Staff Report to the Zoning Administrator

Application Number: **05-0200**

Applicant: Hamilton-Swift Land Use (Attn: Deidre Hamilton)
Owner: David and Paula Fisher
APN: 043-161-42

Agenda Date: April 6,2007

Agenda Item **#:5**
Time: After 10:00 a.m.

Project Description: Proposal to construct a three-story single-family dwelling (including a non-habitable first floor) on a vacant parcel and grade about 980 cubic yards. Requires a Coastal Development Permit, a variance to increase the maximum floor area ratio from 50% to about 56%, a variance for three stories within the Urban Services Line, and preliminary grading review.
Location: Property located on the northeast side at the end of Beach Drive, about one mile southeast from the Rio del Mar Esplanade in Aptos.

Supervisoral District: 2nd District (District Supervisor: Ellen Pine)

Permits Required: Coastal development permit and variance to increase the maximum floor area ratio from 50% to 60% and to increase the maximum number of stones to three

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 05-0200, based on the attached findings and conditions

Exhibits

A. Project plans
B. Findings
C. Conditions
D. Categorical Exemption (CEQA determination)
E. Assessor's parcel map
F. Zoning and General Plan maps
G. Engineering Geologic and Geotechnical report acceptance letter, dated 2/22/07
H. Excerpt **of** conclusions and recommendations from the Engineering Geologic report prepared by Fox, Neilsen, and Assoc., dated 12/2000.
I. Plan review letter from Nielsen and Assoc., dated 2/21/2005.
J. Revised plan review letter from Nielsen and Assoc., dated 1/12/2007.
K. Excerpt **of** conclusions and recommendations from the Geotechnical Report prepared by Haro, Kasunich, and Assoc., dated 2/2001.

L. Geotechnical Report update letter by Hara, Kasunich, and Assoc., dated 2/23/2005.
M. Architectural plan review letter by Haro, Kasunich, and Assoc., dated 3/3/2005.
N. Storm runoff letter from Haro, Kasunich, and Assoc., dated 11/13/2006.
O. Arch. and Civil Engineering plan review letter by Haro, Kasunich, and Assoc., dated 12/28/2006.
P. Photo-simulations of project.
Q. Urban Designer's comments, dated 5/23/2005
R. Comments & Correspondence

Parcel Information

Parcel Size:	5,000 square feet
Existing Land **Use** - Parcel:	Vacant
Existing Land Use - Surrounding:	Single-family dwellings, public beach
Project Access:	Beach Drive (a private road at this location)
Planning Area:	Aptos
Land Use Designation:	R-UL (Urban Low Density Residential)
Zone District:	RB (Ocean Beach residential)
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ ***Yes*** __ No

Environmental Information

Geologic Hazards:	FEMA Flood Zone V (Wave run-up hazard zone), landslide potential at the base of coastal bluff
Soils:	Beach sand (soils map index number 109) and Purisima Foundation Sands
Fire Hazard:	Not a mapped constraint
Slopes:	55% to 100% (property at base of coastal bluff)
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	About **980** cubic yards (including shoring)
Tree Removal:	No trees proposed to be removed
Scenic:	Coastal scenic resource area
Drainage:	Proposed drainage system adequate
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	_X_ Inside __ Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Santa Cruz County Sanitation District
Fire District:	Aptos/La Selva Fire Protection District
Drainage District:	Zone 6

Background

The subject parcel was determined to be a legal lot of record in July of 2003, under permit 02-0217. A previous application for a three-story residence of over 3,500 square feet in size (application 00-0701) was withdrawn, as the findings could not be made for project approval, as the design did not comply with the geotechnical and engineering geologic reports.

The current application for a single-family dwelling of a "bunker" style design was submitted in April of 2005, and deemed complete on February 20,2007. Since the first submittal, the size of the house and the amount of grading has been substantially reduced, resulting in a project with less than 1,000 cubic yards of grading. **As** a result, no Environmental Review of the project is required, and the project now requires a hearing before the Zoning Administrator rather than the Planning Commission.

Project Setting

The subject property is located at the toe of a coastal bluff at the end of Beach Drive, immediately across the street from 646 Beach Drive and about 50 feet southeast **of** the existing house at 641 Beach Drive. Beach Drive at this location is characterized by single-story homes along the beach side of the street, and three-story homes along the bluff toe, with two houses of a similar design currently under construction on lots immediately adjacent to the project site.

Due to the location of the site on a beach at the toe of **a** coastal bluff, the site is subject to landslide and coastal flood hazards. The County Geologic Hazards ordinance (Chapter 16.10) and Federal Emergency Management Agency (FEMA) requirements for areas subject to coastal flood hazards apply to the project site (see section on geologic hazards, below).

Zoning Consistency

The subject property is zoned RB (Ocean Beach Residential), a designation which allows single-family residential uses. A single-family dwelling is a principal permitted use within the zone district, but is subject to the approval of a Coastal Development permit due to the location of the project site on a beach.

Site Standards

With the exception of the requested variances to exceed the two-story height limit and to increase the floor area ratio to about 60%, the proposed house will meet all RB zone district site standards, **as** detailed in the following table:

	RB Zone District Standard	Proposed
Front yard setback	10'*	10'
Side yard setbacks	0' and 5'	5' each side
Rear yard setback	10'	46'
Lot Coverage	50%	33%
Floor Area Ratio	40%	56%
Maximum height	25' on bluff side	25'

* No front **yard setback requirements for RB zoned parcels** with **slopes greater** *than* **25% within 30 feet of the right-of-way per Section** 13.10.323(d)(5)(B) of **the County Code.**

General **Plan/Local** Coastal Program Consistency

The subject parcel has a General Plan/Local Coastal Program Land Use Designation of R-UL (Urban Low Density Residential), implemented by the RB (Ocean Beach Residential) zone district. The proposed single-family dwelling complies with the purposes of this Land Use Designation, **as** the primary use of the site will remain residential.

Geologic Hazards

General Plan policy 6.2.10 requires all development to be sited and designed to avoid or minimize hazards as determined by geologic or engineering investigations. Due to the location of the parcel adjacent to an open beach at the toe **of** a coastal bluff, potential coastal flooding and landslide hazards cannot be avoided and therefore must be mitigated. General Plan policy 6.2.15 allows for new development on existing lots of record in areas subject to storm wave inundation or coastal bluff erosion where a technical report demonstrates that potential hazards can be mitigated over the 100-year lifetime of the structure. Mitigations can include, but are not limited to, building setbacks, elevation of the structure, friction pier or deep caisson foundation; and where a deed restriction indicating the potential hazards on the site and level of prior investigation conducted is recorded on the property deed with the County Recorder. If properly constructed and maintained, the project design is expected to provide protection from landslide hazards and flooding during 100-year storm events within the 100-year life span of the structure.

Due to the location **of** the proposed dwelling at the base of a coastal bluff, the structure will be vulnerable to landslides and slope failures. Consequently, Engineering Geologic and Geotechnical Reports have been prepared addressing geologic hazards, site conditions, and hazard mitigations for the proposed dwelling (excerpts of conclusions and recommendations in Exhibits H and K). These reports and subsequent update letters have been accepted by the County Geologist, as evidenced in his letter of February 22, 2007 (Exhibit G). The project soils engineer and geologist recommend constructing the dwelling with a reinforced concrete structure designed to withstand the impact of any expected landslides, utilizing a "bunker" style design with a flat roof constructed of reinforced concrete and the sides of the structure designed **as** retaining walls to prevent damage by landslide flows along the side yards. The structure will be built flush with the face of the slope to minimize impacts to the rear of the dwelling. Finally, the foundation is designed to withstand slope failure and to mitigate for unconsolidated soils. **As** recommended by the project geologist and soils engineer, deck areas will be covered by an overhang to provide refuge in the event of a landside.

The project site is located within the FEMA Flood Zone-V, a 100-year coastal flood hazard zone designating areas subject to inundation resulting from run-up from waves and storm surges. FEMA regulations and the County Geologic Hazards ordinance (Chapter 16.10) require flood elevation of all new residential structures within 100-year flood zones. FEMA determined the expected 100-year wave impact height to be 21 feet above mean sea level (M.S.L.). The lowest habitable floor of the proposed dwelling is elevated more than one foot above 21 feet M.S.L. to prevent the habitable portions of the dwelling from flooding due to a 100-year storm surge. The garage doors and non-load bearing walls must function as "break-away" walls as required by the FEMA regulations for development in the V-Zone and in Chapter 16.10 of the County Code.

The dwelling at 641 Beach Drive, 50 feet upcoast (northwest) from the project site, was the first structure approved incorporating this design (in 1993 as permit 91-*0506).* Since then, the County has approved eight dwellings of a similar design on Beach Drive, including the two houses currently under construction on the two adjacent properties (under permits 99-0354 and 04-0044).

The last house using the "bunker" design concept was approved on September 26, 2006, by the County Board of Supervisors. This project was located on a vacant lot between 544 and 6**15** Beach Drive (permit 04-0255), about 950 feet upcoast from the Fisher property. The project was appealed to the Coastal Commission by neighbors concerned about an increase in landslide hazards resulting from the construction of the proposed dwelling. In December 2006, the Coastal Commission decided that substantive issues existed, and directed their staff to investigate the "bunker" design further, in particular the effect the "bunker" style design would have on slope stability during and after construction. This project is scheduled for a de novo hearing before the Coastal Commission on March 14, 2007. Coastal Commission staff is recommending approval, and a Coastal Commission staff geologist reviewed the "bunker" house design concept and came to the same conclusion as the County Geologist, that the proposed house will not increase landslide risks if the recommendations of the Engineering Geologist, Geotechnical Engineer, and the County Geologist are followed.

Grading and Erosion Control

General Plan/LCP policy 8.2.2 requires new development to be sited and designed to minimize grading, avoid or provide mitigations for geologic hazards and conform to the physical constraints and topography of the site. **The** project has been designed to step down the slope to reduce excavation and to conform to the topography of the site to the greatest extent possible while maintaining a reasonably sized dwelling in comparison to neighboring homes on Beach Drive.

The proposed dwelling will not destabilize or exacerbate erosion of the bluff, and when completed will act **as** retaining structures to stabilize the toe of the bluff. The only potential for bluff destabilization will occur during excavation and construction. To minimize the chances of a failure occumng during this period, the project geotechnical engineer has outlined a plan for construction phasing (See Exhibits K and L). The **key** elements of this plan include a ban on winter grading (between October 15th and April 15th), observation by the project soils and engineer during work, and requirements that excavation be limited to cuts no greater than five feet deep at a time.

A detailed work plan following these elements will be submitted with the building permit application. This work plan will detail the height of each individual section to be excavated and retained (not to exceed **five** feet at a time), and will take into account any concurrent excavation into

the bluff for neighboring projects.

A Waiver, Indemnification, Bonding, and Insurance Agreement will be required, which will include a requirement that the applicant/owner obtain and maintain Comprehensive Personal Liability (or equivalent) or Owner's Landlord and Tenant Liability Insurance coverage (as appropriate) of $1,000,000 plus an additional $1,000,000 of excess coverage to insure construction of the retaining structure will be completed in a timely manner (See Condition of Approval I.D). In addition, security bonds will be required to ensure bluff stabilization work can be completed by the County if construction stops prior to completion of all necessary shoring, retaining walls, tie-backs, and any other construction required to stabilize the bluff One bond will be for 150% of the total construction cost to stabilize the bluff, which will be released after satisfactory completion of all retention structures as determined by the County Geologist. The second bond will be for 50% of the above construction costs, to be released not less than one year after final inspection (Condition of Approval II.P).

Public Access

The proposal complies with Policy 7.7.10 of the General Plan/LCP (Protecting Existing Beach Access) in that pedestrian and emergency vehicle access will not be impeded by the proposed dwelling and construction, and no public access easements exist across the subject property. Furthermore, the site is not designated for Primary Public Access in Policy 7.7.15 of the General Plan/LCP, and is not suitable for access due to the steep topography of the site.

Design Review

The project is located within a mapped coastal scenic area, and therefore must comply with General Plan Objective 5.10b (New Development within Visual Resource Areas). The purpose of this objective is to ensure that new development is appropriately designed and constructed to have minimal to no adverse impact upon identified visual resources. General Plan/LCP policies 5.10.2 and 5.10.3 require that development in scenic areas be evaluated against the context of their environment, utilize natural materials, blend with the area and integrate with the landform and that significant public vistas be protected from inappropriate structure design. Moreover, General Plan/LCP policy 5.10.7 allows structures to be visible from a public beach where compatible with the pattern of existing development. In this case, the project site is located behind a line of existing one-story homes on the coast side of Beach Drive, and adjacent to two three-story single-family dwellings currently under construction on the bluff side of Beach Drive (approved under permits 99-354 and 04-0044). While a portion of the proposed dwelling will be visible from the public beach, the house will be infill development that is integrated into the Beach Drive neighborhood in terms of height, bulk, mass, scale, and architectural style to minimize visual impacts to the greatest extent possible. The size of the proposed home is consistent with many of the existing homes on the bluff side of Beach Drive, including those which have not been elevated to meet FEMA requirements.

Variances

The project as proposed requires the approval of two variances, one to increase the maximum floor area ratio from 50% to about *56%* and another to construct three stories within the Urban Services Line.

Variance for three stories

Inside the Urban Services Line, the County Code prohibits single-family dwellings greater than two stories absent a variance approval. To compensate for FEMA flood elevation requirements, construct within the constraints of the site, minimize grading, and preserve the open beach, the applicant has requested a variance to construct a three-story single-family dwelling. The steep topography of the site (with slopes greater than *70%)* and the FEMA flood elevation requirements present special circumstances inherent to the property that would deny the property owner a reasonably sized dwelling as enjoyed by residents of similar structures on the bluff side of Beach Drive. Many homes along the bluff side of Beach Drive already have three stories, including the house at 641 Beach Drive and the proposed dwellings on adjacent lots. **For** this reason, the granting of a variance to allow three stories will not constitute the granting of **a** special privilege.

Variance to increase floor area ratio

The size of the lot, the need to meet FEMA flood elevation requirements, and the requirement that all decks be covered to mitigate landslide hazards present special circumstances that warrant an increase in floor area ratio from 50% to about *56%*. It is impossible to design **a** residence of a similar size to neighboring residences and have a functional floor plan within the maximum allowable floor area ratio (FAR). The maximum allowed FAR is 50% of the parcel size, and the proposed FAR is about 56%, which includes the non-habitable garage and underfloor area below the 21-foot flood level. This area *cannot* be used as habitable space and is necessary for flood elevating the proposed residence. The habitable portion of the structure is about 2,300 square feet, which is a reasonable size with respect to the **6,000** square foot lot size and the size of surrounding homes. The goal of the County's floor area ratio (FAR) requirement is to encourage development of structures in proportion to their lot size and to avoid overly large, bulky structures. The requested variance to increase the maximum floor area ratio will result in residence of comparable bulk and mass to surrounding homes on the bluff side of Beach Drive, including the two currently under construction immediately adjacent *to* the project site. Most new residences on smaller lots have been granted a variance to the floor area ratio in order to meet FEMA flood elevation requirements and allow an economically feasible use of the property, including the house on the slot immediately upslope (on parcel 043-152-43), which obtained a variance to increase floor area ratio to 63.7%. Due to the FEMA flood elevation requirements unique to this property's location, in conjunction with the size of the lot, the strict application of the floor area ratio requirements would deprive the property owner of privileges enjoyed by other properties in the area, specifically a moderate sized home with a useable floor plan.

The granting of these variances will not constitute a special privilege, **as** it will afford the property owner a dwelling of a similar size to surrounding homes on the bluff side of Beach Drive. Variances to the number of stones and to increase the floor area ratio have been approved on previous projects on the bluff side of Beach Drive, including the adjacent upcoast property (043-152-43) which has a similar size to the subject parcel.

Conclusion

As proposed and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. Please see Exhibit "B" **("Findings")** for a complete listing **of** findings and evidence related to the above discussion.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.

- APPROVAL of Application Number **05-0200,** based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

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Coastal Development Permit Findings

1. That the project is a use allowed in one of the basic zone districts, other than the Special Use (SU) district, listed in section 13.10.170(d) as consistent with the General Plan and Local Coastal Program LUP designation.

This finding can be made, as a single-family dwelling is a principal permitted use in the "RB" (Ocean Beach Residential) zone district with the approval of a Coastal Development Permit. The "RB' zone district is consistent with the General Plan and Local Coastal Program land use designation of Urban Low Residential.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, *or* open space easements.

This finding can be made, as the parcel is not encumbered by any open space easements or similar land use contracts. The project will not conflict with any existing right-of-way easement or development restrictions as none exist. The proposed dwelling will not affect public access as none exists down the cliff face at this location, and the project will not impede lateral pedestrian access.

3. That the project is consistent with the design criteria and special use standards and conditions of this chapter pursuant to section 13.20.130 et seq.

