysis Report prepared by Noble Consultants, dated 9/16/97 that stated that indeed the proposed seawall would cause minimal localized scouring. Staff inquired as to whether or not revising the location would reduce the amount of scour that occurred as a result of wave runup. Dr. Chia-Chi Lu of Noble Consultants indicated that during high tide winter conditions the wall would experience wave runup regardless of the location. However, Dr. Lu stated that the further landward the seawall is located the less steepening of the beach profile that would occur, and, thus, result in reduced beach scour.

The analysis cited in the preceding section (IVB) regarding shoreline protective devices indicates that bulkheads and revetments have an impact on the shoreline processes and public access. Additionally, as set forth above, there is

also a strong probability that the proposed project would generate adverse individual and cumulative impacts on sand supply, beach profile, and ultimately, public access of the type normally associated with shoreline protective devices. The analysis further indicates that there is a strong possibility that the shoreline is eroding and that the seawall will be subject to wave uprush and may, in all probability, impact on the shoreline. Previous permits for projects involving shoreline protective devices have dramatically and narratively explained the physical process of wave run-up on shoreline in order to help establish the effects of seawalls and bulkheads on shoreline processes and public access (5-87-694, Shapiro; 5-87-695, Condon; 5-87-1020, Lachman).

In the case of this project, the applicant has submitted information that documents the proposed project's seasonal impact on beach sand. As discussed above, there is substantial evidence that the seawall as proposed could adversely impact sand supply and public access as a result of beach scour, end scour effects, retention of potential beach material and interruption of onshore and longshore processes. As conditioned to relocate the seawall 7 ft. landward, the proposed project will minimize and lessen the project's adverse impacts on the shoreline processes and on sand supply. The applicant has proposed as part of the project description an offer to dedicate lateral access. Based on the project's adverse impacts on shoreline processes and public access and recreation to and along the beach, the Commission finds it necessary to impose special condition #4 in order to insure that the dedication is transmitted prior to the issuance of the coastal development permit. Only as conditioned is the proposed project consistent with the sections of the Coastal Act related to public access.

F. Septic System

The Commission recognizes that the potential build-out of lots in Malibu, and the resultant installation of septic systems, may contribute to adverse health effects and geologic hazards in the local area.

Section 30231 of the Coastal Act states that:

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, minimizing alteration of natural streams.

As described in the preceding project description section, a new septic system which includes a septic tank, leachfield and future leachfield will be located under the structure. The proposed 50 ft. long seawall, which includes return walls, will therefore protect the proposed septic system from wave run-up. As proposed, the seawall extends 62 feet onto the beach as measured from Malibu Road right-of-way and is located 5 feet seaward of the applicant's septic system. The applicant's agent has indicated that the septic tank component of the septic system can, from an engineering standpoint, be located within the slope that supports Malibu Road. However he has also stated that seepage pits located in the road shoulder cannot be used because the subsurface water elevation is 4 ft. too high to allow the minimum necessary depth. Therefore, the proposed project employs leachfields, instead of seepage which require a greater area; and, thus must be located on the beach.

As explained in the preceding section regarding shoreline protective devices, staff further inquired with Lawrence Young, the Environmental Health Specialist for the City of Malibu about the possibility of redesigning the proposed septic system in an effort to minimize the seaward extent of the system. In order to achieve a further landward location of the seawall the project's septic system would have to be redesigned. The reduction of the seaward extent of the septic system can be achieved in several ways. First, the applicant could relocate the septic tank to the slope area adjacent to the road where the proposed basement is located. In addition, the applicant could reduce the total number of bedrooms to three or two which would respectfully reduce the size of the leachfields by totals of 150 sq. ft. to 381 sq. ft. Preferably, the applicant could employ a bottomless sand filter system which would eliminate the need for a future leachfield area (450 sq. ft.).

As described, the applicant has several septic system design options which could be implemented in constructing the proposed residence, therefore special condition #5 has been imposed to require the applicant to submit revised plans that will show the bulkhead relocated at a minimum approximately 7 ft. landward from the current location (*See Exhibit 8*). Furthermore, special condition #5 requires the applicant to submit evidence, for the review and approval of the Executive Director that the revised plans have been reviewed and approved by the City of Malibu Health Department.

A favorable percolation test was performed on the subject property which indicates that the percolation rate exceeds the maximum Plumbing Code requirements for the project. In addition, the applicant has submitted septic system "Approval" from the City of Malibu Department of Environmental Health. As reviewed by the City and as set forth in the geotechnical analysis of the septic system, the proposed project will not adversely impact the biological productivity and quality of the coastal waters. Therefore, the Commission finds that the proposed project is consistent with Section 30231 of the Coastal Act.

G. Local Coastal Program

Section 30604 of the Coastal Act states that:

a) Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with the provisions of Chapter 3 (commencing with Section 30200) of this division and that the permitted development will not prejudice the ability of the local government to prepare a local program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200).

Section 30604(a) of the Coastal Act provides that the Commission shall issue a Coastal Permit only if the project will not prejudice the ability of the local government having jurisdiction to prepare a Local Coastal Program which conforms with Chapter 3 policies of the Coastal Act. The preceding sections provide findings that the proposed project will be in conformity with the provisions of Chapter 3 if certain conditions are incorporated into the project and accepted by the applicant. As conditioned, the proposed development will not create adverse impacts and is found to be consistent with the applicable policies contained in Chapter 3. Therefore, the Commission finds that approval of the proposed development, as conditioned, will not prejudice the City's ability to prepare a Local Coastal Program for Malibu which is also consistent with the policies of Chapter 3 of the Coastal Act as required by Section 30604(a).

H. CEQA

Section 13096(a) 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 by any conditions of approval, 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 Commission finds that, the proposed project, as conditioned will not have significant adverse effects on the environment, within the meaning of the California Environmental Quality Act of 1970. Therefore, the proposed project, as conditioned, has been adequately mitigated and is determined to be consistent with CEQA and the policies of the Coastal Act.

APPENDIX A

SUBSTANTIVE FILE DOCUMENTS

Malibu/Santa Monica Mountains District Interpretive Guidelines. Coastal Commission. 1981

Certified Malibu/Santa Monica Mountains Land Use Plan. County of Los Angeles. 12/11/86.

Adopted City of Malibu General Plan. November 1995

City of Malibu. Article IX Interim Zoning Ordinance. 1993.

STUDIES AND PUBLICATIONS

U.S. Army Corps of Engineers. Los Angeles District. Reconnaissance Study of the Malibu Coast. 1994

Christiansen, Herman. "Economic Profiling of Beach Fills" in Coastal Sediments '77. 1977.

