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Staff:	Ruby Pap
Staff Report:	November 3, 2005
Hearing Date:	November 16, 2005
Commission Action:	

STAFF REPORT: PERMIT AMENDMENT

APPLICATION NO.:	**A-1-MEN-01-056-A1**
APPLICANT:	**Steve and Lisa MacCubbin**
APPLICANT'S AGENT:	Ed McKinley
PROJECT LOCATION:	27560 South Highway One, near Schooner Gulch, south of Point Arena, Mendocino County (APN 027-421-06)
DESCRIPTION OF PROJECT PREVIOUSLY APPROVED:	Construction of a 2,460 square-foot, 23.85-foot-high, single-family residence, with a 632-square-foot attached garage/mechanical room, a septic system, connection to an existing private water system, driveway, concrete walkway, and wooden decks.
DESCRIPTION OF AMENDMENT REQUEST:	Modify the design of the approved house resulting in a reduction of floor area of 611 square feet, a reduction of the roof height of the residence by two feet, a substantial reduction in the bulk of the roof structure, and minor door and window changes and

	minor changes to the wood deck. Exterior colors and materials would remain the same.
GENERAL PLAN DESIGNATION:	RR-5, DL (Rural Residential – 5-acre minimum, development limitations)
ZONING DESIGNATION:	RR-5, DL
SUBSTANTIVE FILE DOCUMENTS:	CDP No. A-1-MEN-01-056 (Williams); Mendocino County LCP

SUMMARY OF STAFF RECOMMENDATION:

The staff recommends that the Commission approve with conditions the requested amendment to the coastal development permit. The Commission approved with conditions CDP No. A-1-MEN-01-056 (Williams), *de novo,* on October 8, 2003, authorizing the construction of a 2,460-square-foot, 23.85-foot-high, single-family residence, with a 632-square-foot attached garage/mechanical room, a septic system, connection to an existing private water system, driveway, concrete walkway, and wooden decks, at 27560 South Highway One, near Schooner Gulch, south of Point Arena, in Mendocino County. The parcel has since been sold to the current applicants, Steve and Lisa MacCubbin, who are proposing to amend the CDP by reducing floor area and roof height of residence, substantially reducing the bulk of the roof structure, making minor door and window changes, minor changes to the wood decks. The proposed amendment would locate the newly designed residence entirely within the originally approved development footprint, all exterior colors and materials would remain the same, and no changes are proposed to the approved landscaping, grading, drainage, and erosion control plans.

Staff recommends that the Commission impose seven special conditions for the amendment request, similar to those imposed for the original permit, to ensure that the re-designed residence is consistent with the visual resource protection, geologic hazards, water quality, and erosion and runoff control policies of the Mendocino County LCP: (1) requiring the applicant to submit evidence of a newly recorded deed restriction for the amended development, imposing all the special conditions imposed by the subject amendment; (2) restricting exterior colors to dark earthtones and the minimum necessary exterior lighting that is low wattage, non-reflective, shielded, and directionally cast downward; (3) requiring that the final design and construction plans for the amended development conform to the recommendations of the geotechnical engineering report and requiring that a certified engineering geologist or geotechnical engineer certify that the final design, construction, and drainage plans are consistent with all of the recommendations specified in the geotechnical report; (4) requiring that no bluff or shoreline protective device be constructed to protect the development, and that the applicant waive any rights to construct such devices; (5) requiring that the applicant

assume the risks posed by the development and waive all claims of damage or liability against the Commission or its staff; and (6) and (7) requiring that all development be performed in accordance with the previously approved landscaping plan and drainage and erosion control plans.

Staff recommends that the Commission find that as conditioned, the proposed amendment is consistent with the policies of the LCP regarding geologic hazards, visual resources, water quality, and erosion control, and Coastal Act and LCP policies regarding public access.

The Motion to adopt the staff recommendation can be found on page 5.

STAFF NOTES:

1. Procedure and Background:

Section 13166 of the California Code of Regulations states that the Executive Director shall reject an amendment request if it lessens or avoids the intent of the approved permit unless the applicant presents newly discovered material information, which he or she could not, with reasonable diligence, have discovered and procured before the permit was granted.

Coastal Development Permit No. A-1-MEN-01-056 (Williams) was approved for the construction of a 2,460 square-foot, 23.85-foot-high (average finished grade), single-family residence, with a 632-square-foot attached garage/mechanical room, a septic system, connection to an existing private water system, driveway, concrete walkway, and wooden decks.