The proposed single-family dwelling is consistent with the design criteria and special use standards and conditions of County Code Section 13.20.130 et seq. for development in the coastal zone. Specifically, the house follows the natural topography by stepping up the hillside, proposes minimal grading considering the topography of the site, and is visually compatible with the character of the surrounding residential neighborhood, and includes mitigations for the coastal hazards which may occur within its' 100 year lifespan (landslides, seismic events and coastal inundation). The project is not on a ridgeline, and does not obstruct any public views to the shoreline. The design and siting of the proposed residence will minimize impacts on the site and the surrounding neighborhood. **As** conditioned, the house will incorporate earth-tone colors (ranging from brown-beige to olive green) to blend in with the bluff.

The architecture is complementary to the existing pattern of development and will blend with the built environment. The size of the dwelling is comparable to most of the dwellings along the bluff side of Beach Drive, including the two dwellings under construction adjacent to the project site. The structure will be flood elevated, but will meet the 25 foot RB height limit. This height is consistent with the existing older development along the bluff of side of Beach Drive, most of which is three stones similar to the proposed dwelling.

4. That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the General Plan and Local Coastal Program land use plan, specifically Chapter 2: figure 2.5 and Chapter 7, and, as to **any** development between and nearest public road and the sea or the shoreline of any body of water located within the coastal zone, such development is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act commencing with section 30200.

The project site is located in the appealable area between the shoreline and the first through public road. Public access to the beach is located further up Beach Drive **at** the State Parks parking lot (about 1,000 feet northwest of the proposed dwelling). The proposed dwellings will not interfere with public access to the beach, ocean, or any other nearby body of water. The project site is not identified as a priority acquisition site in the County Local Coastal Program, and is not designated for public recreation or visitor serving facilities.

5. That the proposed development is in conformity with the certified local coastal program.

The proposed single-family dwelling is consistent with the County's certified Local Coastal Program in that a single family dwelling is a principal permitted use in the RE3 (Ocean Beach Residential) zone district with an approved Coastal Development Permit. General Plan policy 6.2.15 allows for development on existing lots of record in areas subject to storm wave inundation or beach or bluff erosion within existing developed neighborhoods and where technical reports demonstrate that the potential hazards can be mitigated over the 100-year lifetime of the structure. An Engineering Geologic and Geotechnical report have been prepared for this project evaluating the hazards and proposing mitigations. These reports have been reviewed and accepted by the County Geolgosit. The proposed structure will be engineered to withstand landslide impacts on a reinforced roof, retaining most of the landslide materials on the roof with any excess flowing over the structure. The project is specifically designed to accommodate natural coastal erosion processes of the bluff face. The dwelling must be constructed flush with the bluff as any exposed rear walls cannot be feasibly designed to withstand the impact of a catastrophic landslide event. Thus, the rear walls must be designed as retaining walls and anchored into the bluff to prevent landslide impacts from displacing the structure. The dwelling will be elevated with no habitable portions under 21 feet above mean sea level. in accordance with **FEMA,** the County General Plan policies and Chapter 16.10 of the County Code for development within the 100-year wave hazard or V-zone. **Thus,** the proposed development is consistent with this General Plan policy.

General Plan policy 6.2.16 for Structural Shoreline Protection Measures states that such structures shall be limited to those which protect existing structures from a significant threat, vacant lots which through lack of protection threaten adjacent developed lots, public works, public beaches or coastal dependent uses. The proposed reinforced concrete dwelling is not specifically a structural shoreline protection measure, but does provide some stability to the toe of the **cliff.**

General Plan/LCP policy 5.10.7 allows structures, which would be visible from a public beach, where compatible with existing development. The subject lot is located on the bluff side of Beach Drive within a line of existing and proposed single-family dwellings **of** a similar height. The project is consistent with General Plan policies for residential infill development as the proposed dwelling will integrate with the built environment along Beach Drive by retaining a similar height, bulk, mass, and scale to existing and recently approved development in the vicinity. The height of the dwelling does note exceed 25 feet in conformance with the height limit for the RB zone district, and consistent with most of the existing and proposed adjacent residences. The size of the structure is consistent with the many of the existing homes on the bluff side of Beach Drive. Dwellings on the beach side of Beach Drive have different site standards and therefore cannot be used to determine compatibility. General Plan/LCP policies 8.6.5 and 8.6.6 require that development be complementary with the natural environment and that the colors and materials chosen blend with the natural landforms. The

proposed dwelling will use stucco painted in earth-tone colors (in the dark brown to beige range) to blend in with the bluff behind.

Development Permit Findings

1. That the proposed location of the project and the conditions under which it would be operated or maintained will not be detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, as the proposed single-family dwelling complies with all development regulations applicable to the site with the exception of floor area ratio and the limitation on the maximum number of stones, for which a variances are being sought (see variance findings, below). The parcel is located within a coastal hazard area and is expected to be subject to wave inundation, landslides and seismic shaking hazards. Engineering Geologic and geotechnical reports have been completed for this project analyzing these hazards and recommending measures to mitigate them. The habitable portions of the dwelling will be constructed above 21 feet mean sea level (msl), which is the expected height of wave inundation predicted for a 100-year storm event. The garage will incorporate break away garage doors and non-structural walls on the lower level to minimize structural damage from wave action.

Construction will comply with prevailing building technology, the Uniform Building Code, the County Building ordinance, and the recommendations of the Engineering Geologic and Geotechnical repor to insure the optimum in safety and the conservation of energy and resources. The structure will be engineered to withstand landslide impacts by incorporating a flat reinforced concrete roof, retaining most of the landslide materials on the roof with any excess flowing over the structure. The project is specifically designed to accommodate natural coastal erosion processes of the bluff face. The dwelling must be constructed flush with the bluff face and be anchored into the bluff to withstand the impact of a catastrophic landslide event and prevent it from displacing the structure. An engineered foundation is required in order to anchor the dwellings in the event of a landslide impact and to withstand seismic shaking. Adherence to the recommendations of the soils engineer and geologist in the house design and construction will provide an acceptable margin of safety for the occupants of the proposed home. The project design will not change the existing pattern debris flow and will not result in increased hazards to adjacent properties or Beach Drive. The proposed design, with retaining walls incorporated into the design of the structure, will actually provide some stability to the toe of the cliff. A drainage system will be constructed, which the upslope neighbors may use to control drainage on the slope face. Thus, the project will provide a small benefit to the upslope property, although natural erosion of the upper bluff face is expected to continue.

2. That the proposed location of the project and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the zone district in which the site is located.

The project is located within the RB (Ocean Beach Residential) zone district. The proposed dwelling will be consistent with all pertinent County ordinances, site standards, and the purpose of the RB zone district, with the exception of the number of stories **and** floor area ratio, for which variances are being sought. These increase in the number of stories and floor area ratio will not significantly increase the bulk of building mass and will allow adequate light, air and open space to adjacent neighbors, as the design of the proposed dwelling is consistent with that of the surrounding neighborhood, as it is visually compatible and integrated with the character of surrounding neighborhood (both existing and proposed dwellings), and meets the intent of County Code Section 13.10.130, "Design Criteria for Coastal Zone Developments" and Chapter 13.11 "Site, Architectural and Landscape Design Review." Homes in the area range from one story on the beach side of Beach Drive to three-stories on the bluff side, with a wood or stucco exteriors and large expanses of windows and decks. The majority of houses in the neighborhood have flat roofs, a feature required on new homes on the bluff side of Beach Drive due to landslide hazards. The proposed colors and materials and architecture will harmonize and blend with the other homes in this neighborhood. Thus, the design of the proposed single-family dwelling is consistent with that of the surrounding neighborhood. As discussed in Finding #1, Engineering Geologic and Geotechnical reports have been prepared evaluating the landslide and coastal flooding hazards, which will be mitigated in accordance with the regulations set forth in Chapter 16.10 (Geologic Hazards) of the County Code. As discussed in the Coastal Findings above, the project is consistent with the County's Coastal Regulations (Chapter 13.20).

3. That the proposed use is consistent with all elements of the County General Plan and with any specific plan which has been adopted for the area.

The project is located in the R-UL (Urban Low Residential) General Plan/Local Coastal Program land use designation. As discussed in Coastal Development Permit Finding 5, all General Plan/LCP policies have been met in the proposed location of the project, the hazard mitigations and with the required conditions of this permit. The design of the single-family dwelling is consistent with that of the surrounding neighborhood on the bluff side of Beach Drive, and is sited and designed to be visually compatible and integrated with the character of surrounding neighborhood and the coastal bluff. The dwelling will not block public vistas to the public beach and, as conditioned, will blend with the built environment when viewed from the public beach. The house is designed to step down the slope, requiring minimal grading considering the limitations placed on the site with regards to slope and construction requirements to minimize geologic hazards. For this reason the project conforms with General Plan policies to minimize grading.

A specific plan has not been adopted for this portion of Rio Del Mar.

4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, as the proposed single-family dwelling will not overload utilities and will not generate more than the acceptable level of traffic on the roads in the vicinity. Specifically, adequate water and sewer service is available to the property and there will be minimal increase in traffic resulting from the construction of one new single family dwelling on a legal lot of record

designated for residential use. Traffic generated by construction will be limited to weekdays between the hours of 8 AM and 5 PM and any damage to Beach Drive resulting from heavy equipment will be required to be repaired (Conditions of Approval III.H and IIIN).

5. That the proposed project will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood.

This finding can be made, as the home will not appear significantly different from the existing or proposed development on the bluff side of Beach Drive, which must be designed with the same constraints and limitations resulting in non-habitable lower floors and flat roofs constructed of re-enforced concrete. The proposed project will result in a home of a similar size and mass to other homes on the bluff side of Beach Drive, and will be designed to be visually compatible and integrated with the character of the surrounding neighborhood.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, in that the proposed single-family dwelling as conditioned will be consistent with the County's Design Review Ordinance as the site design, architectural style, materials, colors, flat roof, and three story design within the RB zone district height limit results in a structure that is compatible with the surrounding development along the bluff side of Beach Drive (see Urban Designer's comments in Exhibit Q).

Variance Findings

1. That because of special circumstances applicable to the property, including size, shape, topography, location, and surrounding existing structures, the strict application of the zoning ordinance deprives such property of privileges enjoyed by other property in the vicinity under identical zoning classification.

This finding can be made, as the subject parcel contains very steep slopes (slopes in excess of 70%) on an unstable coastal bluff, with the only suitable area for development near the base of the bluff within the coastal flood hazard area (Flood Zone-V). Due to the topography and location within a flood hazard area, the structure must be elevated above the expected 100-year coastal inundation level at 21 feet above mean sea level in accordance with the regulations set forth by the Federal Emergency Management Agency (FEMA) and Chapter 16.10 (Geologic Hazards Ordinance) of the County Code. As the lower floor area cannot be used as habitable space, a variance has been requested to increase the maximum number of stones from two to three, and to increase the maximum floor area ratio from 50% to about 56% in order to construct a home of a comparable size to adjacent homes on the bluff side of Beach Drive. Furthermore, the Geotechnical report for the

project site requires decks to be covered in order to protect occupants from landslide debris, and covered outdoor space counts toward floor area ratio and results in a floor area ratio in excess of the **50%** standard for the RB zone district. Strict application of the RB zone district standards would deprive the property owner of home of a similar size and number of stones as those currently under construction on adjacent properties.

2. That the granting of the Variance will be in harmony with the general intent and purpose of zoning objectives and will not be materially detrimental to the public health, safety, or welfare or injurious to property or improvements in the vicinity.

This finding can be made, as compliance with the recommendations and construction methods required by the Engineering Geologic and Geotechnical reports accepted by the Planning Department will insure that granting the variance to increase the floor area ratio to **56%** and to construct a three-story single family dwelling will not be materially detrimental to the public health, safety and welfare or be materially injurious to property or improvements in the vicinity. The residence is required to be elevated above 21 feet mean sea level with no habitable features on the ground floor and constructed with a break-away garage door and walls (except those used as support structures). No mechanical, electrical or plumbing equipment shall be installed below the base flood elevation. The dwelling will be engineered to withstand landslide impacts upon the roof and to allow slide debris to accumulate upon it. This design allows for the natural pattern **of** debris flow and minimizes deflection onto the adjacent properties.

3. That the granting of such variances shall not constitute a grant of special privileges inconsistent with the limitations upon other properties in the vicinity and zone in which such is situated.

The granting of variances to increase the maximum number of stones from two to three and to increase the maximum floor area ratio to **56%** will not constitute a grant of special privilege, as similar variances have been granted for houses of similar construction on the bluff side of Beach Drive due to **FEMA** flood elevation requirements and mitigation measures (such **as** covered decks) to protect occupants from landslide debris. The two homes under construction on adjacent properties (approved under permits **99-0354** and **04-0044)** were granted variance approvals to construct three stories, and a variance to increase the floor area ratio to **63.7%** was approved on the adjacent parcel upcoast (parcel **043-161-43). As** both adjacent properties exhibit the same constraints **as** the subject property, the requested variances will not constitute the grant **of** special privileges.

Conditions of Approval

Exhibit A: Project plans, 8 sheets, drawn by Robert Goldspink, Architect, dated 3/4/05 and revised 11/1/06. Improvement plans, 2 sheets, drawn by Robert DeWitt & Associates, dated 7/1/06 and revised 12/22/06.

I. This permit authorizes the construction of a three-story single-family dwelling of. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicanb'owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Building Permit from the Santa Cruz County Building Official.

C. Obtain a Grading Permit from the Santa Cruz County Building Official.

D. The owner shall execute the attached WAIVER, INDEMNIFICATION, BONDING, AND INSURANCE AGREEMENT **with the** County and meet all requirements therein. This agreement will require the applicant/owner to obtain and maintain Comprehensive Personal Liability (or equivalent) or Owner's Landlord and Tenant Liability Insurance coverage **(as** appropriate) of **$1,000,000** plus an additional **$1,000,000** of excess coverage per single-family dwelling. Proof of insurance shall be provided.

11. Prior to issuance of a Building Permit the applicanb'owner shall:

A. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder).

B. Submit a detailed construction plan following the recommendations of the project geotechnical engineer. The plan shall indicate the shoring plan, the phases of excavation, five foot maximum height for temporarily unsupported cuts, plan to work from the top down. and requirements for the project geotechnical engineer to be on site during excavation. **The** construction plan shall **not** be submitted without an accompanying letter from the project geotechnical engineer approving the plan.

C. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods **to** indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. Identify finish and color of exterior materials and roof covering for approval

by the Zoning Administrator and Urban Designer for visual compatibility with the coastal bluff environment. Colors shall be earth tone, subdued colors (not white). This color board must be in an 8.5" x 11" format. The plans shall include notes specifying low-glare or no-glare windows for all windows facing the beach.

2. The final plans shall include a specification that all windows, doors and other openings will be designed to resist and hold the force of a landslide as specified by the geotechnical engineer. No openings are allowed in **the** rear of the buildings, and all side windows must be **less** than 18 inches wide and approved by the County Geologist. **All** requirements of the County Geologist shall be **met.**

3. The structure shall be engineered to resist and hold the force of a landslide, **as** specified by **the** geotechnical engineer. The roof shall be engineered to support the static load of anticipated landslide debris in conformance with the soils engineering report recommendations.

4. Details showing compliance with the following FEMA and **County** flood regulations:

   a. The lowest habitable floor and the **top** of the highest horizontal structural members (joist or beam) which provides support directly to the lowest habitable floor and elements that function as a part of the structure such as furnace or hot water heater, etc. shall **be** elevated above the 100-year wave inundation level. Elevation at this site is a minimum of **21** feet above mean sea level. The building plans must indicate the elevation of the lowest habitable floor area relative to mean sea level and native grade. Locations for furnaces, hot water **heaters** shall be shown.

   b. The garage doors and non-bearing walls shall function as breakaway walls. The garage doors and front wall shall be certified by a registered civil engineer **or** architect and meet the following conditions:

      i. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood, and

      ii. The elevated portion of the building shall not incur any structural damage due to the effects of wind and water loads acting simultaneously in the event of a base flood.

      iii. Any walls on the ground floor not designated as breakaway shall be demonstrated to be needed for shear or structural support and approved by Environmental Planning.

5. A grading plan, including all grading required for shoring. Grading shall not exceed 1,000 cubic yards, or an amendment to this permit will be required.

This amendment will be required to go through Environmental Review, and all be processed at a level *6* review level, requiring a public hearing before the Planning Commission.

6. **An** erosion and sediment control plan for review and approval by Environmental Planning. The erosion control plan shall include interim measures to prevent erosion during construction and after construction on the bluff face.

7. A drainage plan conforming with the requirements of the Drainage Section of the Department of Public Works. The drainage plan shall include an enclosed drainage system above the proposed residence of adequate size and capacity to carry the runoff from the upslope property, and shall have minimize impacts to downstream properties across Beach Drive. All proposed impervious areas within the parcel shall be shown on the plans. All requirements of the Drainage Section of the Department of Public Works shall be met and the owner/applicant shall pay all fees for Zone 6 Santa Cruz County Flood Control and Water Conservation District, including plan check and permit processing fees.