Dean, Robert G., "Coastal Sediment Processes: Toward Engineering Solutions". Coastal Sediments '87. 1987.

Denison, Frank and Hugh Robertson. "Assessment of 1982-83 Winter Storms Damage to Malibu Coastline". California Geology. September 1985.

Graber & Thompson. The Issues and Problems of Defining Property Boundaries on Tidal Waters in California. California's Battered Coast (California Coastal Commission, 1985).

Griggs, G., J. Tait, and W. Corona. "The Interaction of Seawalls and Beaches: Seven Years of Monitoring, Monterey Bay, California". Shore and Beach. Vol. 62, No. 3. 1994

Hale. "Modeling the Ocean Shoreline". Shore and Beach (Vol. 43, No. 2). October 1975).

Johnson. "The Significance of Seasonal Beach Changes in Tidal Boundaries".

Shore and Beach. (Vol. 39, No. 1). April 1971.

Kraus, Nicholas. "Effects of Seawalls on the Beach". Journal of Coastal Research. Special Issue # 4, 1988.

Kuhn, Gerald G. Coastal Erosion along Oceanside Littoral Cell, San Diego, California. 1981

Maloney & Ausness. "The Use and Legal Significance of the Mean High Water Line Coastal Boundary Mapping". 53 No. Carolina L. Rev. 185 (1974).

McDougal, W.G., M.A. Sturtevant, and P.D. Komar. "Laboratory and Field Investigations of the Impact of Shoreline Stabilization Structures on Adjacent Properties". Coastal Sediments '87. 1987.

National Academy of Sciences. Responding to Changes in Sea Level, Engineering Implications. National Academy Press, Washington D.C. 1987.

Nunez, "Fluctuating Shorelines and Tidal Boundaries: An Unresolved Problem", 6 San Diego L.Rev. 447 (1969).

Shalowitz, Shore and Sea Boundaries, Vols. I and II (1962, 1964).

Shepard, Beach Cycles in Southern California, Beach Erosion Board Technical Memorandum No. 20 (U.S. Army Corps of Engineers, 1950).

Slosson, James and James Krohn. "Southern California Landslides of 1978 and 1980". Storms, Floods and Debris Flows in Southern California and Arizona 1978 and 1980". Proceedings of Symposium by the National Research Council.

State of California. State Department of Boating and Waterways (formerly Navigation and Ocean Development). Shore Protection in California. 1976.

State of California. State Water Resources Control Board. California Marine Waters—Areas of Special Biological Significance Reconnaissance Survey Report, Mugu Lagoon to Latigo Point, Ventura and Los Angeles Counties. 1979.

Tait, J.F and G.B. Griggs. "Beach Response to the Presence of a Seawall: A Comparison of Field Observations". Shore and Beach. Vol. 58, No. 2, pp 11 -28. 1990.

Thompson, "Seasonal Orientation of California Beaches". Shore and Beach (Vol.

55, Nos. 3-4). July 1987.

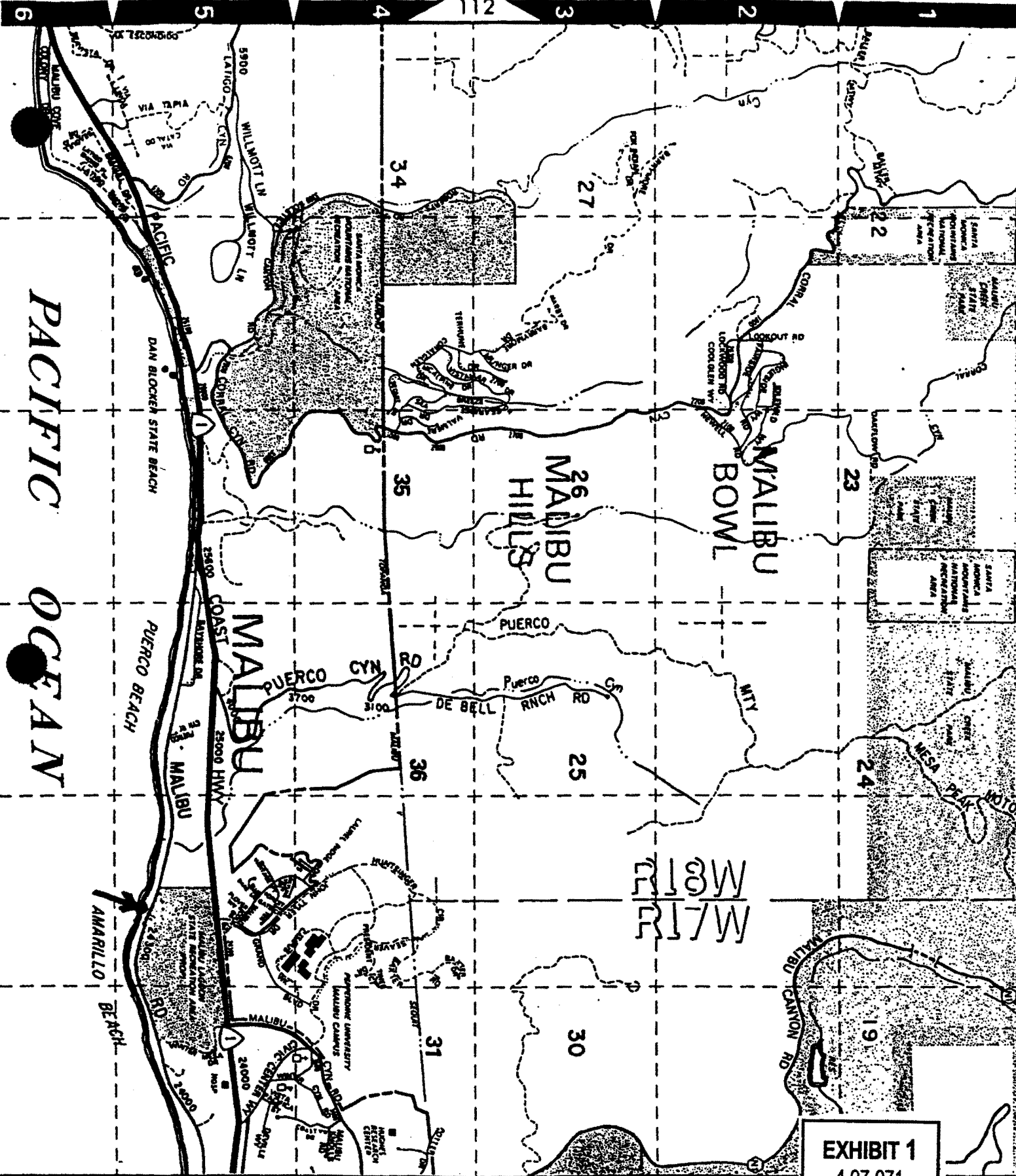
Williams, Phillip & Associates and Peter Warshall & Associates. Malibu Wastewater Management Study. March 1992.