The Commission granted this permit on October 8, 2003 with eight special conditions: (1) requiring the applicant to record a generic deed restriction imposing the special conditions of the approved permit; (2) restricting exterior colors to dark earthtones and the minimum necessary exterior lighting that is low wattage, non-reflective, shielded, and directionally cast downward; (3) requiring that the final design and construction plans conform to the recommendations of the geotechnical engineering report and requiring that a certified engineering geologist or geotechnical engineer certify that the final design, construction, and drainage plans are consistent with all of the recommendations specified in the geotechnical report; (4) requiring that no bluff or shoreline protective device be constructed to protect the development, and that the applicant waive any rights to construct such devices; (5) requiring that the applicant assume the risks posed by the development and waive all claims of damage or liability against the Commission or its staff; (6) requiring that prior to issuance of the CDP, the applicants submit for the Executive Director's review and approval, a revised landscaping plan that eliminates the use of holly (*Ilex aquafloium)*, incorporates five additional trees and five additional

shrubs to be planted along the southern bluff edge to shield the development, and requiring that the landscaping be maintained in good growing condition throughout the life of the project; (7) requiring that prior to issuance of the CDP, the applicants submit for the Executive Director's review and approval an erosion control and runoff plan that incorporates best management practices (BMPs) which serve to minimize the volume and velocity of stormwater runoff leaving the developed site and capture sediment and other pollutants contained in stormwater runoff from the development; and (8) establishing that the Commission action has no effect on conditions imposed by a local government pursuant to an authority other than the Coastal Act.

The current amendment request seeks to reduce the floor area and roof height of residence, including a substantial reduction in the bulk of the roof structure, minor door and window changes, and minor changes to the wood deck. The redesigned house would be located within the same footprint as the originally approved house, and exterior colors and materials would remain the same. Upon receipt of the amendment request, the Executive Director accepted the amendment request for filing on the basis that with conditions, the proposed modifications to the project could be made consistent with the applicable Mendocino County LCP policies and the public access policies of the Coastal Act, and would not lessen or avoid the intent of the Commission's prior action on the original permit (CDP No. A-1-MEN-01-056). The proposed amended design of the house would not adversely affect visual resources and would remain consistent with the visual resource protection policies of the LCP as the proposed height and area reductions would result in a slightly smaller house totally within the originally approved house footprint, there are no proposed changes to the exterior colors or lighting, the proposed changes to the deck, windows, and doors are very minor, and there are no proposed changes to the landscaping plan submitted in accordance with the original permit's conditions. The runoff and erosion control plan approved pursuant to the special condition of the original permit would serve the revised project design, due to the fact that the amount of impervious surface would not increase, the structure would be constructed within the same footprint of the originally approved house, and erosion and runoff impacts would not increase. Moreover, the proposed amended development would not impact public access to the coast, as the house with its revised design would still be located within the same footprint as the originally approved house.

The proposed amended design would not increase the risk of geologic hazards, as the revised house would be located in the same location and maintain the same setback from the bluff as the Commission required for the originally approved project. However, because the design of the house would be different, the final construction and foundation plans would need to be reviewed by a licensed professional as they were for the originally approved house pursuant to Special Condition No. 3, to ensure that the plans are consistent with the recommended design criteria of the geotechnical report prepared for the project. Therefore, staff recommends the Commission impose Special Condition No. 3 for the permit amendment to ensure that the final foundation and other plans of the new house design incorporate the recommended design criteria of the geotechnical

engineer, and that the project is built according to the approved plans. As conditioned, the proposed amendment would be consistent with the geologic hazards of the LCP and would not lessen the intent of the Commission's prior action on the original permit. Finally, with the inclusion of Special Condition No. 1, which would require the applicants to record a deed restriction for the amended development imposing all the special conditions imposed by the subject amendment as conditions, covenants, and restrictions against the property, as was required by the original permit condition, future purchases of the property would continue to be informed of all of the coastal development permit requirements that pertain to the property. Therefore, for the reasons discussed above, the Executive Director has determined that the proposed amendment as conditioned, would not lessen the intent of the Commission's prior action on the original permit and has accepted the amendment for processing.

2. Standard of Review

The original permit (A-1-MEN-056) was reviewed by the Commission *de novo,* on appeal of the County of Mendocino's prior action on the CDP, pursuant to Section 30625 of the Coastal Act and Section 13115 of Title 14 of the California Code of Regulations. The Coastal Commission effectively certified Mendocino County's LCP in October of 1992. Pursuant to Section 30604 of the Coastal Act, after effective certification of an LCP, the standard of review for all coastal permits and permit amendments for developments located between the first public road and the sea is the certified Local Coastal Program and the public access and recreation policies of the Coastal Act.