8. A site plan showing the location of all site improvements, including, but not limited to, points of ingress and egress, parking areas, sewer laterals and drainage improvements. A standard driveway and conform is required.

9. A final landscape plan. This plan shall include the location, size, and species of all existing and proposed trees and plants within the front yard setback and shall meet the following criteria:

   a. Plant Selection. At least 80 percent of the plant materials selected for non-turf areas (equivalent to 60 percent of the total landscaped area) shall be drought tolerant. Native plants *are* encouraged. Up to 20 percent of the plant materials in non-turfareas (equivalent to 15percent of the total landscaped area), need not be drought tolerant, provided they are grouped together and can be irrigated separately.

   b. Turf Limitation. Turf area shall not exceed **25** percent of the total landscaped area. **Turf** area shall be of low to moderate water-using varieties, such as tall fescue. Turf areas should not be used in areas less than 8 feet in width.

10. Final plans shall reference and incorporate all recommendations of the Engineering Geologic and Geotechnical reports and update letters (Exhibits **H** through **O**), with respect to the construction and other improvements on the site. All pertinent Geotechnical report recommendations shall be included in the construction drawings submitted to the County for a Building Permit. Plan review letters from the soils engineer and geologist shall be submitted with the plans stating that the plans have been reviewed and found to be in compliance with the recommendations of the Geotechnical and Engineering Geologic reports.

11. Final plans shall conform with the conditions of the Soils and Geologic Reports Review dated February 22, 2007 (Exhibit G).

12. Final plans shall note that Soquel Creek Water District will provide water service and shall meet all requirements of the District including payment of any inspection fees. Final plans shall show the water connection and shall be reviewed and accepted by the District.

13. Notes indicating that new on-site electrical power, telephone, and cable television service connections will he installed underground.

14. As the structure is proposed to be within 2 feet of the maximum 25 foot height limit for the RB zone district, the building plans must include a roof plan and a surveyed contour map of the ground surface, superimposed and extended to allow height measurement of all features. Spot elevations shall be provided at points on the structure that have the greatest difference between ground surface and the highest portion of the structure above. This requirement is in addition to the standard requirement of detailed elevations and cross-sections and the topography of the project site which clearly depict the total height of the proposed structure.

15. Details showing compliance with fire department requirements, including all requirements of the Urban Wildland Intermix Code, if applicable.

D. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

E. Meet all requirements of and pay Zone ***6*** drainage fees to the County Department of Public Works, Drainage. Drainage fees will he assessed on the net increase in impervious area.

F. Meet all requirements and pay any applicable plan check fee of the Aptos/La Selva Fire Protection District.

G. The owner shall record a Declaration of Geologic Hazards to be provided by Environmental Planning staff on the property deed. Proof of recordation shall be submitted to Environmental Planning. **You may not alter the wording of this declaration.** Follow the instructions to record and return the form to the Planning Department.

H. Pay the current fees for Parks and Child Care mitigation for 4 bedrooms.

I. Pay the current fees for Roadside and Transportation improvements for 4 bedrooms.

J. Provide required off-street parking **for** three cars. Parking spaces must be 8.5 feet wide by 18 feet long and must be located entirely outside vehicular rights-of way. Parking must be clearly designated on the plot plan.

K. Submit a plan review letter from the project structural engineer stating the plans comply with FEMA elevation requirements.

L. Submit a written statement signed by an authorized representative of the school district in which the project is located confirming payment in full of all applicable developer fees and other requirements lawfully imposed by the school district.

M. Obtain a permit from the Monterey Bay Air Pollution District, if required. This permit may require a diesel health risk assessment depending on the equipment used, the timing, and **the** distance of the construction from the nearest residence.

N. Submit a signed, notarized, and recorded maintenance agreement for the silt & grease traps prior to permit issuance.

O. Submit an engineer's statement estimating construction costs including earthwork, drainage, all inspections (soils, structural, and civil engineers, etc.), and erosion control associated with the foundation, retaining walls, and drainage system for review and approval per the Waiver, Indemnification, Security, and Insurance Agreement. These estimates will be reviewed by the County Geologist and will be used for determining the appropriate amounts for each bond.

P. The two security bonds (one **for** 150% of the total construction cost released after completion of all slope stabilization construction, one for 50% released one year after final inspection) shall be in place prior to issuance of the building permit. Please submit proof indicating if Certificate of Deposits or Letters of Credit will be used to satisfy the bonding requirement.

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. Prior to any disturbance on either property the applicant shall convene a pre-construction meeting on the site with the grading contractor supervisor, construction supervisor, project geologist, project geotechnical engineer, Santa Cruz County grading inspector, and any other Environmental Planning staff involved in the review of the project.

B. All land clearing, grading and/or excavation shall take place between April 15 and October 15. Excavation and/or grading is prohibited before April 15 and after October 15. Excavation and/or grading may be required to start later than April **15** depending **on** site conditions, as determined by Environmental Planning staff. **If** grading/excavation is not started by August 1st, grading must not commence until after April 15" the following year *to* allow for adequate time to complete grading prior to October 15.

C. Erosion shall be controlled at all times. Erosion control measures shall be monitored, maintained and replaced as needed. No turbid runoff shall be allowed to leave the immediate construction site.

D. Dust suppression techniques shall be included as part of the construction plans and implemented during construction. These techniques shall comply with the requirements of the Monterey **Air** Pollution Control District.

E. All earthwork and retaining wall construction shall be supervised by the project soils engineer and shall conform with the Geotechnical **report** recommendations.

F. All foundation and retaining wall excavations shall be observed and approved in writing by the project soils engineer prior to foundation pour. **A** copy of the letter shall be kept on file with the Planning Department.

G. Prior to sub-floor building inspection, compliance with the elevation requirement shall be certified by a registered professional engineer, architect **or** surveyor and submitted to the Environmental Planning section of the Planning Department. Construction shall comply with the FEMA flood elevation requirement of 21 feet above mean sea level for all habitable portions of the structure. Failure to submit the elevation certificate may be cause to issue a stop work notice for the project.

H. Construction shall only occur between the hours of 8 ***Ah4*** and 5 PM, Monday through Friday, with no construction activity allowed on weekends and national holidays.

I. All site improvements shown on the final approved Building Permit plans shall be installed.

J. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

K. The project must comply with all recommendations **of** the approved soils and engineering geologic reports.

L. All inspections required by the building and grading permits shall be completed to the satisfaction of the County Building Official, the County Senior Civil Engineer, and the County Geologist.

M. The soils engineer/geologist shall submit a letter to the Planning Department verifying that all construction has been performed according to the recommendations of the accepted geologic and soils report. **A** copy of the letter shall be kept in the project file for future reference.

N. **Any** damage to Beach Drive as a result of the construction process for this project shall be repaired prior to final inspection.

IV. Operational Conditions

A. Modifications to the architectural elements including but not limited to exterior finishes, window placement, roof design and exterior elevations are prohibited, unless an amendment to this permit is obtained.

B. All portions of either structure located below 21 feet mean sea level shall be maintained as non-habitable, and re subject **to** the following conditions:

1. No toilets, kitchen, bedrooms; other habitable rooms, furnaces or hot water heaters shall be installed.

2. The structure may be inspected for condition compliance twelve months after approval and at any time thereafter at the discretion of the Planning Director.

C. In the event that future County inspections of **the** subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

D. In the event of a significant **slope** failure, the owner must remove the debris from the roof within 48 hours under the direction of a civil engineer.

E. **All** landscaping shall be permanently maintained

V. **As** a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents **to** attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY **seeks** to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires on the expiration date listed below unless you obtain the required permits and commence construction.

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Don Bussey	David Keyon
Deputy Zoning Administrator	Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections I5061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 05-0200
Assessor Parcel Number: 043-161-42
Project Location: No address, site vacant

Project Description: Construct one 3-story single-family dwelling

Person or Agency Proposing Project: Hamilton-Swift Land Use (Deidre Hamilton)

Contact Phone Number: (831) 459-9992

A. ____ The proposed activity is not a project under CEQA Guidelines Section 15378.

B. ____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).

C. ____ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgment.

D. ____ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify type:

E. __X__ **Categorical Exemption**

Specify type: 15303(a): Construction of one single-family dwelling

F. Reasons why the project is exempt:

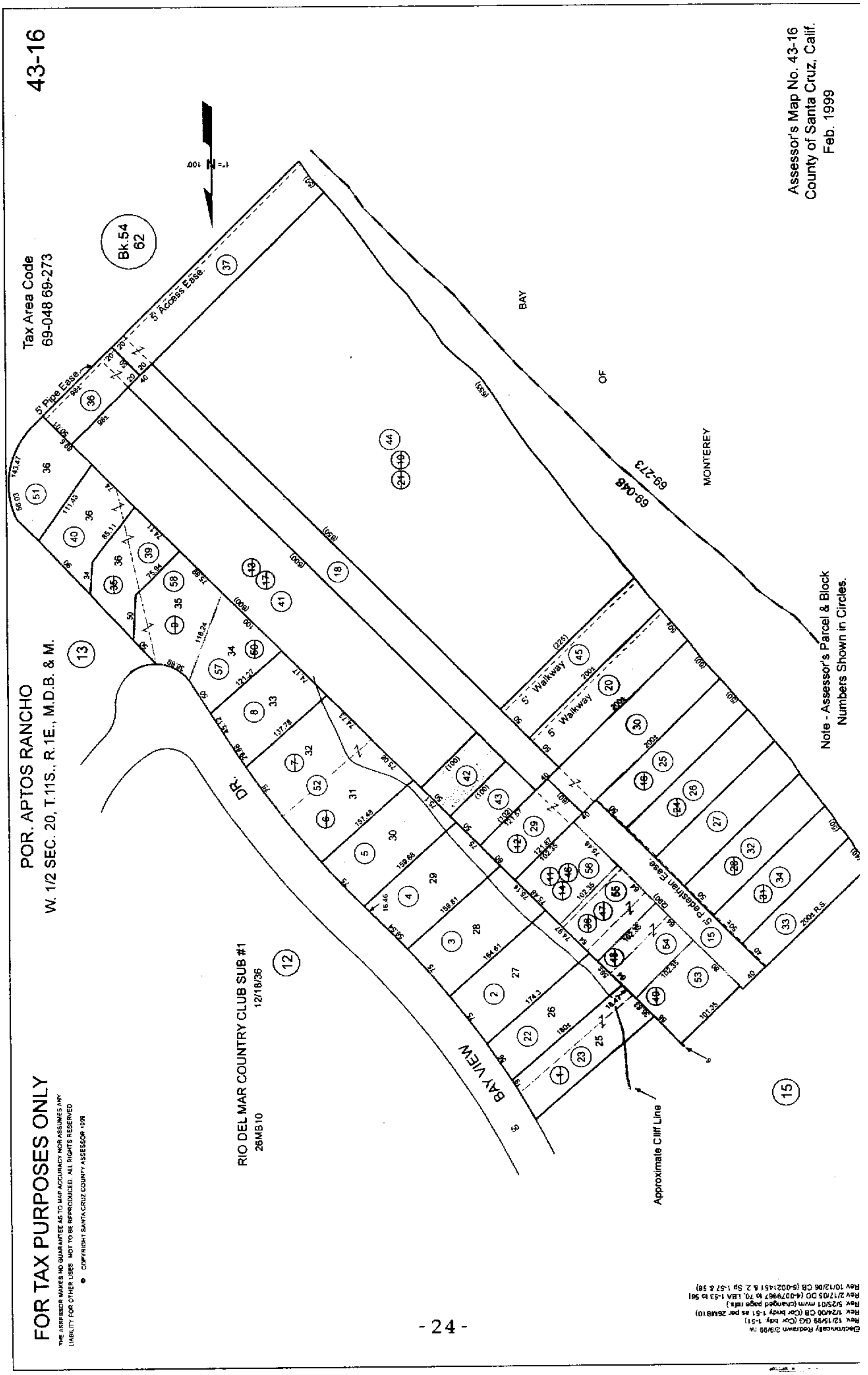
Construction of one single-family dwelling with less than 1,000 cubic yards of grading is exempt from CEQA review

In addition, none of the conditions described in Section 15300.2 apply ***to*** this project.

_____ Date:_____

David Keyon, Project Planner

EXHIBIT D


FOR TAX PURPOSES ONLY
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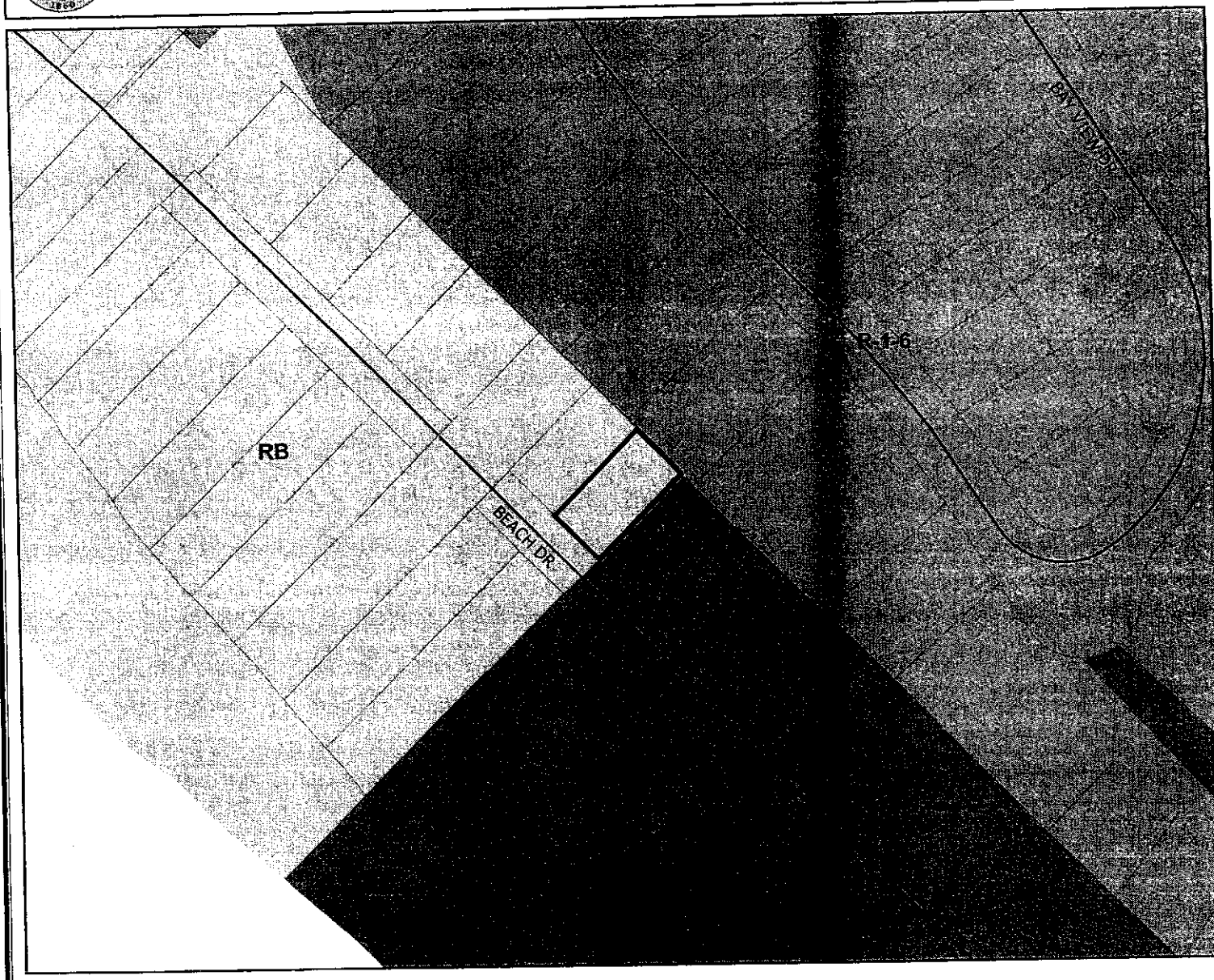
© COPYRIGHT SANTA CRUZ COUNTY ASSESSOR 1999
POR. APTOS RANCHO
W. 1/2 SEC. 20, T.11S., R.1E., M.D.B. & M.
Tax Area Code
69-048 69-273
Bk.54
62
43-16
RIO DEL MAR COUNTRY CLUB SUB #1
26MB10
12/18/36
BAY VIEW
DR.
5' Pipe Ease.
5' Access Ease.
5' Walkway
5' Pedestrian Ease.
BAY
OF
MONTEREY
Approximate Cliff Line
Note - Assessor's Parcel & Block Numbers Shown in Circles.
Assessor's Map No. 43-16
County of Santa Cruz, Calif.
Feb. 1999
Electronically Redrawn 2/9/95 rw
Rev. 12/15/99 GG (Cor bdy. 1-51)
Rev. 1/24/00 CB (Cor bndy 1-51 as per 26MB10)
Rev. 5/25/01 mvm (changed page refs.)
Rev 2/17/05 DD (4-007967 to 70, LBA 1-53 to 56)
Rev 10/12/06 CB (6-002151 & 2, Sp 1-57 & 58)