LETTERS and MEMOS

Letter to Lesley Ewing from Douglas Inman, Ph.D., February 25, 1991

Letter to Lesley Ewing from Dr. Craig Everts of Moffatt and Nichols Engineers, March 14, 1994

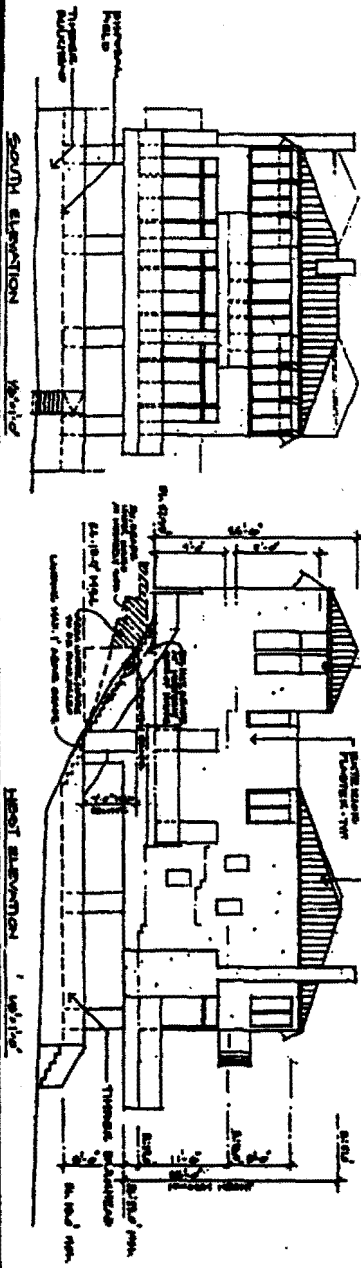
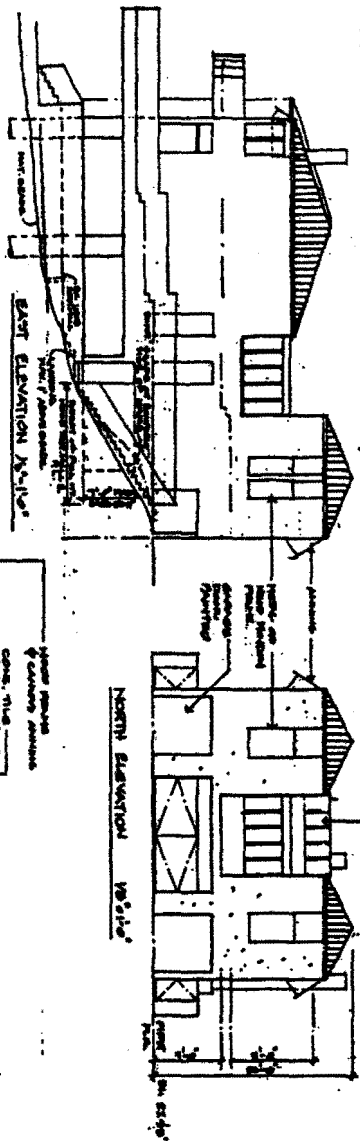
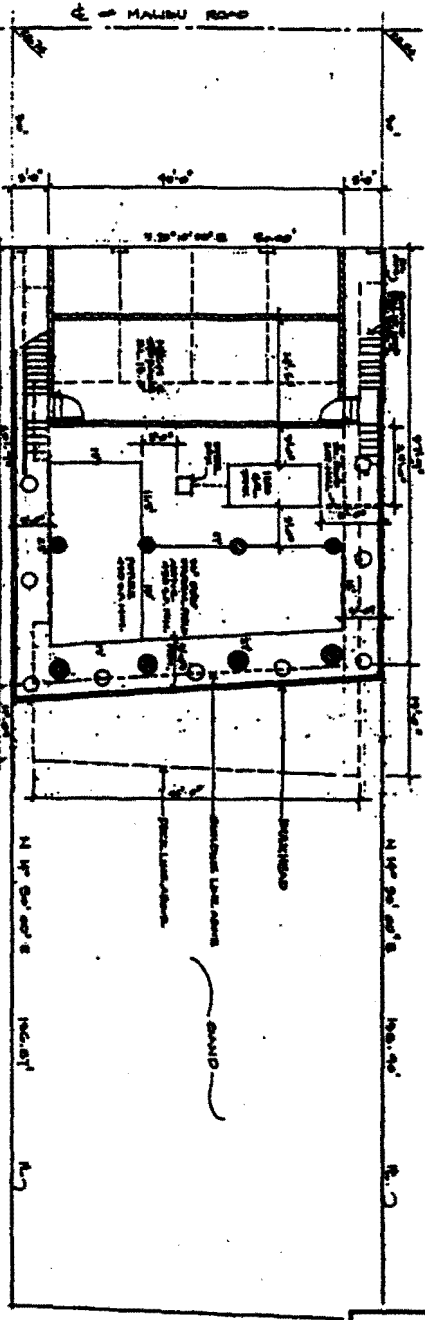
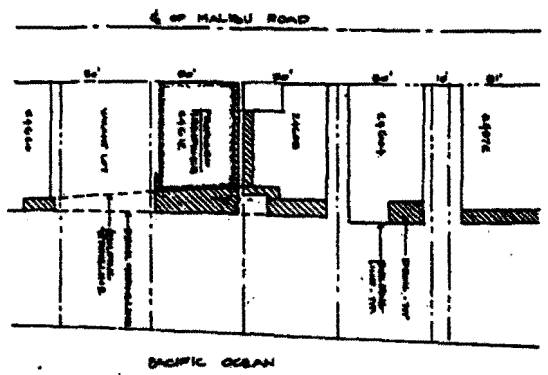
COASTAL PERMIT APPLICATIONS Staff Report Lechuza Villas West
2/4/97; 4-94-200 (Dussman).



PACIFIC OCEAN

EXHIBIT 1
 4-97-071
 VICINITY MAP

DETAIL



PROJECT DATA

Proposed 2-story O.R.K.

Building Area :
 First Floor 1880 S.F.
 Second Floor 1874 S.F.
 Total 3754 S.F.
 Columns 278 S.F.
 Beam/Slab/Columns 300 S.F.

Building Structure:
 Frame structure on masonry
 foundation
 12" x 12" (12' x 12' max)

Construction : Type III

Maximum Bldg. Height : 60'-0"

Owner : PAUL SCHWARTZ Name: see plat only
 16015 MALIBU LANE MALIBU 90266

LEGAL DESCRIPTION:

Lot 20 of Tract 10, Part 1, in the City of Malibu,
 County of Los Angeles, State of California, as the
 same are more fully described in Book 574, Page 11 of Maps
 in the Office of the County Recorder of said County.