3. Commission Action Necessary

The commission must act on the application at the November 16, 2005 meeting to meet the requirements of the Permit Streamlining Act.

I. MOTION, STAFF RECOMMENDATION AND RESOLUTION:

Motion:

I move that the Commission approve Coastal Development Permit Amendment No. A-1-MEN-01-056-A1 pursuant to the staff recommendation.

Staff Recommendation of Approval:

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

Resolution to Approve Permit:

The Commission hereby approves subject to conditions below, the proposed permit amendment and adopts the findings set forth below, on grounds that the development with the proposed amendment as conditioned, will be in conformity with the certified County of Mendocino LCP, is located between the sea and the nearest public road to the sea, and is in conformance with the public access and public recreation policies of Chapter 3 of the Coastal Act. Approval of the permit amendment complies with the California Environmental Quality Act because all feasible mitigation measures and alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment.

II. STANDARD CONDITIONS: (See attached Appendix A)

III. SPECIAL CONDITIONS:

1. Deed Restriction

PRIOR TO ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT AMENDMENT (A-1-MEN-01-056-A1), the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit amendment a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, as amended, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the Special Conditions of this permit, as amended, as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit amendment. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit, as amended, shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property. **This deed restriction shall supercede and replace the deed restriction(s) recorded pursuant to [Special Condition No. 1 of 7 of Coastal Development Permit No. A-1-MEN-01-056 approved on October 8, 2003, which deed restriction(s) is recorded as Instrument No. 2004-13846 in the official records of Mendocino County.**

2. Design Restrictions

A. All exterior siding and roofing of the proposed structures shall be composed of the colors proposed in the application or darker earthtone

colors only. The current owner or any future owner shall not repaint or stain the house or other approved structures with products that will lighten the color of the house or other approved structures without an amendment to this permit. In addition, all exterior materials, including roofs and windows, shall be non-reflective to minimize glare; and

B. All exterior lights, including any lights attached to the outside of the buildings, shall be the minimum necessary for the safe ingress and egress of the structures, and shall be low-wattage, non-reflective, shielded, and have a directional cast downward such that no light will shine beyond the boundaries of the subject parcel.

3. **Conformance of the Design and Construction Plans to the Geotechnical Investigation Report**

A. All final design and construction plans, including foundations, grading and drainage plans, shall be consistent with the recommendations contained in the Geotechnical Investigation report dated March 16, 2001, and Supplemental Bluff Stability and Aerial Photograph Analysis report dated April 18, 2002 prepared by BACE Geotechnical Consultants. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT NO. A-1-MEN-01-056-A1**, the applicant shall submit, for the Executive Director's review and approval, evidence that a licensed professional (Certified Engineering Geologist or Geotechnical Engineer) has reviewed and approved all final design and construction, and drainage plans for the amended development and has certified that each of those plans is consistent with all of the recommendations specified in the above-referenced geotechnical report approved by the California Coastal Commission for the project site.

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

4. **No Future Bluff or Shoreline Protective Device**

A. By acceptance of this permit amendment, the applicants agree, on behalf of themselves and all successors and assigns, that no bluff or shoreline protective device(s) shall ever be constructed to protect the development approved pursuant to Coastal Development Permit Amendment No. A-1-MEN-01-056-A1, including, but not limited to, the residence with the attached garage, foundations, septic system, concrete walkways and

driveway in the event that the development is threatened with damage or destruction from waves, erosion, storm conditions, bluff retreat, landslides, ground subsidence or other natural hazards in the future. By acceptance of this permit amendment, the applicants hereby waive, on behalf of themselves and all successors and assigns, any rights to construct such devices that may exist under Public Resources Code Section 30235 or under Mendocino County Land Use Plan Policy No. 3.4-12, and Mendocino County Coastal Zoning Code No 20.500.020(E)(1).

B. By acceptance of this permit amendment, the applicants further agree, on behalf of themselves and all successors and assigns, that the landowner shall remove the development authorized by this permit amendment, including the residence with the attached garage, foundations, septic system, concrete walkways and driveway if any government agency has ordered that the structures are not to be occupied due to any of the hazards identified above. In the event that portions of the development fall to the beach before they are removed, the landowner shall remove all recoverable debris associated with the development from the beach and ocean and lawfully dispose of the material in an approved disposal site. Such removal shall require a coastal development permit.