Zoning Map



Legend

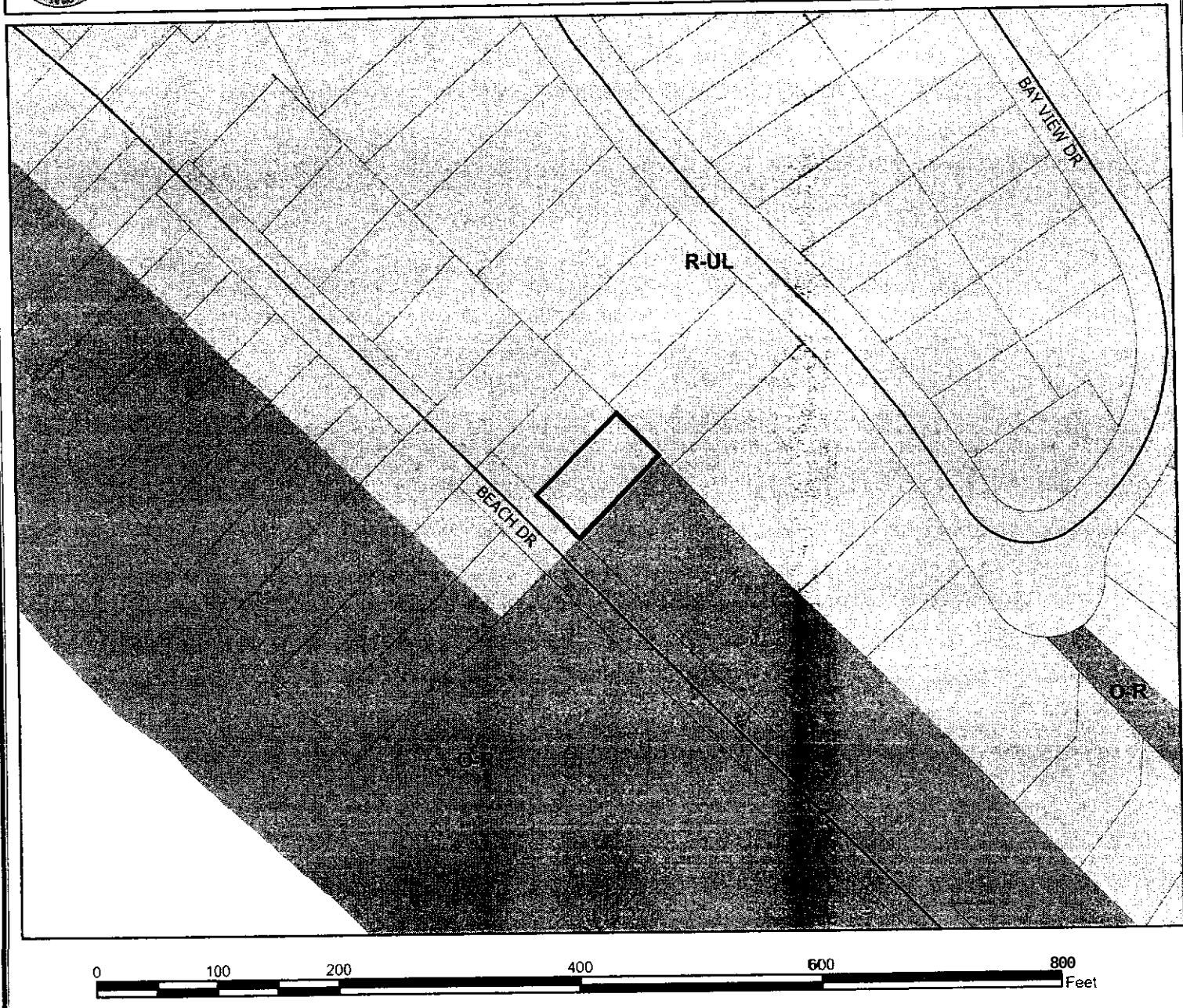
- APN 043-161-42
- Assessors Parcels
- Streets
- PARK (PR)
- RESIDENTIAL- OCEAN BEACH (RB)
- RESIDENTIAL-SINGLE FAMILY (R-1)

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
April *2005*

EXHIBIT

General Plan Designation Map



Legend

- APN 043-161-42
- Assessors Parcels
- Streets
- Parks and Recreation (O-R)
- Residential - Urban Low Density (R-UL)

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
April 2005

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX (831) 454-2131 TDD (831) 454-2123
TOM BURNS, PLANNING DIRECTOR

February 22,2007

Deidre Hamilton
Hamilton Swift LUDC, Inc.
1509 Seabright Avenue, Suite A1
Santa *Cruz*, CA 95062

Subject: Review **of** Engineering Geology Report and Updates, **by** Neilsen &Associates, Dated January **12,2007,** July **1,2005** and Febuary **21, 2005,** Project **No. 1191;** and Geotechnical Report and Updates by Haro, Kasunich &Associates, Dated December **28,2006,** November **13,2006,** March **3,2005, February 23,2005** and February **20,2001** Project **No.: SC7045,**

Reference: APN: **043-161-42;** Application **No.: 05-0200**

Dear Applicants,

The purpose of this letter is to inform you that the Planning Department has accepted the subject report and updates and the following items shall be required:

1. **All** construction shall comply with the recommendations of the report and updates

2. Final plans shall reference the report and updates, and include a statement that the project shall conform to the report's recommendations.

3. Before building permit issuance, *pian-review letters* shall be submitted to Environmental Planning from both the geotechnical engineer and engineering geologist. The authors of the reports shall write the *pian review* fetters. Each letter shall state that the project plans conform to the report's recommendations.

4. Prior to the public hearing on any permit related to this project, the engineering geologist and geotechnical engineer must confirm the strength of the on-site rock **and** soils materials through an on-site testing program and submit this testing data to the County for approval by the County Geologist.

(over)

EXHIBIT C

5. The construction must comply with all County Geologic Hazards Code, the provisions of all FEMA regulations, and the County Building Code. This shall include the raising of the lowest floor elevation so that it is located above the flood hazard zone.

6. All decks must be covered to protect anyone using the decks from potential landslide debris.

7. All windows on the sides of the building and potentially impacted by landsliding must be designed so that they have the largest dimension of 14 inches.

8. A complete shoring plan must be reviewed and approved before issuance of any building permit. The plan must include a construction schedule.

9. The drainage system must conduct the drainage from the slope's crest to its base in a durable culvert. A drainage maintenance agreement must be developed by the owners, or their attorneys, and must be approved by the County. The agreement must be approved by the County and then executed before building permit approval.

10. The application for a building permit shall include an engineered grading and drainage plan.

11. Drainage easements must be designated on the property lines on either side of the property so that the properties above the proposed residence are able to conduct their drainage through the subject lot in a controlled manner.

12. Before final inspection, the architect and civil engineers must indicate in writing to the County Geologist that all of the provisions of the FEMA regulations, including "break-away walls" and location of electrical facilities, have been complied with during construction.

13. Before the final inspection, the engineering geologist, geotechnical engineer, civil engineer, and contractor must indicate that with regard to their area of expertise that the house has been has been consbucted in accordance with the approved plans, and reports all conditions of approval, and concluded that the house is safe to occupy.

14. Both the engineering geologist and civil engineer must inspect and approve the back cut for the proposed retaining walls. The results of *this* inspection must be submitted in writing to the County Geologist for review and must include photographs that document the conditions of the cut slope after excavation. If the engineering geologist and/or the civil engineer determine that the excavated slope does not meet the recommendations of their reports, corrective measures must be taken to compensate for any newly revealed site conditions.

EXHIBIT C 4

15. Haro, Kasunich, and Associates, the project geotechnical engineer, or a similar qualified testing laboratory, must be employed to inspect and test **all fill** material placed on the site. **The** relative compaction tests' locations must be noted **on** a copy of the approved grading plans, and all related test data must be included in **a** table with a reference number that correlates the table data to the test location indicated on the grading plan.

16. A notice of geologic hazards shall be recorded with County Recorder's Office that indicates that house is located in an area of flooding, wave attack, and landsliding. The notice is attached, and is to be completed and executed by owner.

All of the above-mentioned conditions shall become conditions of approval of the Coastal Permit.

After building permit issuance the soils engineer and engineering geologist *must **remain** involved with* the *project* during construction. Please review the *Notice to Permits Holders* (attached).

Our acceptance of the reports is limited to its technical content. **Other** project issues such as zoning, fire safety, septic or sewer approval, etc. may require resolution by other agencies.

Please call the undersigned at (831)454-3175, email pln829@co.santa-cruz.ca.us if we can be of any further assistance.

Sincerely,

Joseph L. Hanna CEG 1313
County Geologist

Cc: Haro, Kasunich and Associates
Neilsen and Associates
David Keyon, Project Planner
Andrea Koch, Resource Planner
File

EXHIBIT C

FOXX, NIELSEN AND ASSOCIATES
ENGINEERING GEOLOGYAND COASTAL CONSULTING

ENGINEERING GEOLOGIC INVESTIGATION
for a
PROPOSED SINGLE FAMILY HOMESITE

Beach Drive, Rio Del Mar
Assessors Parcel Number 043-161-42
Santa Cruz County, California

Job No. SCr-936-G

December 2000

501 MISSION STREET, SUITE 8 • SANTA CRUZ, CALIFORNIA 95060 • (831) 427-1770

EXHIBIT H

Another potential hazard created by severe ground shaking from earthquakes is liquefaction and lateral spreading. The loose, unconsolidated, and saturated beach sands below the base of the property may de-stabilize when influenced by strong ground motions generated by an earthquake. Therefore, the design of the foundation should take into account the potential for the beach sand to liquefy, and for the talus material and beach sand to shift laterally thereby generating an active lateral force. Due to the higher relative density of the Purisima Formation which underlies the beach sand, it is our professional opinion that there is a low liquefaction potential of the Purisima Formation.

DRAINAGE AND EROSION HAZARDS

There should be a drainage system installed at the property to convey possible surface runoff **from** the steep slope behind the house. It *is* best to accommodate this potential flow in a shallow surface depression such as a shallow drain trough because of the possibility that a significant amount of sediment could erode from the hill and fill or block subsurface drain pipes or inlets.

All areas on the slope that are stripped of vegetation during construction of the retaining wall must be revegetated prior to the onset of the **next** rainfall season.

CONCLUSIONS

i. The subject property occupies a sieep hillside that rises above Beach Drive. **A** single family home is proposed on the hillside rising up from its approximate base. **A** conceptual configuration of this home is shown the geologic cross section, Plate **2.**

2. Four different earth materials occur at the subject property. These are: 1) marine terrace deposits, *2)* Purisima Formation sands, **3)** talus, and 4) beach sands. Marine terrace deposits comprise the top fifteen feet of the coastal bluff. These terrace deposits lie mostly above the upper property line. Beneath the marine terrace deposits lie the Purisima Formation sands and gravels which make up most of the hillside above the homesite. The Purisima Formation consists of thick bedded sands with frequent lenses of pebbles and cobbles. These earth materials are lightly to poorly cemented at the property. **A** talus cone or wedge occurs on the bottom half of the hillside. This talus deposit is an accumulation *of* slope wash and landslide debris from higher on the slope. The talus deposit is underlain by beach sand near the toe of the slope and by Purisima Formation sand a short distance up the slope. The base of the subject property as well as Beach Drive are underlain by unconsolidated beach sand. Purisima Formation sand and cobbly sand underlie the beach sand about **15** feet below Beach Drive.

3. The steep coastal bluff face in the vicinity of the property and along the entire length of Beach Drive has experienced numerous landslides in historic time, particularly during the

past 17 years. The most recent episodes of landsliding occurred during the winter of 2000 on the hillside just east of the subject property (Plate 1). Landslides will occur on the bluff above the home in the future, most likely during rainstorms but also as a result of strong ground shaking from earthquakes.

4. A slope stability analysis conducted during this study by the project geotechnical engineers indicates a significant potential for both debris flow landslides occumng during intense and/or prolonged rainfall and larger landslides generated by severe ground shaking caused by an earthquake. The results of the slope stability analysis and the geologic conditions indicate a need to develop landslide mitigation measures at the proposed homesite.

5. There is a potential for erosion at the toe of the coastal bluff. We have shown a projected erosion boundary on the accompanying geologic cross section (Plate 2) and discussed our reasoning for developing this boundary in this report. This boundary should be used for foundation design purposes.

6. There is a potential flood hazard on the lowermost portion of the property. The 100-year flood elevation has been determined by FEMA as 21 feet above NGVD from 1929.

7. Moderate to severe ground shaking is likely at the subject property if a large magnitude earthquake occurs on a nearby fault. Refer to the body of the report for specific seismic criteria and fault information.

8. The beach sand under the lowermost part of the property is typically saturated, at least below a depth of 10 feet; the groundwater level probably rises during high tides and winter rainfall periods.

9. The proposed home is feasible if the recommendations presented in this report and those in the accompanying geotechnical report being prepared by Haro, Kasunich and Associates are adhered to during design, implemented during construction and maintained for the lifetime of the dwelling. In this event, the occupants within the dwelling should not be subject to risks beyond an ordinary level of risk as defined in the Scales of Acceptable Risk presented in Appendix E of this report.

RECOMMENDATIONS

1. The following landslide mitigation measure: (or approved equivalent) must be implemented into the design of the homesite:

   A. Construct the home intc rhe hillside. This requires that the rear walls act as engineered retaining walls, and portions of the side walls act as engineered retaining walls. It is anticipated that homesite will be excavated as needed.

B. The excavation should be prevented from failing into adjacent properties. It is anticipated that temporary shoring will be needed to support the cutslopes during construction. It is anticipated that appropriate engineered shoring will be designed and used along the sides of the excavation as well as along the back of the excavation.

C. The rear wall of the dwelling and the roof line should coincide with the slope at the rear of the house so that there is no potential for landslides originating above the home to impact the rear wall of the dwelling. In concept, landslide debris will flow onto and over the home. The calculated seismic failures are very large masses of earth. A smaller failure such as the calculated saturation landslide has a moderate to perhaps high probability of occurring on the bluff face above the proposed home. Either of these landslides could deposit earth and debris on the roof of the proposed home. We anticipate that the earth and debris may impact the rooftop at a velocity of 32 feet per second and pile up on the roof of the home with the pile having slopes on the sides and front of about 1½:1 (H:V). The loads on the roof from the potential slide masses will probably require concrete and steel frame building methods.

D. The foundations of the home should be designed against slope failure on the sides of the home since it is assumed that the side yard will not be protected by retaining walls.

2. The foundation along the southeast side of the house should be designed for the estimated scour and erosion boundaries shown on Plate 2 of this report. Foundation piers should penetrate a sufficient distance into the Purisima Formation sandstone to obtain adequate bearing and lateral support in the event that they are exposed to the scour level indicated on Plate 2. We also recommend the construction of a subterranean wall along the southeast side of the house that extends to the depth of scour and the projected erosion line shown on Plate 2. This wall will prevent the erosion and failure of earth materials from beneath the house in the event that the bluff retreats to the depth of projected scour and landward to the projected erosion line.

3. The home should be designed and constructed to account for the designated 100-year flood elevation of 21 feet above sea level based on the National Geodetic Vertical Datum of 1929.

4. The structure should be designed to withstand moderate to severe seismic shaking. Refer to the body of the report for seismic criteria.

5. The project geotechnical engineer should evaluate the liquefaction potential of the beach sand underlying the homesite or develop mitigation measures for liquefaction hazards if

the analysis indicates **a** susceptibility. We anticipate that a deep pier and grade beam foundation will be used that penetrates below the beach sand and talus deposits into the more competent Purisima Formation sands and gravels, not only for liquefaction potential but for potential instability in the talus and beach sand deposits.

6. **A** surface drain system shall be developed for the property which accommodates potential surface flow *off* the steep hillsides above the property. It is best to accommodate this potential flow in a shallow surface depression such as a shallow drain trough because of the possibility that a significant amount of sediment could erode from the hill and fill or block subsurface drain pipes or inlets. All roof and driveway runoff should be conveyed to Beach Drive where there is a storm drain system.

7. All areas where vegetation is stripped during construction should be revegetated with appropriate erosion resistant vegetation prior to the next rainfall season.

8. **This** report should be reviewed in conjunction with the forthcoming soils report by Haro, Kasunich and Associates. The recommendations of the soils engineer should be closely followed.