VICINITY MAP

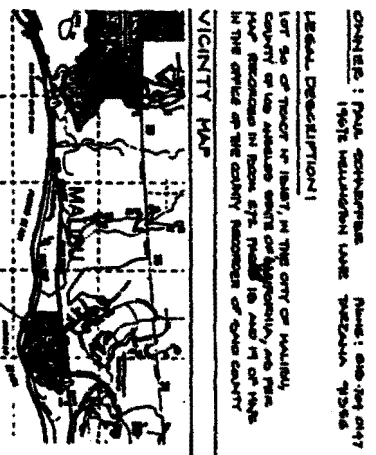


EXHIBIT 2
 4-97-071
SITE PLAN & ELEVATIONS

GOLDMAN | FIRTH | BOCCATO
 ARCHITECTS
 24955 PACIFIC COAST HIGHWAY, SUITE A202
 MALIBU, CALIFORNIA (310) 480-1831

DATE	7-6-76	BY	PAUL SCHWARTZ
PROJECT NO.	4-97-071	DATE	7-6-76
PROJECT NAME	SCHAFFNER RESIDENCE		
PROJECT ADDRESS	16015 MALIBU LANE MALIBU, CA 90266		

24612 MALIBU RD.
MALIBU, CA 90265

RECEIVED

JUN 06 1997

CITY OF MALIBU
ENVIRONMENTAL HEALTH

EXHIBIT 4
4-97-071
SEPTIC SYSTEM

S.F.D.: 4 Bedroom (N)
SEPTIC TANK: 1200 Gallon (N)
PRESENT: 1 - 15' X 20.5' Drainfield
with 2' Extra Rock (N)
FUTURE: 100Z
PERC RATE: Sand Category

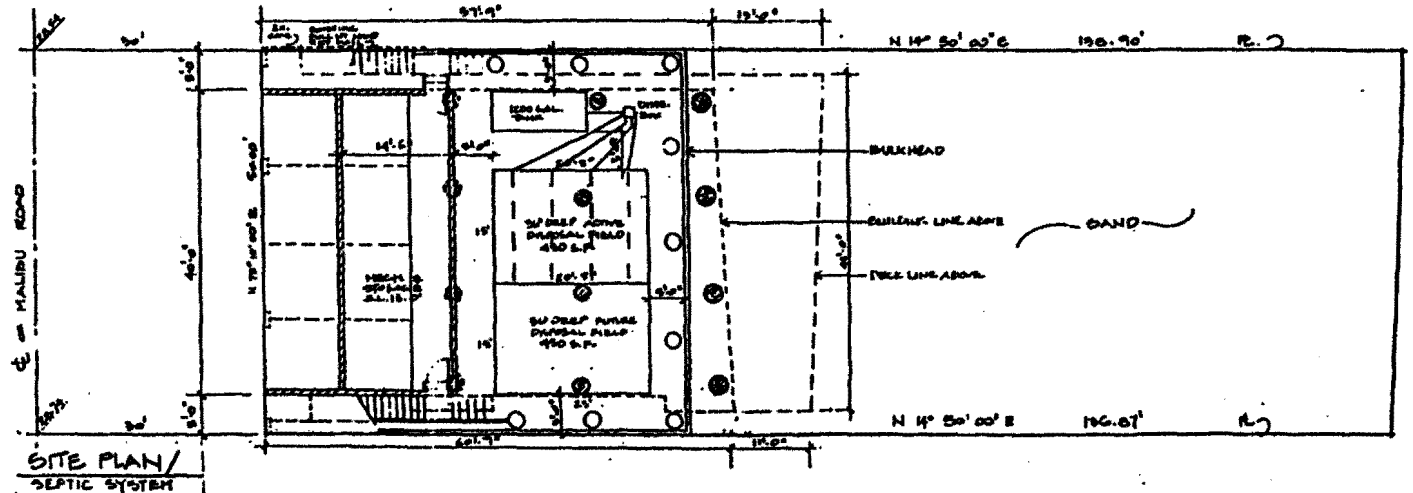
NOTES:

1. This approval is for a new 4 bedroom single family dwelling. A new private sewage disposal system shall be installed, as shown.
2. This approval only relates to the minimum requirements of the City of Malibu Uniform Plumbing Code and does not include an evaluation of any geological, or other potential problems, which may require an alternative method of wastewater disposal.
3. This approval is void for one year or until City of Malibu Uniform Plumbing Code and/or Administrative Policy changes render it noncomplying.

1" = 16'



CITY OF MALIBU
ENVIRONMENTAL HEALTH
IN-CONCEPT APPROVAL
SIGNATURE
MAY 29 1997 *L Young*
FINAL APPROVAL IS REQUIRED
PRIOR TO THE ISSUANCE OF
ANY CONSTRUCTION PERMITS.



BUILDING STRINGLINE 1/32"=1'-0"