C. In the event the edge of the bluff recedes to within 10 feet of the principal residence but no government agency has ordered that the structures not be occupied, a geotechnical investigation shall be prepared by a licensed geologist or civil engineer with coastal experience retained by the applicant, that addresses whether any portions of the residence are threatened by wave, erosion, storm conditions, or other natural hazards. The report shall identify all those immediate or potential future measures that could stabilize the principal residence without shore or bluff protection, including but not limited to removal or relocation of portions of the residence. The report shall be submitted to the Executive Director and the appropriate local government official. If the geotechnical report concludes that the residence or any portion of the residence is unsafe for occupancy, the permittee shall, within 90 days of submitting the report, apply for a coastal development permit amendment to remedy the hazard which shall include removal of the threatened portion of the structure.

5. **Assumption of Risk, Waiver of Liability and Indemnity**

By acceptance of Coastal Development Permit Amendment No.A-1-MEN-01-056-A1, the applicants acknowledge and agree: (i) that the site may be subject to hazards from landslide, bluff retreat, erosion, subsidence, and earth movement; (ii) to assume the risks to the applicants and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted

development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

6. Landscape Plan

A. The permittee shall undertake development in accordance with the approved final revised landscape plan dated January 7, 2004 and the addendum to the revised landscape plan received on July 20, 2004. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

B. No limbing or pruning of the visually screening trees already existing or planted pursuant to the approved landscaping plan shall occur unless a permit amendment is obtained and issued prior to the commencement of limbing and pruning.

7. Grading, Drainage, Erosion and Runoff Control Plan

The permittee shall undertake development in accordance with the approved Grading, Drainage and Erosion Control plan dated June 15, 2004 prepared by KPFF Engineers of Fort Bragg, CA. Any proposed changes to the approved plan shall be reported to the Executive Director. No changes to the approved plan shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

IV. FINDINGS AND DECLARATIONS FOR APPROVAL

The Commission hereby finds and declares:

1. Site & Project Amendment Description

A. Site Description

The project site is a blufftop parcel above Bowling Ball Beach approximately three miles south of Point Arena, one mile northwest of Schooner Gulch, and 1,000 feet southeast of Ross Creek in an area along the Mendocino coastline designated as highly scenic (see

exhibits 1 and 2). The parcel ranges in elevation between 33 and 61 feet above sea level, and is approximately a half-acre in size. The property is accessed by a paved, common driveway off Highway One to the north-northeast. The common driveway ends in a cul-de-sac at the east-northeast corner of the property. A gravel driveway extends from the cul-de-sac, basically along the northeast property line to the west-northwest neighboring residence. Neighboring two-story single-family houses currently exist on both sides of the project site. The subject property is currently well forested, predominantly with mature, planted, Monterey pine trees with sparse understory consisting of poison oak, coyote brush, and native blackberries. There are no indications of Environmentally Sensitive Habitat Areas (ESHA) existing on the property.

The property is zoned Rural Residential, 5 Acres Minimum, DL. Within the Rural Residential Zone, a single-family residence is a permitted use, subject to approval of a coastal development permit.

The parcel is visible from Highway One for a distance of approximately 300 feet for motorists traveling south, but is not visible while traveling north on Highway One due to the nature of the topography. Highway One is at a lower elevation than the subject property, and views are limited due to the forested landscape on the subject property, as well as from thickets of willow vegetation growing along the highway. The view of the property from Schooner Beach and its publicly accessed headlands is very limited. Where the property would be in view, the neighboring house just to the southwest would screen the proposed house. Views of the proposed house would be partially visible from a short portion of the Ross Creek/Whiskey Shoals public coastal access trail across Ross Creek to the west. The uppermost portion of the residence may be visible from Bowling Ball Beach. Multi-species landscape plantings north and east of the residence are intended to provide visual screening to address views from these vantage points.

B. Project Amendment Description

The originally approved project included the construction of a 2,460-square-foot two-story single-family residence, with a 632-square-foot attached garage/mechanical room, and an average height of 23.85 feet above natural grade and a maximum height from existing grade at no more than twenty-seven feet at any point on the house, installation of a septic system, connection to an existing private water system, and construction of an all-weather surfaced driveway, concrete walkway, and wooden decks. The project as originally approved also involves the removal of approximately 44 live Monterey pine trees. The current amendment application proposes a substantial reduction in the bulk of the roof structure, a total floor area reduction of 611 square feet (from 3092 to 2481 square feet), and an average roof height reduction of approximately 2 feet. The size of the west-facing roof gable would be reduced, and the roof design would be angled to incorporate a "hipped" style rather than "gabled" style. The previously approved attached deck on the southern portion of the proposed residence is proposed to be re-configured slightly from a triangular to an octagonal shape, and the previously approved porch on