9. We shall be afforded an opportunity to review the final design plans to ensure that our recommendations have been incorporated. If we are not afforded this opportunity, we will assume no responsibility for the misinterpretation of our recommendations.

In addition to the above recommendations, we suggest that you purchase a copy of Peter Yanev's Peace of Mind in Earthquake Country. This book contains a wealth of information regarding seismic design and precautions the home builder can take to reduce the possibility of loss of life and property during an earthquake. **In** addition, we **suggest** that the occupants of the homes be familiar with emergency procedures in the event of an earthquake.

INVESTIGATION LIMITATIONS

1. This report presents the results of our Engineering Geologic Investigation which addresses the geologic conditions and potential geologic hazards associated with the development of the subject properties with single family homes. This report outlines the general geologic conditions present at the site and presents conceptual recommendations to help mitigate potential **risks** associated with the geologic hazards. This report does not include geotechnical engineering, structural engineering, civil engineering, or architectural evaluations.

2. This written report comprises all of our professionai opinions, conclusions and recommendations. This report supersedes any oral communications concerning our opinions, conclusions and recommendations.

3. The conclusions and recommendation noted in this report are based on probability and in no way imply the site will not possibly be subjected to ground failure or seismic shaking so intense that structures will be severely damaged or destroyed. The report does suggest that building structures at the noted site, in compliance with the recommendations noted in the report, is an. acceptable risk.

4. This report is issued with the understanding that it is the duty and responsibility of the owner, or of his representative or agent, to ensure that the recommendations contained in this report are brought to the attention of the architect and engineer for the project, incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

5. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the **works** of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by an engineering geologist.

Thank you. Please call our office if you have questions

Hans Nielsen
Certified Engineering Geologist 1390

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

21 February 2005

Job No. SCr-1075-G

Dr. Steve Gamer
1777 Dominican Way
Santa Cruz, **CA** 95065

SUBJECT: Review of preliminary plans for a new single family home.

REFERENCE. End of Beach Drive, Rio Del Mar, Santa Cruz County, California, Assessors Parcel Number 043-161-42.

Dear Mr. Gamer:

At the request of your architect, Robert Goldspink, we have reviewed a preliminary set of plans for your new single family home. The plans consist of three sheets - a Site Plan (Sheet A), Floor Plans and Elevations (Sheet B), and Section **A** and Street Elevations (Sheet C) the latter of which show views of the home from Beach Drive. There are four additional sheets consisting of a topographic map and three elevation/profile sections, but there is no data on those sheets pertinent to our review. Sheets **A,** B and C are dated 27 January 2005.

The purpose of our review was to assess whether the preliminary plans adhered to recommendations in a geologic report for this property prepared by the engineering geology firm of Foxx, Nielsen and Associates **(FNA)** in December 2000. The principal of our **firm,** Hans Nielsen, was the chief geologist in that investigation, so we are very familiar with the project and the FNA report. Our **firm** has more recently been involved in planning issues associated with the proposed home, and we are the current geologists of record.

The plans show that the home will be built into the hillside such that the rear wall of the home essentially coincides with the native ground surface along the entire rear of the home. This meets the intent of one recommendation by FNA. The plans show that a retaining wall rising some 9 feet above the roof of the house will be constructed at the rear of the home to accommodate a "basement" room. A triangular support extending from this wall to the roof of the home will be constructed as part of the support for this retaining wall. We understand that the face of the ocean side of this triangular facet will be surfaced with compacted soil and planted in some form of vegetation in order to obscure the face of the facet and improve the visual impact from Beach Drive, the beach and the ocean. The particular details **of** this covering are not provided on the plans but were described to us Mr. Goldspink. Although structural aspects of the home to withstand the load from landslide debris are not included in this preliminary set of plans, review of structural calculations and details is beyond your expertise anyway.

No foundation details are shown on the plans. As recommended by **FNA** and by the project geotechnical engineers (Haro, Kasunich and Associates), the home will be founded on a pier and grade beam type foundation. Specific foundation design details should be developed and addressed by the project foundation/geotechnical engineers.

EXHIBIT 7

In regards to the foundation, FNA had recommended the following:

> *The foregoing argument mandates* **that the** *house* **be foiinded on deep piers that** *extend into* **the** *Purisima Formation* **bedrock.** *Furthermore,* **the piers should extend below** *the* **depth of projected scour and** *be* **designed** *to* **support the house** *and* **remain** *stable* **in the event that they** *are* **exposed** *to* **the scour** *level indicated on* **Plate** *2.* ***We also recommend the construction of a subterranean wall along the*** *southeast* **side of** *the house that extends below* **the depth of scour and the projected erosion line** *shown* **on Plate** *2.* *This* **wall will prevent the erosion and failure of** *earth* **materials from beneath the house in the event that the bluff retreats** *to* **the depth of projected scour and landward io the projected erosion line.**

However in regards to the "subterranean wall along the southeast side of the house", the project geotechnical engineers, Haro Kasunich and Associates, have raised a concern with constructing an impermeable bamer relative to flood concerns. HKA has indicated that FEMA requires that no barriers be constructed in flood zones that could result in an increase in flood elevation, and the property is located in a flood zone relative to the ocean. It is possible that a barrier along the southeast side of the home could affect flood levels in the immediately vicinity of the property. Therefore, we agree with HKA's concern that no solid bamer or wall be built along the southeast side of the home. Since the FNA study revealed a potential for significant erosion of the earth materials along the southeast side of the home by ocean waves, it is possible that the earth materials beneath the home could erode resulting in the foundation piers and the floors portions of the home below the **FEMA** base flood elevation of **21** NGVD should be designed in conformance with the current **FEMA** design standards as presented in the **HKA** geotechnical investigation update and addendum design criteria letter report dated **23** February 2005.

These preliminary plans do not show drainage details, but it is our understanding and the recommendation of **FNA** that downspouts and other site drainage will be conveyed to Beach Drive.

The South Elevation profile on Sheet B shows that the **first** living level of the home will be located one story above street level at elevation **25 5** feet. Although there are no indications of the datum for this elevation on the plans, we assume that this elevation is relative to mean sea level based on the National Geodetic Vertical Datum of 1929 since **we** know that the elevation of Beach Drive at the property is about 13 feet MSL NGVD. Based on this knowledge and assumption, the elevation shown on the section indicates that the first living level will be located one foot or more above the **FEMA** flood elevation of **21** feet along Beach Drive as required by Santa Cruz County.

EXHIBIT I 1

The East Elevation on Sheet **B** shows that the decks on the front or ocean side of the home will be covered by a roof extension This is acceptable since the roof extension will ensure that any landslide debris cascading over the home will not fall onto the **decks** The Second Floor Plan on Sheet B shows that over 50% of the width of a terrace (or deck) on the east or down coast side of the home will be covered by roof The terrace (or deck) **is 9** feet wide, and 5 feet **is** covered by roof In our opinion, the degree of roof covering on this deck provides a reasonable refuge for occupants of the deck in the event that landslide debris cascades over the home and onto the deck

In general, these preliminary plans adhere to the recommendations of **FNA** with exceptions and limitations noted herein, all of which shall be addressed **in** more detailed plans and development requirements as the project progresses.

Sincerely,

Hans Nielsen
C.E.G. 1390

REGISTERED GEOLOGIST
HANS NIELSEN
No. 1390
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

EXHIBIT I

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

12 January 2007

Job No. SCr-1191-G

Mr. Dave Fisher
1420 S. Mills Avenue, Suite M
Lodi, CA 95242

SUBJECT: Review of revised plans for a new single family home

REFERENCE: End of Beach Drive, Rio Del Mar, Santa Cruz County, California, Assessors Parcel Number 043-161-42.

Drainage Plan revised on 22 Dec. 2006

Dear Mr. Fisher:

At the request of your architect, Robert Goldspink, we have reviewed a preliminary set of revised plans for a new single family home. The plans were revised to reduce grading volumes and to remove an exterior deck on the westerly side of the house

We reviewed the following sheets of the new plans: Site Plan {Sheet A), Floor Plans and Elevations (Sheet B), Section and Street Elevations (Sheet C), Geologic Site Map (Sheet H) and a Geologic Cross Section (Sheet J) all prepared by Robert Goldspink, architect and last revised 1 November 2006. Sheets H and J are copies of the map and section produced by our firm. We also reviewed a Grading and Drainage Plan (Sheet E1) and an accompanying Details sheet (Sheet E2) prepared by Robert DeWitt and Associates, Inc. last revised on 22 December 2006. There are additional plan sheets including a landscape plan, floor area calculations and grading volume calculations that did not contain information pertinent to the geologic issues.

The purpose of our review was to assess whether the preliminary plans adhered to recommendations in a geologic report for this property prepared by the engineering geology firm of Foxx, Nielsen and Associates (FNA) in December 2000. The principal of our firm, Hans Nielsen, was the chief geologist in that investigation, so we are very familiar with the project and the FNA report. Our firm has more recently been involved in planning issues associated with the proposed home, and we are the current geologists of record.

The plans show that the home will be built into the hillside such that the rear wall of the home essentially coincides with the native ground surface along the entire rear of the home. This meets the intent of one recommendation by FNA. The bunker style of construction is an effective

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method of mitigating potential landslide hazards at the homesite based on modeling that suggests the potential for a very large landslide on the hillside above the home under worst-case conditions of strong ground shaking from an earthquake combined with excessive saturation of the earth materials.

No foundation details are shown on the plans. As recommended by FNA and by the project geotechnical engineers (Haro, Kasunich and Associates), the home will be founded on a pier and grade beam type foundation Specific foundation design details should be developed and addressed by the project foundation/geotechnical engineers.

We are amending herein the recommendation by Foxx, Nielsen and Associates for a sheet pile wall along the downcoast side of the house. The wall was intended to protect the home from erosion of the bluff because there was an open beach adjacent to the property. A seawall has been constructed on the adjacent property, downcoast side, to protect the driveway/parking area of the adjacent house which is under construction. We are the engineering geologists on the adjacent property, so we have been involved in the development of the seawall and observed the construction We are confident that the seawall mitigates erosion at the toe of the portion of the hillside that would affect the subject property.

Section A on Sheet C shows that the first living level of the home will be located one story above street level at elevation 25.375 feet NGVD. The elevation shown on the section indicates that the first living level will be located one foot or more above the FEMA flood elevation of 21 feet along Beach Drive as required by Santa Cruz county.

The East Elevation on Sheet B shows that an exterior deck on the front or ocean side of the home will be completely covered by a roof extension. This is acceptable since the roof extension will ensure that any landslide debris cascading over the home will not fall onto the deck.

The Geologic Cross Section, Sheet J, has been amended to reflect information obtained from the adjacent downcoast property. An ancient beach-face was found during the investigation of that property as well as on another property several hundred feet to the west in the last couple of years. We believe this ancient beach-face exists at the property, so the section has been amended to reflect this information

The Grading and Drainage Plan, Sheet E1, shows that an existing drainage pipe that extends across the subject property and originates on the upslope property will be replaced so that it is linear from the top to the bottom of the hillside along the westerly side of the property. It currently takes a circuitous route from west to east and down along the easterly property line. It was our recommendation that the pipe be re-aligned, a condition that we feel mitigates additional stress at the current 90° elbow at the top of the dope. Sheet E2 provides details on the anchoring requirements for the pipe. The drainage plan also shows that runoff from this drain pipe and all runoff from the new home will be conveyed to the base of the hillside as recommended in the FNA report. Beyond this, we have not assessed the drainage conditions, particularly on Beach

Drive, since this is beyond our scope of expertise

Nielsen and Associates has reviewed the geologic aspects of these plans only. We are not the geotechnical, civil, or *structural* engineers of record on *this* project. We provide no warranties, either *express* or implied, concerning the dimensions or accuracy of the plans and analysis. This review of the plans is performed solely for the purpose of assisting our client in quality control. Because quality control is subject to interpretation, *our* opinions do no represent warranties, either express or implied, of *the* adequacy *of* the *plans* for their *intended* purpose or for any other purpose whatsoever.

In general, these preliminary plans adhere to the recommendations of FNA with exceptions and limitations noted herein, all *of* which *shall* be *addressed* in more detailed plans and development requirements as the project progresses.

Sincerely,

Hans Nielsen

C.E.G. 1390

REGISTERED GEOLOGIST
HANS NIELSEN
No. 1390
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

copies to: Robert Goldspink
Haro, Kasunich and Assoc.
Hamilton-SwiftLand Use Consultants
Robert Goldspink, architect

3

GEOTECHNICAL INVESTIGATION
for
APN 043-161-42
BEACH DRIVE
Santa Cruz County, California

Prepared for
DR. STEVE GARNER
% Roy Horn
Capitola, California

Prepared by
HARO, KASUNICH AND ASSOCIATES, INC.
Geotechnical & Coastal Engineers
Project No. SC7045
February 2001

EXHIBIT V

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our investigation, the proposed project appears compatible with the site, provided the following recommendations are incorporated into the design and construction of a single family residence at the base of the coastal bluff located on the landward side of Beach Drive in Aptos, California.

The proposed residence will be set into the hillside, with the landward wall and portions of the upcoast and downcoast walls, constructed as retaining walls.

Beach Drive was constructed upon a wave cut platform, infilled with beach sand and soil materials. The proposed residence will span the wave cut platform with the landward portion of the foundation system cutting into undisturbed native soil.

The primary geotechnical considerations at the site include inevitable landsliding and slope failure of the coastal bluff above the proposed residence, embedding the foundation system into undisturbed native soil, potential seismic shaking and mitigating erosion of the downcoast parcel boundary.

A quantitative slope stability analysis was performed to evaluate the probable mechanisms of slope failure, to develop worst case potential debris loads and to determine lateral earth forces for design of the residential structure.

The residence, with a tied back retaining wall and a drilled pier foundation system, will buttress the bottom of slope, forcing any slope failures above the top of the retaining wall system.

The coastal bluff will continue to fail/recede whether the residence is constructed or not.

We recommend the residence be constructed to withstand impact and debris loads from the inevitable future slope failures. It is our opinion a concrete roof supported by a steel frame will be necessary to protect the residence. In order to prevent landslide debris from being deflected onto the adjacent upcoast and downcoast parcels, the roof should be flat.

Due to the transition from infilled wave cut platform to undisturbed, dense native soil within the building envelope and the erosion of a portion of the building envelope projected by the project engineering geologist, it will be necessary to support the structure on a drilled pier foundation system. The piers will penetrate the beach sand and fill materials. Drilled piers should be embedded such that the bases are at least 10 feet horizontally from the surface of the projected erosion boundary. The geologic cross section can be utilized to estimate

the minimum pier depths. The piers should be designed to mitigate hydrodynamic loading and the potential impact from waterborne debris.

During construction of the residence, it will be necessary to temporarily shore the excavated backslope as well as portions of the side yard talus slopes during construction.

If all recommendations in the geologic and geotechnical reports are closely followed and properly implemented during design and construction, and maintained for the lifetime of the proposed residence, then in our opinion, the occupants within the residence should not be subject to risks from geologic hazards beyond the "Ordinary Risks Level," in the "Scale of Acceptable Risks" contained in Appendix C of this report.

The following recommendations should be used as guidelines for preparing project plans and specifications:

Site Grading

1. The geotechnical engineer should be notified at least four (4) working days prior to any *site* clearing or grading so that the work in the field can be coordinated with the grading contractor, and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction.

EXHIBIT K

It is the owner's responsibility to make the necessary arrangements for these required services.

2. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557-78.

3. Areas to be graded should be cleared of all obstructions including loose fill, building foundations, trees not designated to remain, or other unsuitable material. Existing depressions or voids created during site clearing should be backfilled with engineered fill.

4. Cleared areas should then be stripped of organic-laden topsoil. Stripping depth should be from 2 to 4 inches. Actual depth of stripping should be determined in the field

5. Areas to receive engineered fill should be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. Portions of the site may need to be moisture conditioned to achieve a suitable moisture content for compaction. These areas may then be brought to design grade with engineered fill.

EXHIBIT K

6. Engineered fill should be placed in thin lifts not exceeding 8 inches in loose thickness, moisture conditioned, and compacted to at least 90 percent relative compaction. The upper 12 inches of entry driveway pavement and exterior slab subgrades should be compacted to at least 95 percent relative compaction. If engineered fill is utilized upslope of the residence to fill voids between the structure and the hillside, engineered fill requirements will be prepared on a specific basis during the final structural engineering design process.

The aggregate base below pavements should likewise be compacted to at least 95 percent relative compaction.

7. The on-site soils generally appear suitable for use as engineered fill. Materials used for engineered fill should be free of organic material, and contain no rocks or clods greater than 6 inches in diameter, with no more than 15 percent larger than 4 inches.