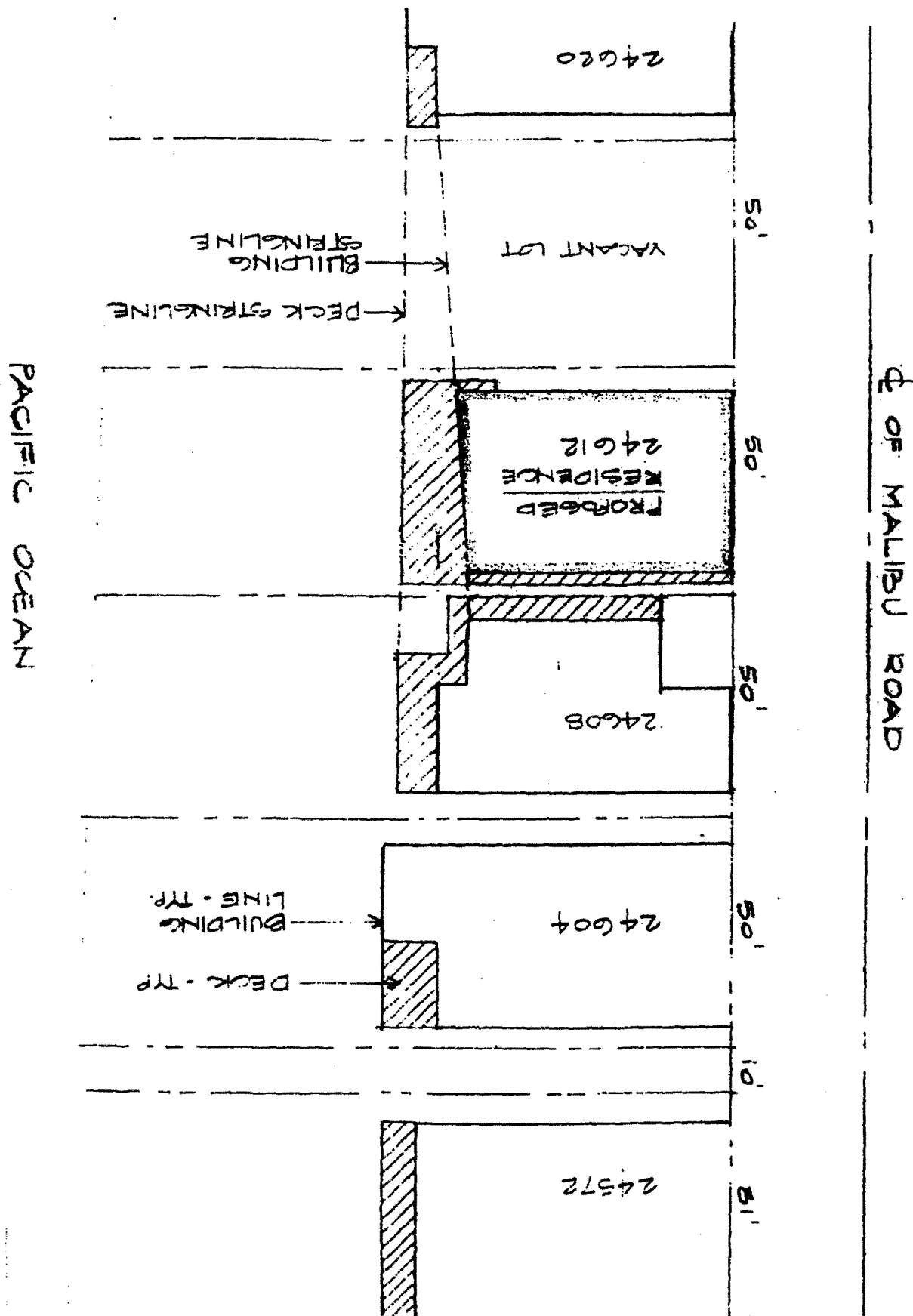
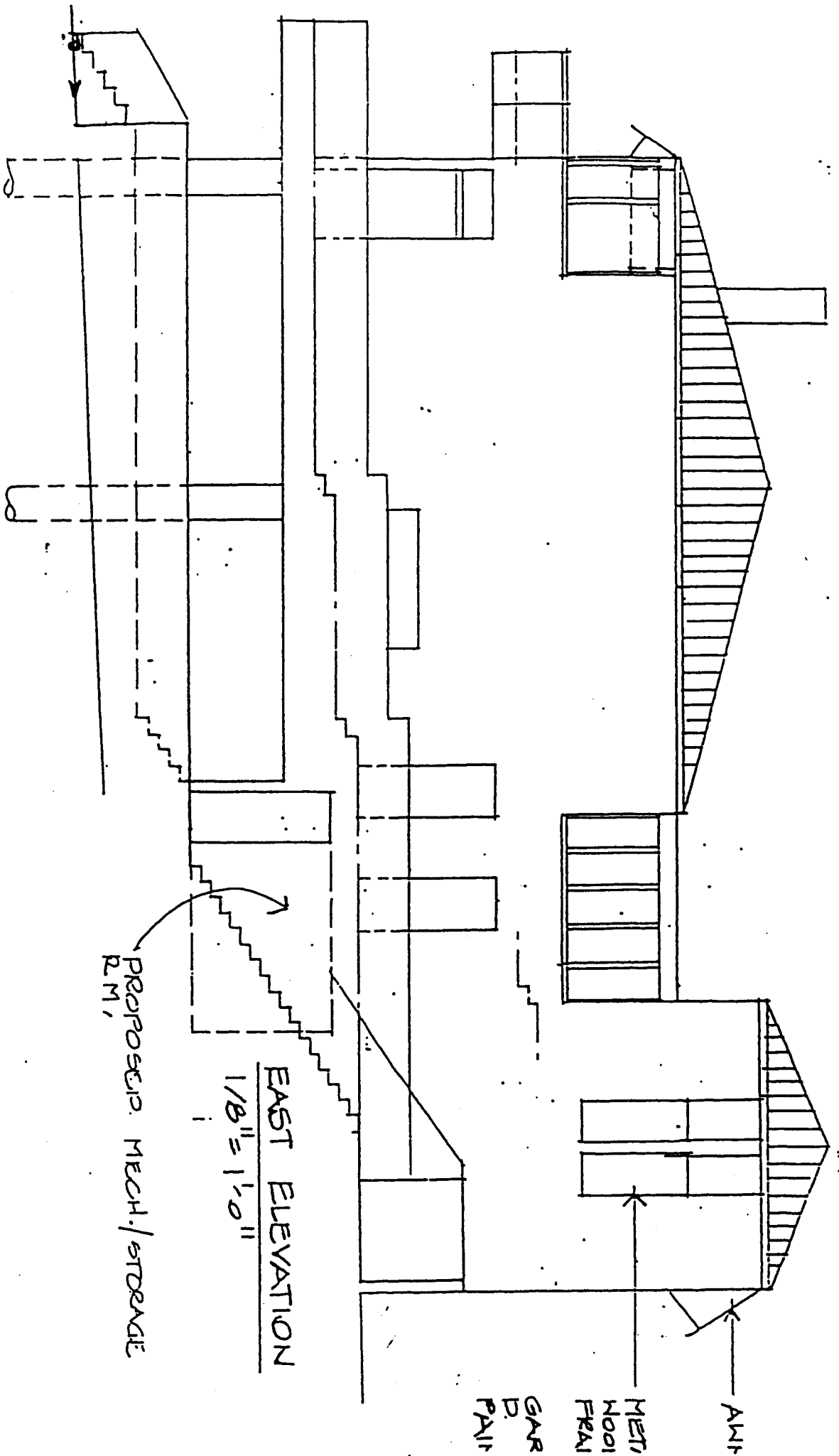


EXHIBIT 5
4-97-071
DECK/BUILDING
STRINGLINE



SCHAEFFER RESIDENTS
 21612 MAURIBU RD.