the northeastern side of the house would be moved slightly to the northwest, connecting it to the proposed re-located walkway (exhibit 4). Minor door and window changes are also proposed, but the exterior colors would remain the same previously approved colors: siding and trim color - Duckback "Canyon Brown," Limestone cultured stone (CSV-20-45) used as stone facing for the siding of the lower portion of the structure, and for the single chimney stone-work - "Chardonnay," a mottled, textured stone facing that is a dark earthtone color, and not highly reflective.

2. Geologic Hazards

Summary of LCP Provisions

LUP Policy 3.4-1 states the following in applicable part:

> "*The County shall review all applications for Coastal Development permits to determine threats from and impacts on geologic hazards arising from seismic events, tsunami runup, landslides, beach erosion, expansive soils and subsidence and shall require appropriate mitigation measures to minimize such threats. In areas of known or potential geologic hazards, such as shoreline and bluff top lots and areas delineated on the hazards maps, the County shall require a geologic investigation and report, prior to development to be prepared by a licensed engineering geologist or registered civil engineer with expertise in soils analysis to determine if mitigation measures could stabilize the site…*"

LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.020(B) state that:

> "*The County shall require that new structures be set back a sufficient distance from the edges of bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (75 years). Setbacks shall be of sufficient distance to eliminate the need for shoreline protective works. Adequate setback distances will be determined from information derived from the required geologic investigation and from the following setback formula:*
>
> *Setback (meters) = Structure life (years) x Retreat rate (meters/year)*
>
> *The retreat rate shall be determined from historical observation (e.g., aerial photographs) and/or from a complete geotechnical investigation.*
> *All grading specifications and techniques will follow the recommendations cited in the Uniform Building Code or the engineering geologist's report* [emphasis added]."

LUP Policy 3.4-12 and Zoning Code Section 20.500.020(E)(1) state that:

"*Seawalls, breakwaters, revetments, groins, harbor channels and other structures altering natural shoreline processes or retaining walls shall not be permitted unless judged necessary for the protection of existing development, public beaches or coastal dependent uses.*"

Section 20.500.015(A) of the Coastal Zoning Code states in applicable part:

"*(1) Preliminary Investigation. The Coastal Permit Administrator shall review all applications for Coastal Development Permits to determine threats from and impacts on geologic hazards.*

(2) Geologic Investigation and Report. In areas of known or potential geologic hazards such as shoreline and bluff top lots and areas delineated on the hazards maps, a geologic investigation and report, prior to development approval, shall be required. The report shall be prepared by a licensed engineering geologist or registered civil engineer pursuant to the site investigation requirements in Chapter 20.532."

Section 20.500.010 of the Coastal Zoning Code states that development shall:

"*(1) Minimize risk to life and property in areas of high geologic, flood and fire hazard;*

(2) Assure structural integrity and stability; and

(3) Neither create nor contribute significantly to erosion, geologic instability or destruction of the site or surrounding areas, nor in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs."

Section 20.500.020(B) of the Coastal Zoning Code states in applicable part:

"*(1) New structures shall be set back a sufficient distance from the edges of bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (seventy-five (75) years). New development shall be set back from the edge of bluffs a distance determined from information derived from the required geologic investigation and the setback formula as follows:*

Setback (meters) = structure life (75 years) x retreat rate (meters/year)

Note: The retreat rate shall be determined from historical observation (aerial photos) and/or from a complete geotechnical investigation.

...

(3) Construction landward of the setback shall not contribute to erosion of the bluff face or to instability of the bluff [emphasis added]."

Discussion

As discussed in the Commission's findings for the originally approved residence, the subject parcel is a bluff top parcel that overlooks the ocean. The bluffs range in height from 33 to 61 feet and are very steep. As described above, the amended project proposes to construct a new single-family residence with an attached garage/mechanical room and appurtenant development including a septic system, driveway, walkway, and decks. The new residence would be a new structure that Mendocino County LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.020(B) require to be set back a sufficient distance from the edge of the bluff to ensure its safety from bluff erosion and cliff retreat during the economic life span of 75 years. Additionally, these provisions require the setback to be a sufficient distance so as to eliminate the need for shoreline protection devices.