8. We estimate shrinkage factors of about 20 percent for the on-site materials when used in engineered fills.

9. All permanent cut and fill slopes should be inclined no steeper than 2:1 (horizontal to vertical).

EXHIBIT K

10. Following grading, all exposed slopes should be planted as soon as possible with erosion-resistant vegetation.

11. After the earthwork operations have been completed and the geotechnical engineer has finished his observation of the work, no further earthwork operations shall be performed except with the approval of and under the observation of the geotechnical engineer.

Foundations

12. The residential proposed structure may be supported on a drilled pier foundation system. Drilled piers should penetrate fill materials and beach sand and be embedded into undisturbed native soil.

Drilled Piers

13. Drilled piers should be at least 18 inches in diameter and be embedded at least 8 feet into undisturbed Purisima sandstone. Drilled piers should be embedded such that the bases are at least 10 feet horizontally from the surface of the projected erosion boundary delineated on the Geologic Cross Section.

14. Piers constructed in accordance with the above may be designed for an allowable end bearing capacity of 20 ksf. This value may be increased by one third for short term

EXHIBIT K

seismic and wind loading. The bottom of the excavation should be clear of debris. Due to the loose nature of the talus deposits and groundwater at about +2 feet, NGVD, we anticipate the pier holes will need to be cased, shielded or maintained with weighted drilling mud.

15. For passive lateral resistance, all fill materials, beach sand and the top 1 foot of the cut Purisima Formation should be neglected in pier design. A horizontal setback of 5 feet between the top of the passive zone and the surface of the engineering geologist's projected erosion boundary should also be maintained. From -1 foot to -4 feet below the aforementioned horizontal setback, a lateral passive lateral resistance of 500 pcf (efw) times 2 pier diameters may be used. Below -4 feet, a passive lateral resistance of 600 pcf (efw) times 3 pier diameters may be used for structural design.

16. To resist uplift forces, an allowable skin friction value of 315 psf of pier sidewall may be used within the Purisima formation. The uplift skin friction requires a horizontal setback of at least 5 feet from surface of the projected erosion boundary delineated on the Geologic Cross-Section.

17. During the projected erosion of the soil materials beneath the proposed residence, the drilled piers will be subject to active pressures as the piers are exposed above the projected erosion boundary. An active pressure of 30 pcf acting on two piers diameters

EXHIBIT K

should be utilized to design the buried portion of the pier foundation, above the projected erosion boundary.

Hydrodynamic Loads

18. During the design scour condition, the pier system supporting the proposed residence will be impacted by coastal flooding. Due to the site configuration, it is our opinion the residence will be impacted by surging floodwaters/broken waves, not breaking waves within the building envelope. Using methodology outlined in the FEMA 2000-Coastal Construction Manual and the 1984 - ACES - Shore Protection Manual, we recommend the drilled piers be designed to withstand an equivalent hydrostatic force of 1,340 pounds per foot of pier width, acting at an elevation of 4.5 feet NGVD.

Dynamic Loading -Waterborne Debris

19. During the design scour condition, the pier system supporting the residence may be impacted by waveborne debris during its design life of 100 year. Impact loading is a function of: The size, shape and weight of the object; the flood velocity; the velocity of the object compared to the flood velocity; and the duration of impact.

In addition to hydrodynamic loading, the pier foundation should be design to withstand the impact of an object traveling at 9.0 feet per second, weighing 1,000 pounds with a duration of impact of 0.3 seconds. The Debris Impact Load Formula (11.9) from the 2000 - FEMA -

Coastal Construction Manual be used to calculate the debris impact loading. We also recommend the impact loading be applied at 7.5 feet NGVD along the southeast and southwest perimeters of the proposed structure.

Retainina Walls and Lateral Pressures

20. Retaining walls should be designed to resist both lateral earth pressures and any additional surcharge loads. Cantilever or unrestrained walls up to 30 feet high should be designed to resist an active equivalent fluid pressure of 70 pcf for sloping backfills inclined up to 1:1 (horizontal to vertical). Restrained walls should be designed to resist uniformly applied rectangular wall pressures of 45H psf where H is the height of the wall.

21. Within the active zone, a seismic surcharge of 16H/ft should be utilized in design of the retaining walls. The resultant of the seismic loading should act at 0.6H, where H is the height of the wall.

22. In addition, the walls should be designed for any adjacent live or dead loads which will exert a force on them.

23. Retaining walls that act as interior house walls should be thoroughly waterproofed.

EXHIBIT K

24. For fully drained conditions as delineated above, we recommend that permeable material meeting the State of California Standard Specifications, Section 68-1.025, Class 1, Type A or an approved equivalent be placed behind the wall, with a minimum continuous width of 1 foot and extending the full height of the wall to within 1 foot of the ground surface. A 4 inch diameter perforated drain pipe (with perforations placed downward) should be installed within 4 inches of the bottom of the granular backfill and be discharged to a suitable location. We do not recommend that this or any drain pipe be discharged into dry wells. They should be designed to discharge at adequate points that pick up accumulated surface and subsurface water in lined ditches, closed conduit. catch basins or similar facilities that carry the accumulated water away from the foundation system. A geotextile drainage blanket equivalent to Miradrain 6000 may be substituted for the gravel blanket drain provided the design active pressures are increased by 15 percent.

25. If engineered fill is utilized upslope of the residence to fill voids between the structure and the hillside, engineered fill requirements will be prepared on a specific basis during the final structural engineering design process.

Tieback Anchors

26. For design of the tieback anchors, the helix screw plates or the pressure grouted anchor bulb (bonded zone) should be at least 25 feet from the face of the retaining Wall.

EXHIBIT K

27. Tieback loading is dependent upon anchor tendon strength. The small diameter anchor shafts should be designed for tension in the direction of the axis of the anchor.

28. Non-pressure grouted tieback anchors should have a minimum overburden cover of 20 feet and extend approximately 30 feet back from the face of the bluff. Tiebacks will require an unbonded length of *20* feet.

29. A working shaft bond friction of 1,800 psf between soil and non-pressure grouted anchor diameters may be considered for design of small diameter (4 to 8 inch) tieback anchors where building envelope/property boundaries allow the use of a longer bonded zone tieback.

30. The maximum bond strength/design load should not exceed 100,000 pounds.

31. The tieback anchors may be installed up to a maximum angle of *20* degrees from horizontal.

32. Upon completion of the backfill behind the walls, all tiebacks must be permanently stressed to 85 percent of their design load. In addition, all tiebacks must be tested by the contractor in the presence of the geotechnical engineer to 100 percent of their design load. Any tiebacks that fail during testing must be replaced and re-tested by the contractor.

EXHIBIT K

33. All tiedback anchor systems must be corrosion protected and reviewed by the geotechnical engineer before the contractor purchases and installs them.

Slabs-on-Grade

34. Parking and structural concrete slabs/mats below the BFE should be supported by the drilled pier system.

35. These slabs may be expected to be undermined during the 100 year design life of the project.

36. Exterior concrete slabs-on-grade should be founded at least 12 inches of engineered fill (redensified site soils) compacted to at least 95 percent relative compaction. Reinforcing should be provided in accordance with the anticipated use and loading of the slab. The reinforcement should not be tied to the building foundations. These exterior slabs can be expected to undermined and then replaced during the design life of the project.

Landslide Debris - Dead Loads

37. The December 2000 Geology Report states landslide debris may pile up on the flat roof with the pile having slopes on the sides and front of about 1.5:1 (horizontal to vertical). If the "worst case" slide occurs before the slope has a chance to recede due to shallow

EXHIBIT K

sliding, we estimate the soil pile in the center of the structure would be a maximum height of 21 feet.

38. We estimate a total of 500 yd^3 will come to rest on a 35 foot deep by 40 foot wide flat roof. A maximum load of 2,310 psf may be anticipated at the back of the roof with zero dead loading along the roof sides and front edge.

39. The future side yards may only be 10 feet wide (including neighbor's sideyard setback). This narrow space will fill up with potential slide material which comes to rest at a 1.5:1 gradient. This failure condition may require the sidewalls of the house to act as retaining structures right after failure and before clean up. We recommend designing the sidewalls and windows to accommodate static active earth pressures of 30 pcf for a non-restrained condition or 19.5 H psf/ft if the floor and roof between the sidewalls act to restrain the walls.

Debris Flow-Impact Force Criteria

40. Debris flows and slump slides on the slope above the proposed residence will impact the roof of the structure. It is our opinion the roof will need to be constructed of reinforced concrete and designed to withstand the temporary, short term impact loads. To prevent deflection of landslide debris onto the adjacent sideyard parcels, the roof should be flat. Based upon recommendations from the Geology Report, an initial impact velocity

EXHIBIT K

of 32 fps second was used. The existing slope above the proposed residence is about 1:1 (horizontal to vertical) in slope gradient. Our slope stability analysis indicates a long term slope gradient of about 2:1 (horizontal to vertical) at a Factor of Safety = **1.2.** The highest impact pressure results when the debris strikes the roof and stops, transferring all of its kinetic energy to the roof. After the initial impact the debris material will flow over the front and sides of the roof. The flowing mass would then impart both a vertical and horizontal load to the structure.

39. For design purposes based upon a level, flat roof, we estimate the back (landward) 20 foot width of roof/structural **fill,** will be subjected to the initial slide mass impact force. For design purposes a normal (vertical) impact load of 1175 psf should be considered for a 45 foot wide structure. Utilizing a coefficient of friction, between formed concrete and the debris mass of 0.35 we recommend a uniform horizontal force of 410 psf across the back 20 foot width of roof/structural **fill.**

40. Beyond the 20 foot wide impact zone the debris material will spread itself over the roof with material falling to the front and sides of the residence. Dynamic debris forces may be neglected beyond the impact zone with dead loads only being used for the highest elevation roof design. If decks or lower story roofs project out from the uppermost roof system, dynamic loads will need to be evaluated for specific final design configurations.

EXHIBIT K

Site Drainage

41. An erosion control and drainage plan should be prepared for the project. The plan should be reviewed and approved by the project geotechnical engineer and engineering geologist. Because of the potential slope instability at the site, erosion control and drainage systems will need to be maintained, repaired and replaced in the future after instability occurs.

42. We recommend a concrete v-ditch be constructed at the top of the uppermost retaining wall that will collect surface water which flows downslope as a result of direct rainfall or surface water spilling onto the top of the bluff from above.

Plan Review. Construction Observation and Testing

43. Our firm should be provided the opportunity for a general review of the final project plans prior to construction so that our geotechnical recommendations may be properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. The recommendations presented in this report require our review of final plans and specifications prior to construction and upon our observation and, where necessary, testing of the earthwork and foundation

EXHIBIT K

excavations. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.

EXHIBIT K

Project No. SC7045.05
23 February 2005

DR. STEVEN GARNER
1777 Dominican Way
Santa Cruz, California 95065

Subject: Geotechnical Investigation Update and Addendum Design Criteria

Reference: Proposed Blufftoe Residence
APN 043-161-42
Beach Drive
Santa Cruz County, California

Dear Dr. Garner:

This letter report is written to update our 20 February 2001 Geotechnical Investigation for the proposed Garner family residence at the referenced parcel and to present addendum geotechnical design criteria.

As previously outlined, the primary geotechnical considerations at the site include the inevitable landsliding or slope failure of the coastal bluff above the proposed residence, embedding the foundation system into undisturbed Purisima sandstone bedrock, potential seismic shaking and mitigating erosion of the downcoast parcel boundary. The proposed structure is required to be designed and constructed to prevent lateral movement from simultaneous wind and water loads in addition to waterborne, debris impact loading along the southeast and southwest foundation perimeters.

We recommend the residence be constructed to withstand impact and debris loads from the inevitable slope failures. **It** is our opinion a concrete roof supported by a steel frame will be necessary to protect the residence. The roof system should be flat to prevent the deflection of landslide debris onto the adjacent side yard parcels.

Due to the transition from infilled wave cut platform to undisturbed, Purisima sandstone bedrock within the building envelope, and the erosion of a portion of the building envelope projected by the project engineering geologist, it will be necessary to support the structure by a pier and grade beam foundation system. The piers should penetrate the beach sand and talus deposits. Drilled piers should be embedded such that the bases are at least 10 feet horizontally from the surface of the projected erosion boundary. The November 2000 geologic cross section of the site by Foxx, Nielsen & Associates can be used to estimate the minimum pier depths. The drilled piers will penetrate any saturated, loose beach sands within the wave cut platform, mitigating the liquefaction potential at the site.

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It is our opinion, the proposed development will have an ordinary level of risk from geologic hazards now existing at the site, (i.e. geologic hazards having the potential to cause significant personal injury or structural damage), after the recommended mitigation measures are implemented.

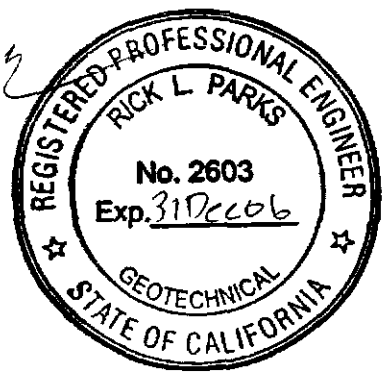
Attached to this letter is a compilation of geotechnical design criteria to be used for the design and construction of the proposed residence. The design criteria includes a portion of the 2001 design criteria presented by our firm, updated debris impact loading recommendations and current FEMA recommendations for the understory garage/basement area floor system.

If you have any questions concerning the data or conclusions presented in this letter report. please call our office.

Very truly yours,

HARO, KASUNICH & ASSOCIATES, INC.

Rick L. Parks
G.E. 2603



RLP/dk

Copies: 1 to Addressee
4 to Robert Goldspink, Architect
1 to Donald Urfer, Structural Engineer

EXHIBIT

Project No. SC7045.05
18 February 2005

ADDENDUM GEOTECHNICAL DESIGN CRITERIA

The foundation system for the proposed Garner family residence should consist of a drilled pier and grade beam system, with the drilled piers penetrating beach sand, fill materials and talus deposits along the seaward portion of the structure and below the "projected erosion boundary" provided by Foxx, Nielsen and Associates. The proposed structure is required to be designed and constructed to prevent lateral movement from simultaneous wind and dynamic water loads; in addition, waterborne debris impact loading along the southeast (downcoast) and southwest (seaward) foundation perimeter.

The residential structure is to be supported by drilled piers embedded into undisturbed Purisima sandstone bedrock. The Purisima Formation is described by geologic maps (Brabb, 1989) as a siltstone/sandstone. The Purisima formation along the base of the Beach Drive bluff consists of very dense, silty sand with very little cementation. Pier drilling below the average groundwater elevation, about +2 feet NGVD, is problematic. At a minimum, we anticipate full length casing will be needed to maintain pier excavation integrity. Weighted drilling fluid may also need to be used with the casing to mitigate the potential for saturated sands flowing into the casing as the auger is withdrawn. We have recently observed the use of a small vibratory hammer in conjunction with a conventional drill rig to drill foundation piers at two Beach Drive residences, the Royon and Lane residences. The excavator mounted vibratory hammer was used to effectively seat the casing into the Purisima formation in order to minimize heaving of the bottom.

The residential structure will be elevated above the FEMA Base Flood Elevation, 21 feet NGVD. The driveway and the seaward portion of the understory for the proposed residence will be situated upon about 16 feet of beach sand, talus deposits, and roadway fill. During a severe seismic event the soil materials within the wave cut platform underlying the aforementioned area may settle due to either dry seismic consolidation and/or liquefaction. The vertical bearing of the proposed residence will not be effected by either liquefaction or lateral spreading provided the piers are designed per our geotechnical recommendations. During severe seismic shaking, we do expect the driveway and possibly the understory parking/storage areas to be damaged and need to be repaired or replaced. To minimize settlement and maintenance from normal usage, we recommend the driveway and understory parking areas plus 3 feet horizontally in all directions on property be redensified to a depth of 3 feet to at least 90 percent relative compaction. The top 12 inches of the redensified soils should be compacted to at least 95 percent relative compaction. As per FEMA guidelines the understory slabs on grade will be displaced during a design storm event, allowing flood waters to flow through the foundation systems with minimal obstruction and wave deflection. The driveway and understory garage/storage areas at the residence are expected to be undermined, lost and replaced during the design life of the structure.

We recommend the residence be constructed to withstand impact and debris loads from the inevitable future slope failures. It is our opinion concrete roofs supported by a steel and concrete frames will be necessary to protect the residence. In order to prevent landslide debris from being deflected onto the adjacent upcoast and downcoast parcels, the roofs should be flat.

Due to the transition from infilled wave cut platform to undisturbed, dense native soil Purisirna sandstone at the seaward perimeter of the building envelope, and to comply with the FEMA requirement the residence be supported by an open foundation system, it will be necessary to support the structure on a drilled pier foundation system. The seaward piers will penetrate the beach sand and fill materials. Drilled piers should be embedded such that the bases are at least 10 feet horizontally from the surface of the projected erosion boundary. The November 2000 geologic cross section can be utilized to estimate the minimum pier depths.