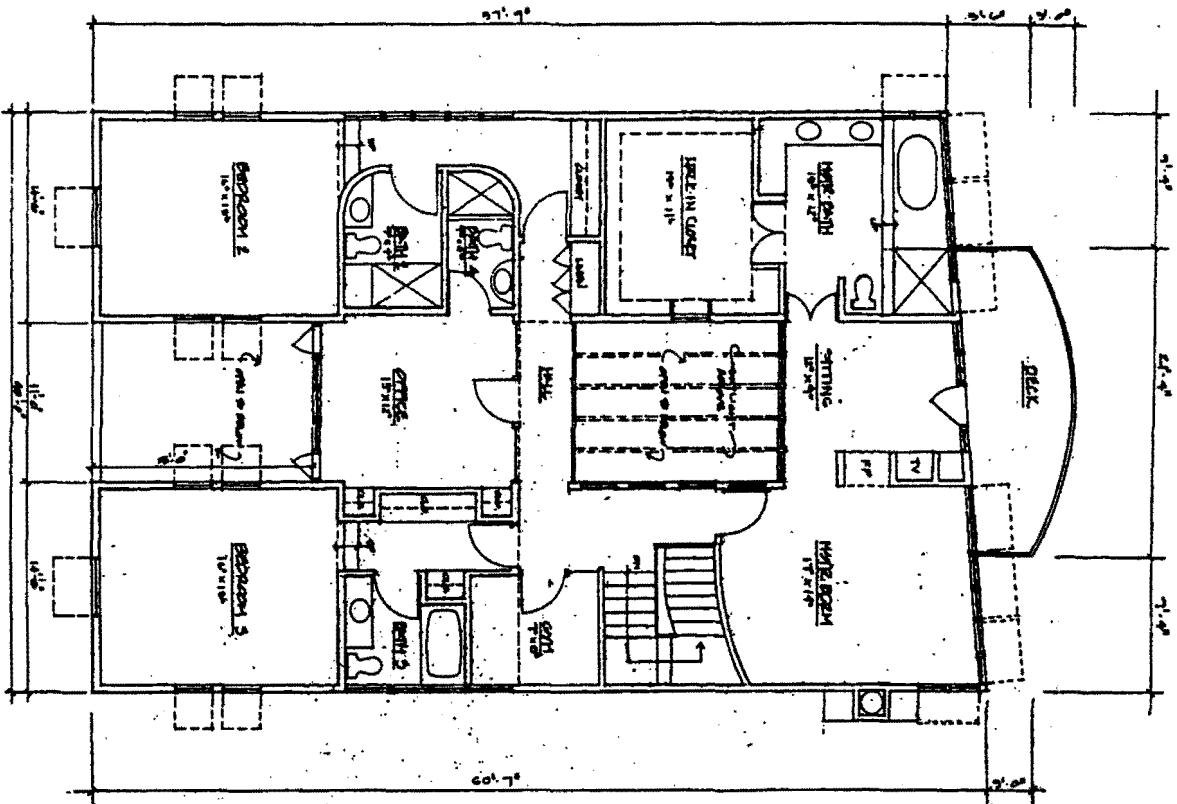
PROPOSED MECH./STORAGE
 R.M.

EAST ELEVATION
 1/8" = 1'-0"