The current amendment application proposes no changes to the previously Commission approved geologic setback, and the proposed amendment would place the residence entirely within the previously approved residential footprint. The original permittee's (Williams) geologist, BACE Geotechnical, performed a geotechnical investigation documented in a report dated March 16, 2001, that determined a bluff retreat rate of 1 ½ inches per year. The report recommended a bluff setback of 40 feet for the original house to protect it from bluff retreat over a 75-year lifespan for the house based on comparison of historical photographs from the years 1964, 1977, and 1981 and a safety factor of four. For purposes of the Commission's *de novo* review of the original application, this report was supplemented by a slope stability analysis dated April 18, 2002 and copies of the 1964 and 1981 aerial photographs used during the earlier geotechnical investigation, as well as a recently-obtained 2000 aerial photograph. In addition, as part of this supplemental analysis, two other points on the bluff edge south of the applicant's property were measured on the photographs and BACE responded comments received from the appellant and others related to slope stability and increased erosion as the sea level rises due to global warming.

Following submittal of the current permit amendment request, Commission staff visited the site and determined that no significant bluff retreat or other changes to the bluff edge have occurred since the Commission approved the original project in 2003. Given the lack of change in conditions, the fact that the proposed amended house design would be constructed within the same footprint at the originally approved house, and the fact that the geotechnical investigation performed for the original project was performed in recent years, Commission staff did not require that a new geotechnical investigation be performed and submitted as part of the amendment request.

The original geotechnical investigation found a 1½- inch per year bluff retreat rate based on the analysis of three (3) historical aerial photographs covering a time span of 17 years.

The addition of the year-2000 aerial photograph expanded the time span of coverage to 36 years. The revised photographic analysis using the 2000 aerial photograph concluded that the bluff retreat rate would average 3.3 inches per year, eroding back 20.6 feet over the 75-year economic lifespan of the house. This erosion estimate is greater than the original estimate, but allowed for a factor of safety of almost 2 for the recommended 40-foot setback. Supplemental comments stated that there is a landslide located a few properties to the south, which "is a localized feature with no potential impact on the Williams' property. As previously stated in BACE's 2001 geotechnical investigation report, there are no landslides in the near vicinity of the William's property." BACE also addressed sea level rise issues, stating "[s]ea level rise appears probable, however, the projected rise (1.6 feet over the next century, or 1.2 feet in the next 75 years) will be a gradual process, not an over-night event."

Coastal Commission staff geologist Dr. Mark Johnsson reviewed the original BACE reports for the originally approved project, visited the site, and conferred with the applicants' geologist. After reviewing the additional materials submitted, Dr. Johnsson opined that the applicant's geologist's projection of the bluff retreat rate is appropriate.

Mendocino County LUP Policy 3.4-7 and CZC Section 20.500.020(B) require that new structures be set back a sufficient distance from the edge of the bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (75 years) and the setback be of sufficient distance to eliminate the need for shoreline protection devices. As discussed above, BACE Geotechnical concluded that the bluff is eroding at an average rate of about 3.3-inches-per-year. Therefore, over a period of 75 years representing the economic life span of a house, the bluff would erode back approximately 20.6 feet. A factor-of-safety of almost two was applied to arrive at the 40-foot recommended bluff setback. After reviewing the requested additional documentation concerning the analysis of aerial photos, bluff retreat rate, and the recommended bluff top setback as well as the quantitative slope stability analysis and erosion potential, the Commission staff geologist opined that the original permittees' geologist's projection of the bluff retreat rate and the other recommendations were reasonable.

The current proposed amended design would reduce the size of the residence and keep it entirely within the originally approved footprint, and is therefore located outside this forty-foot setback line from the bluff edge. Therefore, the Commission finds that the proposed development as conditioned will be set back a sufficient distance from the bluff edge to provide for a 75-year design life of the development consistent with LUP Policy 3.4-7 and CZC Section 20.500.020(B).

LUP Policy 3.4-1 states, in part, that geologic investigations for development in areas of known or potential geologic hazards shall determine if mitigation measures could stabilize the site. In its investigation of the site, BACE geotechnical advised that the structure should be supported on a system of cast-in-place drilled concrete piers interconnected with grade beams. The original CDP for the originally approved residence

included a condition requiring all final design and construction plans, including foundations and grading drainage plans, be consistent with the recommendations contained in the geotechnical reports dated March 16, 2001, prepared by BACE Geotechnical Consultants, and that prior to issuance of the CDP, a licensed professional certify that the final plans are consistent with the above mentioned report. The condition also requires that the development be constructed consistent with the approved plans.