During construction of the residence, it will be necessary to temporarily shore the excavated backslope as well as portions of the side yard talus slopes during construction. The talus deposits above the residence can be expected to slough off the slope during construction. We will work with the project earthwork contractor and engineering geologist during construction to evaluate the upslope talus deposit wedge and remove the loose soils if necessary prior to excavation of the building envelope.

If all recommendations in the geologic and geotechnical reports are closely followed and properly implemented during design and construction, and maintained for the lifetime *of* the proposed residence, then in our opinion, the occupants within the residence should not be subject to risks from geologic hazards beyond the "Ordinary Risks Level," in the "Scale *of* Acceptable Risks" contained in the Appendix of our 2001 report.

The following recommendations should be used as guidelines for preparing project plans and specifications:

Site Grading

1. The geotechnical engineer should be notified at least four **(4)** working days prior to any site clearing or grading so that the work in the field can be coordinated with the grading contractor, and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557.

3. Areas to be graded should be cleared of all obstructions including loose fill, building foundations, trees not designated to remain, or other unsuitable material. Existing depressions or voids created during site clearing should be backfilled with engineered fill.

4. Cleared areas should then be stripped of organic-laden topsoil. Stripping depth should be from 2 to 4 inches. Actual depth of stripping should be determined in the field by the geotechnical engineer. Strippings should be wasted off-site or stockpiled for use in landscaped areas if desired.

5. Areas to receive engineered fill should be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. Portions of the site may need to be moisture conditioned to achieve a suitable moisture content for compaction. These areas may then be brought to design grade with engineered fill.

6. Engineered fill should be placed in thin lifts not exceeding 8 inches in loose thickness, moisture conditioned, and compacted to at least 90 percent relative compaction. The driveway and understory parking areas plus 3 feet horizontally in all on property directions should be supported by at least 3 feet of engineered fill compacted to at least 90 percent relative compaction. The upper 12 inches of the driveway as well as understory and exterior slab subgrades should be compacted to at least 95 percent relative compaction. If engineered fill is utilized upslope of the residences to fill voids between the

structures and the hillside, engineered fill requirements will be prepared on a specific basis during the final structural engineering design process.

The aggregate base below asphaltic pavement sections if utilized should likewise be compacted to at least 95 percent relative compaction.

7. The on-site soils generally appear suitable for use as engineered fill. Materials used for engineered fill should be free of organic material, and contain no rocks or clods greater than 6 inches in diameter, with no more than 15 percent larger than 4 inches.

8. We estimate shrinkage factors of about 20 percent for the on-site materials when used in engineered fills.

9. We recommend a maximum vertical height of five (5) feet for temporary cut slopes. We recommend top down construction for the bluff face retaining wall system.

10. Following grading, all exposed slopes should be planted as soon as possible with erosion-resistant vegetation.

EXHIBIT 1.

11. After the earthwork operations have been completed and the geotechnical engineer has finished his observation of the work, no further earthwork operations shall be performed except with the approval of and under the observation of the geotechnical engineer.

Foundations

12. The proposed residential structure should be supported on a drilled pier foundation system. Drilled piers should penetrate talus deposits and beach sand and be embedded into undisturbed Purisima sandstone.

Drilled Piers

13. Drilled piers should be at least 18 inches in diameter and be embedded at least 8 feet into undisturbed Purisima sandstone. Drilled piers should be embedded such that the bases are at least 10 feet horizontally from the surface of the projected erosion boundary as delineated on the November 2000 Geologic Cross Section.

14. Piers constructed in accordance with the above may be designed for an allowable end bearing capacity of 20 ksf for a minimum piers spacing of three (3) pier diameters or greater. This value may be increased by one third for short term seismic and wind loading. The bottom of the excavation should be clear of debris. Due to the loose nature of the talus deposits and groundwater at about +2 feet, NGVD, we anticipate the pier holes will need to be cased, shielded or maintained with weighted drilling mud.

15. For passive lateral resistance, all fill materials, beach sand and the top 1 foot of the cut Purisima Formation should be neglected in pier design. A horizontal setback of 5 feet between the top of the passive zone and the surface of the engineering geologist's projected erosion boundary should also be maintained. From -1 foot to -4 feet below the aforementioned horizontal setback, a lateral passive lateral resistance of 500 pcf (efw) times 2 pier diameters may be used. Below -4 feet, a passive lateral resistance of 600 pcf (efw) times 3 pier diameters may be used for structural design.

16. To resist uplift forces, an allowable skin friction value of 315 psf of pier sidewall may be used within the Purisima formation. The uplift skin friction requires a horizontal setback of at least 5 feet from the face of the projected erosion boundary delineated on the Geologic Cross Section.

17. During the projected erosion of the soil materials beneath the proposed residence, the drilled piers will be subject to active pressures as the piers are exposed above the projected erosion boundary. An active pressure of 30 pcf acting on two pier diameters should be utilized to design the buried portion of the pier foundation, above the projected erosion boundary.

Hydrodynamic Loads

18. During the design scour condition, the pier system supporting the proposed residence will be impacted by coastal flooding. Due *to* the site configuration, it is our

opinion the residence will be impacted by surging floodwaters/broken waves, not breaking waves within the building envelope. Using methodology outlined in the FEMA 2000-Coastal Construction Manual, we recommend the drilled piers along the southeast (downcoast) and southwest (seaward) perimeters of the proposed structure be designed to withstand an equivalent hydrostatic force of 1,340 pounds per foot of pier width, acting at an elevation of **4.5** feet NGVD.

Dynamic Loading – Waterborne Debris

19. During the design scour condition, the pier system supporting the residence may be impacted by waveborne debris during its design life of 100 years. Impact loading is a function of: The size, shape and weight of the object; the flood velocity; the velocity of the object compared to the flood velocity; and the duration of impact.

In addition to hydrodynamic loading, the pier foundation should be designed to withstand the impact of an object traveling at 9.0 feet per second, weighing 1,000 pounds with a duration of impact of 0.3 seconds. The Debris Impact Load Formula (11.9) from the 2000 – FEMA – Coastal Construction Manual be used to calculate the debris impact loading. We also recommend the impact loading be applied at 7.5 feet NGVD along the southeast and southwest perimeters of the proposed structure.

EXHIBIT 1

Retaining Walls and Lateral Pressures

20. Retaining walls should be designed to resist both lateral earth pressures and any additional surcharge loads. Cantilever or unrestrained walls up to 30 feet high should be designed to resist an active equivalent fluid pressure of 70 pcf for sloping backfills inclined up to 1:1 (horizontal to vertical). Restrained walls should be designed to resist uniformly applied rectangular wall pressures of 45H psf where H is the height of the active zone. The configuration of the landward portion of the residence can have a dramatic effect on active and seismic surcharge loading. A stepped floor system at 1:1 (H:V) or less steep up the hillside will significantly reduce surcharge loading from above structure levels as well as break up the total height of the active zone into smaller components versus a 30+ foot height active zone. We will work with the project architect and structural engineer to evaluate specific design scenarios in order to produce an efficient design.

21. Within the active zone, a seismic surcharge of 16H/ft should be utilized in design of the retaining walls. The resultant of the seismic loading should act at 0.6H, where H is the height of the active zone.

22. In addition, the walls should be designed for any adjacent live or dead loads which will exert a force on them.

23. Retaining walls that act as interior house walls should be thoroughly waterproofed.

EXHIBIT

24. For fully drained conditions as delineated above, we recommend a geotextile drainage blanket equivalent to Miradrain 6000 be used.

25. If engineered **fill is** utilized upslope of the residence **to fill** voids between the structure and the hillside, engineered fill requirements will be prepared on a specific basis during the final structural engineering design process.

Tieback Anchors

26. For design of the tieback anchors, the pressure grouted anchor bulb (bonded zone) should be at least *20* feet from the face of the retaining wall.

27. Tieback loading is dependent upon anchor tendon strength. The small diameter anchor shafts should be designed for tension in the direction of the axis of the anchor.

28. Grouted tieback anchors should have a minimum overburden cover of at least 25 feet.

29. A working shaft bond friction of 2,500 psf between soil and non-pressure grouted anchor diameters may be considered for design of small diameter **(4** to 8 inch) tieback anchors where building envelopelproperty boundaries allow the use of a longer bonded zone tieback.

30. The maximum bond strength/design load should not exceed 100,000 pounds.

31. The tieback anchors may be installed up to a maximum angle of 20 degrees from horizontal.

32. Upon completion of the backfill behind the walls, all tiebacks should permanently stressed to 60 percent of their design load or as directed by the project structural engineer. In addition, all tiebacks must be tested by the contractor in the presence of the geotechnical engineer to 100 percent of their design load in accordance to criteria outlined by the current edition of the PTI Recommendations for Pre-stressed Rock and Soil Anchors. Any tiebacks that fail during testing must be replaced and re-tested by the contractor. Installation of a post grouting tube will allow a failed anchor to be re-grouted without anchor replacement.

33. All tiedback anchor systems must be corrosion protected and reviewed by the geotechnical engineer before the contractor purchases and installs them.

Debris Impact Loads

34. Based upon our engineering analysis for this project and adjacent Beach Drive parcels we have developed the following debris impact loads and impact zones corresponding to three types of probable slope failures as follows: arcuate failure blufftop about 5 feet thick at the base and encompassing about 15 feet of the blufftop including retaining walls and/or hardscape; planar failure or translational slide along the bluff face as

a result of seismic shaking, on the order of 20 feet thick; and planar failure of the blufface due to saturation, about 10 feet in thickness.

35. The table below should be used by the project structural engineer to develop and design a structural system to mitigate potential debris impact loads. We will also work with the project structural engineer to include any upslope hardscape, retaining wall components and/or concrete debris, in the debris load force field as warranted.

Landslide Mode	Arcuate Blufftop Failure	**20'** Thick Planar Failure Seismic	10' Thick Planar Failure Saturated
Drop Height (ft)	48	15	NA
Velocity at Impact **(fps)**	**32**	**20**	**32**
"Rebound" Velocity **(fps)**	**5**	**5**	**0**
Velocity post Impact (fps)	**22**	**12**	**20**
Area of Soil at Impact Length X Width $(ft)_1$	**10 x** width	**20 x** width	**10 x** width
Coverage Area after Soil Stops Moving $(ft^2)_1$	**30 x** width	**30 x** width	**>50 x** width
Peak Force in X-Direction at Impact $(psf)_2$	**2250**	**765**	**880**
Peak Force in Y-Direction at Impact $(psf)_2$	1105	**375**	435

EXHIBIT 1

1. Length is distance from slope towards the ocean. Width is width of structure.
2. Peak Force should be applied to Area of Soil at Impact.
3. Sources: Debris - Flow Hazards Mitigation
   Chen - 1997: and
   Fluid Mechanics and Hydraulics
   Giles - 1962

Landslide Debris - Dead Loads

36. Landslide debris may pile up on the flat roof with the pile having slopes on the sides and front of about 1.5:1 (horizontal to vertical).

37. We recommend designing the sidewalls and windows below 13.5 feet above finish grade on the upcoast and downcoast sides of the proposed residence to accommodate static active earth pressures of 30 pcf for a non-restrained condition or 19.5 H psf/ft if the floor and roof between the sidewalls act to restrain the walls. During the design process, we will work with the project design team to specify sidewall debris loading relative to a working design.

Lateral Spreading Active Force

38. The seaward perimeter (only) foundation systems of the proposed residence should be designed to withstand an active lateral force of 30 pcf (efw) to accommodate any future lateral spreading of the beach sediments above the historic sour line. The potential lateral spreading will extend from the historic scour line at 0 feet NGVD up to an elevation of +6 feet NGVD.

EXHIBIT

Driveway and Understory Slabs on Grade

39. As outlined in the 2000 **FEMA** Coastal Construction Manual, pages **12-154** to **12-156** and included with this report, driveway and understory slabs on grade may be facilitated by use of a unreinforced slab, supported directly on the soil present at the site.

40. It is our opinion paving stones or asphaltic pavement may be used as an alternative to the unreinforced frangible concrete slab on grade outlined by **FEMA.**

41. For design of the driveway and understory areas, we recommend the proposed pavement section, unreinforced frangible concrete slab or paving blocks be supported by at least 3 feet of redensified soils compacted to at least 90 percent relative compaction. The top *12* inches of the redensified soils should be compacted to at least 95 percent relative compaction. As per **FEMA** guidelines, the understory slabs on grade will be displaced during a design storm event, allowing flood waters to flow through the foundation system with minimal obstruction and wave deflection. The driveway and understory slabs on grade are expected to be undermined, lost and replaced during the design life of the structure.

Site Drainage

42. An erosion control and drainage plan should be prepared for the project. The plan should be reviewed and approved by the project geotechnical engineer and engineering geologist. Because of the potential slope instability at the site, erosion control and

drainage systems will need to be maintained, repaired and replaced in the future after instability occurs.

43. We recommend a concrete v-ditch be constructed at the top of the uppermost retaining walls that will collect surface water which flows downslope as a result of direct rainfall or surface water spilling onto the top of the bluff from above.

Plan Review, Construction Observation and Testing

44. Our firm should be provided the opportunity for a general review of the final project plans prior to construction so that our geotechnical recommendations may be properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility **for** misinterpretation of cur recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. The recommendations presented in this report require our review of final plans and specifications prior to construction and upon our observation and, where necessary, testing of the earthwork and foundation excavations. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SC7045.05
3 March 2005

DR. STEVEN GARNER
1777 Dominican Way
Santa Cruz, California 95065

Subject: Geotechnical Review of Architectural Plans

Reference: Proposed Garner Family Residence
APN 043-161-42
Beach Drive
Santa Cruz County, California

Dear Dr. Garner

This letter is written to outline our review of the geotechnical aspects of the preliminary architectural plans showing the proposed layout of Garner family residence at the referenced parcel. The preliminary project plans were prepared by Robert J. Goldspink Architect and are dated 27 January 2005. Our Geotechnical Investigation of the referenced parcel is dated 20 February 2001. We recently prepared the Geotechnical Investiaation Update and Addendum Design Criteria report dated 23 February 2005 for the proposed Garner family residence.

The preliminary architectural plans consist of three sheets, specifically:

1) Sheet A – Site Pian showing proposed building footprint in relation to proposed adjacent residences;

2) Sheet B – Floor Plans & Elevation outlining a flat roof system, deck overhangs and the lowest living floor being above the FEMA Base Flood Elevation of **21** feet NGVD;

3) Sheet 3 – Section & Street Elevation showing the structure stepped into the blufftoe.

It is our opinion the aforementioned conceptual plan sheets were prepared in general conformance to our geotechnical recommendations.

The coastal bluff at the referenced parcel is about 100 feet high. The proposed residence will buttress or retain the bottom 40 feet of the bluff. The proposed retaining wall system will substantially reduce the total volume of bluff face susceptible to slope failure and decrease the amount of slope debris available to flow onto Beach Drive.

EXHIBIT M

We will work with the project structural engineer and other members of the design team to incorporate our geotechnical recommendations into the project design in order to construct a residence capable of withstanding the design landslide impact forces as well as the predicted FEMA coastal flooding.

If you have any questions regarding the geotechnical aspects of this project, please call our office.

Very truly yours,

HARO, KASUNICH AND ASSOCIATES, INC.

Rick L. Parks
G.E. 2603

RLP/sq

Copies: 1 to Addressee
4 to Robert J. Goldspink, Architect
1 to Hans Nielsen

EXHIBIT M

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SC7045
13 November 2006

DAVE FISHER
1420 South Mills Avenue, Suite **M**
Lodi. California 95242

Subject: Geotechnical Comments Regarding
Percolation of Storm Runoff

Reference: Proposed Blufftoe Residence
(Formerly Garner Project)
APN 043-161-42
Beach Drive
Santa Cruz County, California

Dear Mr. Fisher:

This letter is written to present our opinion and supporting documentation regarding the use of collected storm water retention or percolation at the referenced project. The proposed residence will be located at the toe of the coastal bluff and at the back of the historic beach.

Prior to the development of Beach Drive and construction of the quarrystone revetment, the ocean would episodically scour the beach, remove the accumulated talus and beach deposits, and depending upon the duration of the storm, cut into the toe of the bluff. The driveway and seaward perimeter of the proposed blufftoe residence will be situated atop this infilled wave cut notch.

We have drilled a number of exploratory soil borings along this area of Beach Drive and included with this letter soil boring logs drilled at the base of the referenced parcel, HKA job #SC7045 and the adjacent upcoast parcel, HKA job #SC6046.

The attached documentation includes:

- Field exploration and sampling methodology;
- Boring Site Plan for referenced parcel;
- Borings 3 and 4 from referenced parcel;
- Geologic Cross-section for referenced parcel based upon project Geology Investigation by Hans Nielsen, C.E.G.;
- Boring Site Plan for adjacent upcoast parcel; and
- Borings 1 and **2** from adjacent upcoast parcel.