AIR
 MET.
 MOOI
 FRAM
 GAR
 D.
 PAIR

EXHIBIT 6
 4-97-071
 ELEVATION
 STORAGE/
 BASEMENT

SECOND FLOOR PLAN
1875 927



FIRST FLOOR PLAN
1875 927

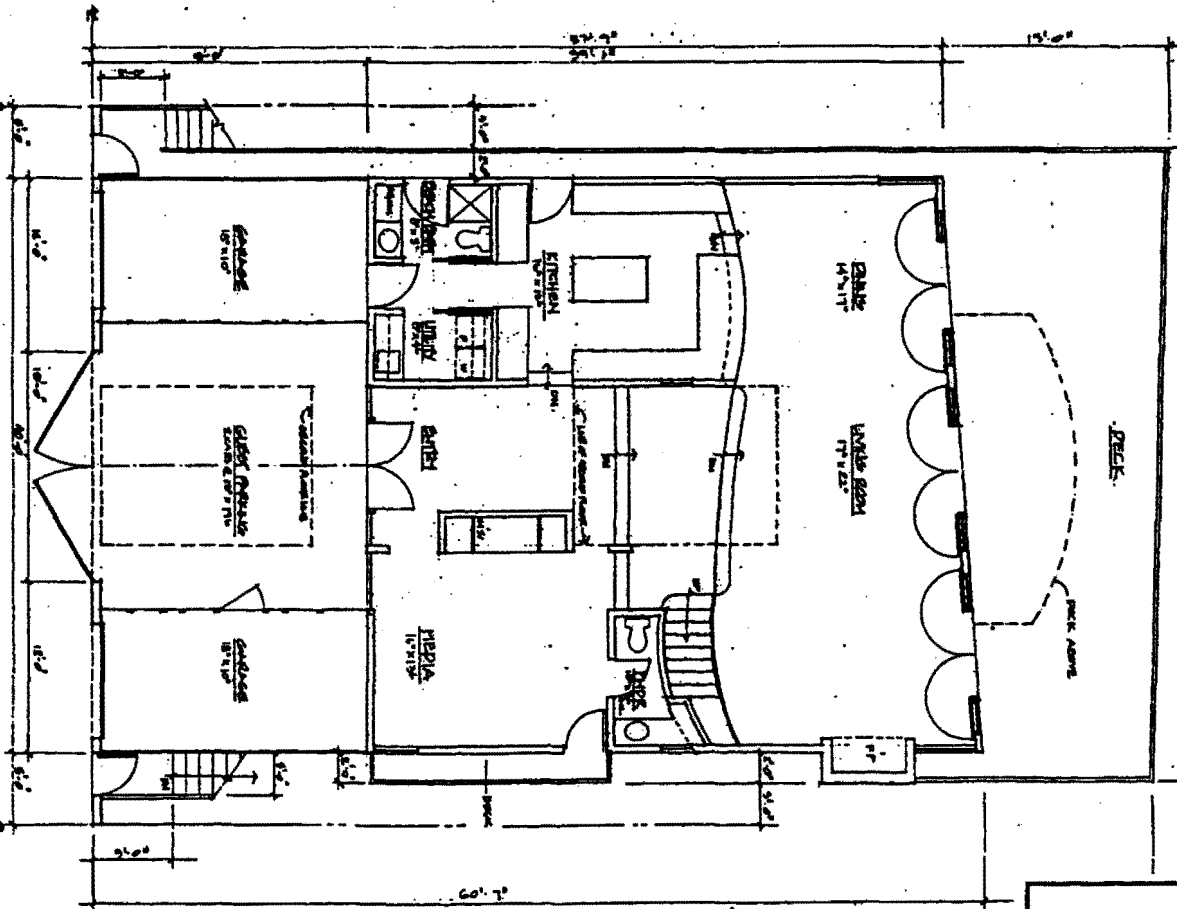
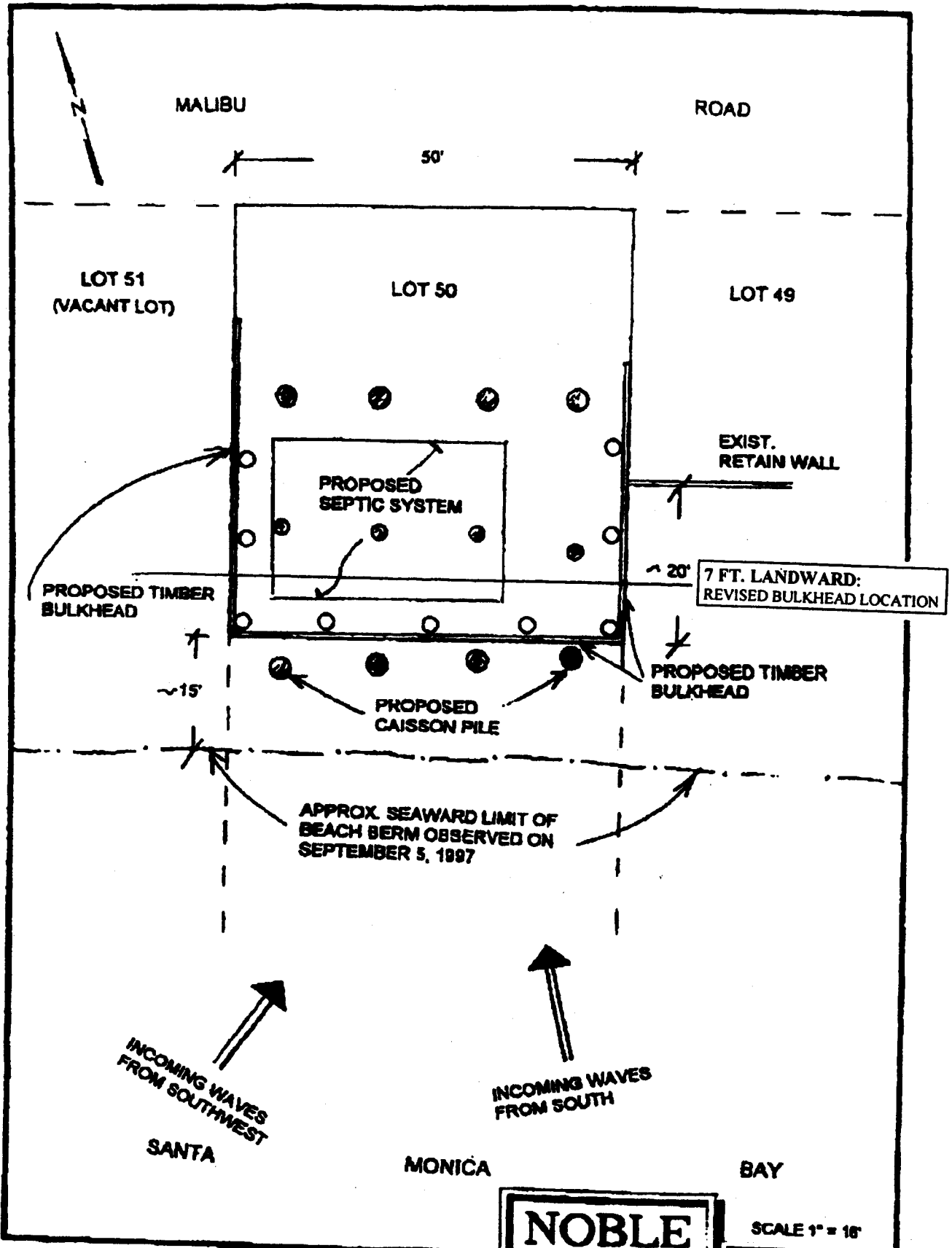


EXHIBIT 7
4-97-071
FLOOR PLANS

DATE	7.6.76	PROJECT	1875 927 SECOND FLOOR PLAN	BY	DAVID BOCCATO
SCALE	1/4" = 1'-0"	CLIENT	CONCEPT RESIDENCE	CHECKED	DAVID BOCCATO
PROJECT NO.	1875 927	ADDRESS	54612 MALIBU RD MALIBU, CA 90263	DATE	
NO.	2				

GOLDMAN | FIRTH | BOCCATO
ARCHITECTS
24955 PACIFIC COAST HIGHWAY, SUITE A202
MALIBU, CALIFORNIA (310) 456-1831



NOBLE
CONSULTANTS, INC.

SCALE 1" = 16'

EXHIBIT 8
4-97-071
REVISED BULKHEAD
LOCATION
(Per Special Condition #5)