The original permittees (Williams) submitted certified final design, and construction, foundation, grading, drainage, and erosion control plans, satisfying the special condition, and received the CDP for the original residential design in July 2004. The current proposal would change the design of the residence, and final foundation and other construction plans for the new design were not submitted with the amendment request. Therefore, to ensure that the final construction plans for the revised house design adhere to the design criteria specified in the geotechnical reports, and that development is constructed consistent with the approved revised plans, the Commission imposes Special Condition No. 3 as a condition of this permit amendment. The condition requires all final design and construction plans for the amended development, including foundations, be consistent with the recommendations contained in the geotechnical reports dated March 16, 2001, prepared by BACE Geotechnical Consultants. As conditioned, the development will include the measures determined by the geologic investigation to be necessary to stabilize the site consistent with LUP Policy 3.4-1.

The Commission also attaches Special Condition No. 4, which indicates that by acceptance of the permit amendment, the applicants agree that no bluff or shoreline protective devices shall ever be constructed to protect the development approved by this amendment, and requires that the landowner provide a geotechnical investigation and remove the house and its foundation if bluff retreat reaches the point where the structure is threatened, and requires that the landowners accept sole responsibility for the removal of any structural debris resulting from landslides, slope failures, or erosion of the site. These requirements are consistent with LUP Policy 3.4-7 and Section 20.500.010 of the Mendocino County Coastal Zoning Ordinance, which state that new development shall minimize risk to life and property in areas of high geologic, flood, and fire hazard, assure structural integrity and stability, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas, nor in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. The Commission finds that the proposed amended development could not be approved as being consistent with LUP Policy 3.4-7 and Zoning Code Section 20.500.010 and 20.500.020(B) if projected bluff retreat would affect the proposed amended development and necessitate construction of a seawall to protect it.

As was the case with the originally approved residence, the current applicants are proposing to construct a residence with portions of the development as close as approximately 40 feet to a bluff that is gradually eroding. Thus, the proposed amended development will be located in an area of high geologic hazard. The proposed amended

development can only be found consistent with the above-referenced LCP provisions if the risks to life and property from the geologic hazards are minimized and if a protective device will not be needed in the future.

Information submitted with the original applicant's engineering geologist states that if the new development is set back forty (40) feet from the bluff edge, it will be safe from erosion and will not require any devices to protect the proposed development during its useful economic life. Although a comprehensive geotechnical evaluation is a necessary and useful tool that the Commission relies on to determine if proposed development is permissible at all on any given bluff top site, as discussed in the findings for approval with conditions of the original permit (see exhibit 5) the Commission finds that a geotechnical evaluation alone is not a guarantee that a development will be safe from bluff retreat. It has been the experience of the Commission that in some instances, even when a thorough professional geotechnical analysis of a site has concluded that a proposed development will be safe from bluff retreat hazards, unexpected bluff retreat episodes that threaten development during the life of the structure sometimes still do occur. Site-specific geotechnical evaluations cannot always accurately account for the spatial and temporal variability associated with coastal processes and therefore cannot always absolutely predict bluff erosion rates.

The BACE Geotechnical Investigation report states that their geological and engineering services and review of the originally approved development was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. *"No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in the report."* This language in the report itself is indicative of the underlying uncertainties of this and any geotechnical evaluation and supports the notion that no guarantees can be made regarding the safety of the proposed development with respect to bluff retreat.

Geologic hazards are episodic, and bluffs that may seem stable now may not be so in the future. Therefore, the Commission finds that the subject lot is an inherently hazardous piece of property, that the bluffs are clearly eroding, and that the proposed new development will be subject to geologic hazard and could potentially someday require a bluff or shoreline protective device, inconsistent with LUP Policy 3.4-7 and CZC Sections 20.500.010 and 20.500.020(B). The Commission finds that the proposed amended development could not be approved as being consistent with LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.010 and 20.500.020(B) if projected bluff retreat would affect the proposed development and necessitate construction of a seawall to protect it.

Based upon the geologic report prepared by BACE geotechnical for the originally approved development and the evaluation of the project by the Commission's staff geologist, the Commission finds that the risks of geologic hazard are minimized if the residence is set back approximately 40 feet or more from the bluff edge as proposed to be

amended. However, given that the risk cannot be eliminated and the geologic report cannot assure that shoreline protection will never be needed to protect the residence, the Commission finds that the proposed amended development is consistent with the certified LCP only if the permit amendment is conditioned to provide that shoreline protection will not be constructed. Thus, the Commission further finds that due to the inherently hazardous nature of this lot, the fact that no geology report can conclude with any degree of certainty that a geologic hazard does not exist, the fact that the approved development and its maintenance may cause future problems that were not anticipated, and because new development shall not engender the need for shoreline protective devices, it is necessary to attach Special Condition No. 4 prohibiting the construction of seawalls and Special Condition No. 5 requiring the waiver of liability.