EXHIBIT N

116 First Lake Avenue • Watsonville, California 95076 • (831) 722-4175 • Fax (831) 722-3202

As shown on the Geologic Cross-section and delineated in the attached boring logs, the infilled wave cut notch and the overlying blufftoe consist of loose to medium dense sandy soils to about 16 feet below existing road grade.

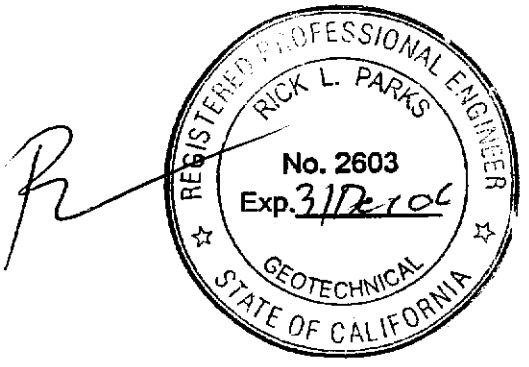
It is our opinion the concentration and percolation of collected site runoff could cause consolidation or settlement of the non-engineered sandy soils over time. Redensification of the underlying subgrade will improve site soil density, but the percolation pit area paving section will need to be releveled or repaired as the sandy soils settle due to long term saturation or strong seismic shaking. The releveling of pavers or repairheplacement of pervious pavement will be straight forward and easy to accomplish.

If you have any questions regarding this letter, please call our office.

Very truly yours,

HARO, KASUNICH AND ASSOCIATES, INC.

Rick L. Parks
G.E. 2603



RLP/dk

Attachment

Copies: 1 to Addressee
1 to Robert Goldspink, Architect
3 to Robert DeWitt, P.E.
1 to Deidre Hamilton, Project Planner

EXHIBIT N

The general locations and descriptions referred to in this report are based on site reconnaissances by the Geotechnical Engineers and a review of the Engineering Geologic Investiaation, dated **12** December 2000, prepared for the referenced property.

Field Exploration

Subsurface conditions were investigated on 28 March 2000 and 14 April 2000. The approximate location **of** the test borings are indicated on the Boring Site Plan, Figure 2. The borings were advanced with either mud rotary equipment mounted on a truck or a limited access Minute Man drill rig working on carved hillside platforms.

Representative soil samples were obtained from the exploratory borings at selected depths, or at major strata changes. These samples were recovered using the 3.0 inch O.D. Modified California Sampler (L) or the Standard Terzaghi Sampler (T).

The penetration resistance blow counts noted on the boring logs were obtained as the sampler was dynamically driven into the in situ soil. The process was performed by either dropping a 140-pound hammer or hand throwing a 70-pound hammer a 30-inch free fall distance and driving the sampler 6 to 18 inches and recording the number of blows for each 6-inch penetration interval. The blows recorded on the boring logs represent the accumulated number of blows that were required to drive the last 12 inches. The recorded

NOV 06 - R/

blow counts accumulated by hand throwing the 70-pound hammer may be halved to approximate Standard Penetration Testing blow counts (N-value at 350 foot-pounds)

The soils encountered in the borings were continuously logged in the field and described in accordance with the Unified Soil Classification System (ASTM D2486). The Logs of Test Borings are included in Appendix A of this report. The Boring Logs denote subsurface conditions at the locations and time observed, and it is not warranted that they are representative of subsurface conditions at other locations or times.

Laboratory Testing

The laboratory testing program was directed toward determining pertinent engineering and index *soil* properties.

The natural moisture contents and dry densities were determined on selected samples and are recorded on the boring logs at the appropriate depths. Since water has a significant influence on soil, the natural moisture content provides a rough indicator of the soil's compressibility, strength, and potential expansion characteristics.

Gradation or sieve testing was also performed on selected samples to facilitate soil classification.

NOV 06 - #2 EXHIBIT

Project No. SC7045
28 December 2006

RECEIVED

JAN 0 3 2006

ROBERT J. GOLDSPINK
Architect

MR. DAVE FISHER
1420 South Mills Avenue, Suite M
Lodi, California 95242

Subject: Geotechnical Review of Architectural and Civil Engineering Plans

Reference: Proposed Blufftoe Residence
APN 043-161-42
Beach Drive
Santa Cruz County, California

Dear Dr. Garner:

This letter outlines our review of the geotechnical aspects of the architectural and civil engineering plans for the proposed bluffloe residence at the referenced parcel. The architectural plans were prepared by Robert J. Goldspink, Architect and are dated 1 November 2006. The Grading and Drainage Improvement Plans were prepared by Robert L. DeWitt & Associates and are dated 22 December 2006.

Specifically we reviewed the following plan sheets:

1) Sheet A-Site Plan;
2) Sheet B-Elevations;
3) Sheet C-Section;
4) Sheet D-Landscape Plan;
5) Sheet K-Section;
6) Sheet N- Roof Plan;
7) Sheet El-Grading & Drainage Improvement Plan with erosion control notes; and
8) Sheet E2-Details.

It is our opinion the aforementioned plan sheets have been prepared in general conformance to our geotechnical recommendations.

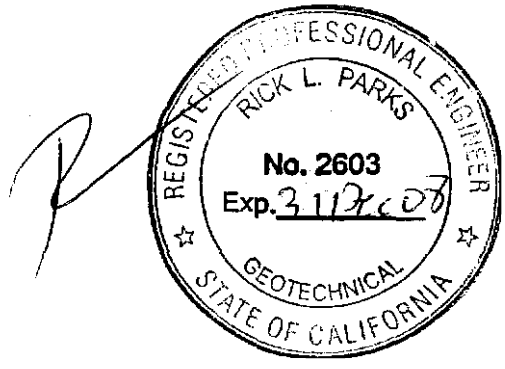
116 EAST LAKE AVENUE • WATSONVILLE, CALIFORNIA 95076 • (831)722-4175 • FAX (831)722-3202

If you have any questions regarding this letter, please call our office.

Very truly yours,

HARO, KASUNICH AND ASSOCIATES, INC.

Rick L. Parks
G.E. 2603



RLP/dk

Copies: 1 to Addressee
1 to Hans Nielsen
1 to Robert DeWitt
3 to Robert Goldspink

EXHIBIT U

-85-

Perspective View A ***showing proposed exterior colors for Garner Residence***
[from Viewpoint S19]

Garner Residence

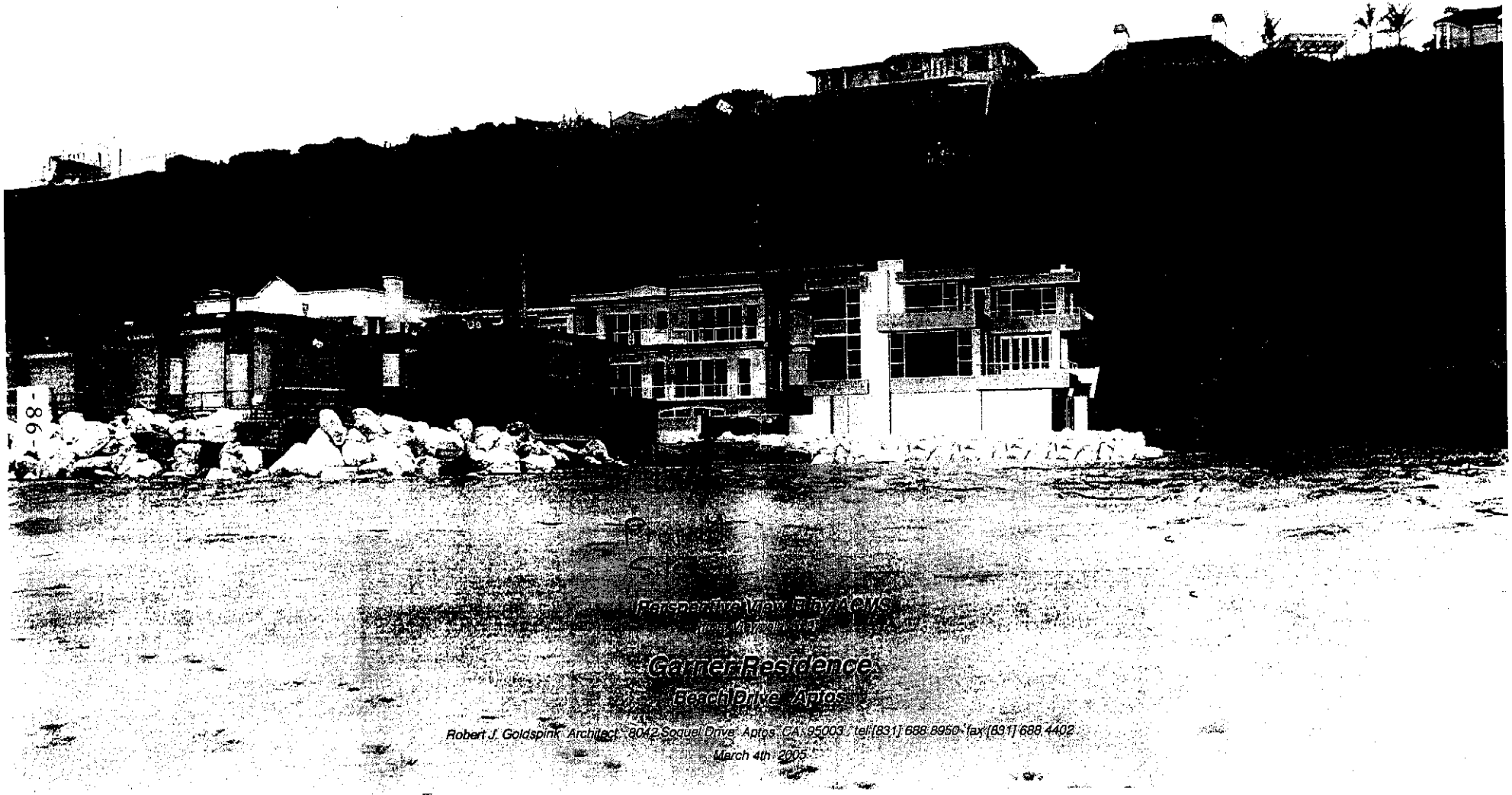
Beach Drive Aptos

Robert J. Goldspink Architect 8042 Soquel Drive Aptos CA 95003 tel [831] 688 8950 fax [831] 688 4402

March 4th 2005

Refer to Proposed Exterior Materials Schedule and Color Board

Computer generated perspective drawings prepared by Mike Grisez, ACMS
1847 Ucker Road, Royal Oaks, CA 95076 tel 423 5902



Perspective View By AGMS

Garner Residence

Beach Drive, Aptos

Robert J. Goldspink, Architect, 8042 Soquel Drive, Aptos, CA, 95003, tel:(831) 688 8950, fax:(831) 688 4402

March 4th, 2005

-86-

EXHIBIT D

COUNTY OF SANTA CRUZ | Planning Department

MEMORANDUM

Application No: 05-0200

Date: May 23,2005

To: David Keyon, Project Planner

From: Larry Kasparowitz, Urban Designer

Re: Design Review for a new residence on Beach Drive, Aptos

GENERAL PLAN/ZONING CODE ISSUES

Design Review Authority

13.20.130 The Coastal Zone Design Criteria are applicable to any development requiring a Coastal Zone Approval.

Desian Review Standards

13.20.130 Design criteria for coastal zone developments

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
Visual Compatibility			
All new development shall be sited, designed and landscaped to be visually compatible and integrated with the character of surrounding neighborhoods or areas	✔		
Minimum Site Disturbance			
Grading, earth moving, and removal of major vegetation shall be minimized.	✔		
Developers shall be encouraged to maintain all mature trees over 6 inches in diameter except where circumstances require their removal, such as obstruction of the building site, dead or diseased trees, or nuisance species.			N/A
Special landscape features (rock outcroppings, prominent natural landforms, tree groupings) shall be retained.			N/A

EXHIBIT C

Ridgeline Development			
Structures located near ridges shall be sited and designed not to project above the ridgeline or tree canopy at			NIA
Land divisions which would create parcels whose only building site would be exposed on a ridgetop shall not be permitted			NIA
Landscaping			
New or replacement vegetation shall be compatible with surrounding vegetation and shall be suitable to the climate, soil, and ecological characteristics of the area			NIA
Rural Scenic Resources			
Location of development			
Development shall be located, if possible, on parts of the site not visible or least visible from the public view.			N/A
Development shall not block views of the shoreline from scenic road turnouts, rest stops or vista points			NIA
Site Planning			
Development shall be sited and designed to fit the physical setting carefully so that its presence is subordinate to the natural character of the site, maintaining the natural features (streams, major drainage, mature trees, dominant vegetative communities)			NIA
Screening and landscaping suitable to viewshed			NIA
Building design			
Structures shall be designed to fit the topography of the site with minimal cutting, grading, or filling for construction			N/A
pitched, rather than flat roofs, which are surfaced with non-reflective materials except for solar energy			NIA

EXHIBIT

Natural materials and colors which blend with the vegetative cover of the site shall be used, or if the structure is located in an existing cluster of buildings, colors and materials shall repeat or harmonize with those in the cluster			N/A
Large agricultural structures			
The visual impact of large agricultural structures shall be minimized by locating the structure within or near an existing group of buildings			NIA
The visual impact of large agricultural structures shall be minimized by using materials and colors which blend with the building cluster or the natural vegetative cover of the site (except for			NIA
The visual impact of large agricultural structures shall be minimized by using landscaping to screen or soften the			NIA
Feasible elimination or mitigation of unsightly, visually disruptive or degrading elements such as junk heaps, unnatural obstructions, grading scars, or structures incompatible with the area shall be included in site development			NIA
The requirement for restoration of visually blighted areas shall be in scale with the size of the proposed project			NIA
Signs			
Materials, scale, location and orientation of signs shall harmonize			NIA
Directly lighted, brightly colored, rotating, reflective, blinking, flashing or			NIA
Illumination of signs shall be permitted only for state and county directional and informational signs, except in designated commercial and visitor serving zone districts			NIA

EXHIBIT

In the Highway 1 viewshed. except within the Davenport commercial area, only **CALTRANS** standard signs and public parks, or parking lot identification signs, shall be permitted to be visible from the highway. These signs shall be of natural unobtrusive materials and colors			**NIA**
Beach Viewsheds			
Blufftop development and landscaping (e.g., decks, patios, structures, trees, shrubs, etc.) in rural areas shall be set back from the bluff edge a sufficient distance to be out of sight from the shoreline, or if infeasible, not visually intrusive			**NIA**
No new permanent structures on open beaches shall be allowed, except where permitted pursuant to Chapter **16.10** (Geologic Hazards) or Chapter **16.20** (Grading Regulations)			**N/A**
The design of permitted structures shall minimize visual intrusion, and shall incorporate materiils and finishes which harmonize with the character of the area. Natural			**N/A**

EXHIBIT Q

Design Review Authority

13.11.040 Projects requiring design review.

(a) Single home construction, and associated additions involving 500 square feet or more, within coastal special communities and sensitive sites as defined in this Chapter.

13.11.030 Definitions

(u) 'Sensitive Site" shall mean any property located adjacent to a Scenic road or within the viewshed of a scenic road as recognized in the General Plan; or located on a coastal bluff or on a ridgeline.

Design Review Standards

13.11.072 Site design.

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
Compatible Site Design			
Location and type of access to the site	✔		
Building siting in terms of its location and orientation	✔		
Building bulk, massing and scale	✔		
Parking location and layout	✔		
Relationship to natural site features and environmental influences	✔		
Landscaping	✔		
Streetscape relationship			N/A
Street design and transit facilities			N/A
Relationship to existing structures	✔		
Natural Site Amenities and Features			
Relate to surrounding topography	✔		
Retention of natural amenities	✔		
Siting and orientation which takes advantage of natural amenities	✔		
Ridgeline protection			N/A
Views			
Protection of public viewshed	✔		
Minimize impact on private views	✔		
Safe and Functional Circulation			
Accessible to the disabled, pedestrians, bicycles and vehicles			N/A
Solar Design and Access			

EXHIBIT Q

Reasonable protection for adjacent properties	✔		
Reasonable protection for currently occupied buildings using a solar energy system	✔		
Noise			
Reasonable protection for adjacent properties	✔		

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
Compatible Building Design			
Massing of building form	✔		
Building silhouette	✔		
Spacing between buildings	✔		
Street face setbacks	✔		
Character of architecture	✔		
Building scale	✔		
Proportion and composition of projections and recesses, doors and windows, and other features	✔		
Location and treatment of entryways	✔		
Finish material, texture and color	✔		
Scale			
Scale is addressed on appropriate levels	✔		
Design elements create a sense of human scale and pedestrian interest	✔		
Variation in wall plane, roof line, detailing, materials and siting	✔		
Solar Design			
Building design provides solar access that is reasonably protected for adjacent properties	✔		
Building walls and major window areas are oriented for passive solar and natural lighting	✔		

EXHIBIT Q