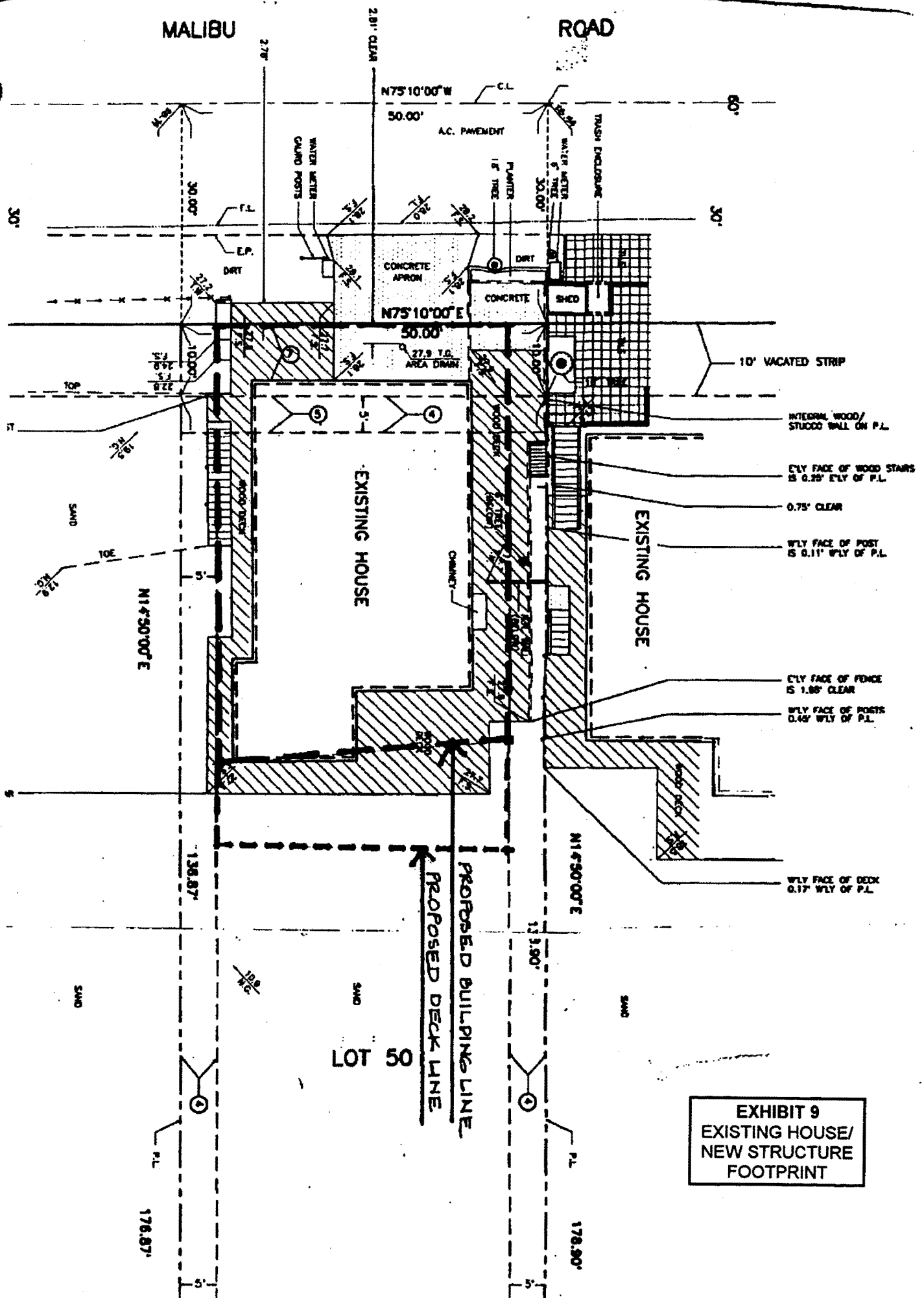
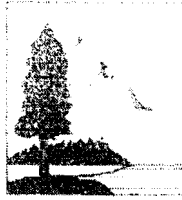


EXHIBIT 9
**EXISTING HOUSE/
 NEW STRUCTURE
 FOOTPRINT**

CALIFORNIA STATE LANDS COMMISSION
 100 Howe Avenue, Suite 100 South
 Sacramento, CA 95825-8202



ROBERT C. HIGHT, Executive Officer
 (916) 574-1800 FAX (916) 574-1810
 California Relay Service From TDD Phone 1-800-735-2927
 from Voice Phone 1-800-735-2929

Contact Phone: (916) 574-1892
 Contact FAX: (916) 574-1925

May 10, 1996

Vilija Karalius
 Goldman/Firth/Boccatto Architects
 24955 Pacific Coast Highway, Suite A202
 Malibu, CA 90265

RECEIVED
 File Ref: SD 96-04-23.2

APR 02 1997

CALIFORNIA
 COASTAL COMMISSION
 SOUTH CENTRAL COAST DISTRICT

Dear Ms. Karalius:

SUBJECT: Coastal Development Project Review, Demolition of Existing Residence/Deck and Construction of New Residence/Deck, 24612 Malibu Road, Malibu, Los Angeles County

This is in response to your request on behalf of your client, Paul Schaeffer, for a determination by the State Lands Commission (SLC) whether it asserts a sovereign title interest in the property that the subject project will occupy and whether it asserts that the project will intrude into an area that is subject to the public easement in navigable waters.

The facts pertaining to your client's proposed project, as we understand them are these:

Your client proposes to demolish an existing single family residence with deck and construct a new two-story residence and deck at 24612 Malibu Road in Malibu. This is a well developed area with residences and decks both to the east and west, although the immediately adjacent property to the west is a single undeveloped lot. From the plans submitted, it appears that both the proposed residence and deck will be in conformance with the stringlines established by the residences and decks on either side.

We do not at this time have sufficient information to determine whether your client's project will intrude upon state sovereign lands or interfere with other public rights. Development of information sufficient to make such a determination would be expensive and time-consuming. We do not think such an expenditure of time, effort and money is warranted in this situation, given the limited resources of this agency and the circumstances set forth above. This conclusion is based on the size and location of the property, the character and history of the adjacent development, and the minimal potential benefit to the public, even if such an inquiry were to reveal the basis for the assertion of public claims and those claims were to be pursued to an ultimate resolution in the state's favor through litigation or otherwise.

EXHIBIT 10
 4-97-071
 State
 Commission
 Letter

May 10, 1996

Accordingly, the SLC presently asserts no claims either that the project intrudes onto sovereign lands or that it would lie in an area that is subject to the public easement in navigable waters. This conclusion is without prejudice to any future assertion of state ownership or public rights, should circumstances change, or should additional information come to our attention.

If you have any questions, please contact Jane E. Smith, Public Land Management Specialist, at (916) 574-1892. *574-1892*

Sincerely,

Jane Sekelsky
Jane Sekelsky, Chief
Land Management Division

cc: Jack Ainsworth, California Coastal Commission

CALIFORNIA COASTAL COMMISSION

SOUTH CENTRAL COAST AREA
89 SOUTH CALIFORNIA ST., SUITE 200
VENTURA, CA 93001
(805) 641-0142



Via Facsimile

July 21, 1997

Mr. Ron Goldman
Goldman/Firth/Boccatto Architects
24955 PCH, Suite A202
Malibu, CA 90265

RE: Coastal Development Permit Application #4-97-071 (Schaeffer)

Dear Ron,

I have received your letter today regarding the above cited permit. As we understand it, you would like to alter the project description to include an offer to dedicate a lateral access easement along the southern portions of the site beginning ten feet seaward of the proposed deck area. So the applicant is now proposing the following:

Demolition of an existing 1390 sq. ft. single family residence; construction of a two-story 3,725 sq. ft. single family residence with a 373 sq. ft. garage, a 580 sq. ft. basement/storage area; construction of a 48 ft. long wooden bulkhead with 32 ft. and 25 ft. long return walls, installation of a septic system and leach field; and, an offer to dedicate a lateral access easement over the southern portion of the lot as measured ten feet seaward of the proposed deck area. (emphasis added)

Accordingly, we will be changing the proposed project description and all project references will reflect the revised project. Additionally, in accord with your wishes to dedicate lateral access, one of the special conditions contained in the staff recommendation to the Commission will be the recordation of the above specified lateral access condition. Please be advised that this recommendation reflects the analysis of the Commission staff only and does not predetermine any actions that may be taken by the Coastal Commission through the public hearing process. Should you have any questions, please contact me at the above phone number.

Very truly yours,

Rebecca K. Richardson
Coastal Program Analyst