In addition, as noted above and in the findings for the originally approved development, some risks of an unforeseen natural disaster, such as an unexpected landslide, massive slope failure, erosion, etc. could result in destruction or partial destruction of the house, as amended, or other development approved by the Commission. In addition, the amended development itself and its maintenance may cause future problems that were not anticipated. When such an event takes place, public funds are often sought for the clean-up of structural debris that winds up on the beach or on an adjacent property. As a precaution, in case such an unexpected event occurs on the subject property, the Commission attaches Special Condition No. 4, which requires the landowner to accept sole responsibility for the removal of any structural debris resulting from landslides, slope failures, or erosion on the site, and agree to remove the house should the bluff retreat reach the point where a government agency has ordered that the structure not be occupied.

For the originally approved residence, the Commission attached a special condition requiring that the property owners/applicants record and execute a deed restriction against the property approved by the Executive Director that imposes the special conditions of the permit as covenants, conditions and restrictions on the use and enjoyment of the property. This special condition was required, in part, to ensure that the development was consistent with the LCP and to provide notice of potential hazards of the property and help eliminate false expectations on the part of potential buyers of the property, lending institutions, and insurance agencies that the property is safe for an indefinite period of time and for further development indefinitely into the future, or that a protective device could be constructed to protect the approved development. On June 23, 2004, the applicants for the originally approved development recorded a deed restriction on their property and submitted this to the Commission, satisfying the above condition. However, the current amended proposal, as conditioned, includes new special conditions pertaining to the amended residential design. Therefore, the Commission imposes Special Condition No. 1, which requires the applicants to record a similar deed restriction for the amended project, to impose the special conditions of the permit amendment as covenants, conditions and restrictions on the use and enjoyment of the property.

Additionally, the Commission attaches Special Condition No. 5, which requires the landowner to assume the risks of extraordinary erosion and geologic hazards of the property and waive any claim of liability on the part of the Commission. Given that the applicants have chosen to implement the amended project despite these risks, the applicants must assume the risks. In this way, the applicants are notified that the Commission is not liable for damage as a result of approving the permit amendment for development. The condition also requires the applicants to indemnify the Commission in the event that third parties bring an action against the Commission as a result of the failure of the amended development to withstand hazards. In addition, the requirement of Special Condition No. 1 that a deed restriction be recorded will ensure that future owners of the property will be informed of the risks, the Commission's immunity from liability, and the indemnity afforded the Commission.

The Commission notes that Section 30610(a) of the Coastal Act and Chapter 20.532 of the County's Coastal Zoning Code exempt certain additions to existing single family residential structures from coastal development permit requirements. Pursuant to this exemption, once a house has been constructed, certain additions and accessory buildings that the applicant might propose in the future are normally exempt from the need for a permit or permit amendment. However, in this case because the project site is located within a highly scenic area, future improvements to the approved project are not exempt from permit requirements pursuant to Section 30610(a) and Section 13250(b)(1) of the Commission's regulations. Section 30610(a) requires the Commission to specify by regulation those classes of development, which involve a risk of adverse environmental effects and require that a permit be obtained for such improvements. Pursuant to Section 30610(a) of the Coastal Act, the Commission adopted Section 13250 of Title 14 of the California Code of regulations. Section 13250 specifically authorizes the Commission to require a permit for additions to existing single-family residences that could involve a risk of adverse environmental effect. Moreover, Section 13250(b)(1) indicates that improvements to a single-family structure in an area designated as highly scenic in a certified land use plan involve a risk of adverse environmental effect and therefore are not exempt. As discussed previously, the entire subject property is within an area designated in the certified Mendocino Land Use Plan as highly scenic. Therefore, pursuant to Section 13250(b)(1) of the Commission's regulations, future improvements to the approved amended development would not be exempt from coastal development permit requirements and the County and the Commission will have the ability to review all future development on the site to ensure that future improvements will not be sited or designed in a manner that would result in a geologic hazard.

The Commission thus finds that the proposed amended development, as conditioned, is consistent with the policies of the certified LCP regarding geologic hazards, including LUP Policies 3.4-1, 3.4-7, 3.4-12, and Coastal Zoning Code Sections 20.500.010, 20.015.015, and 20.500.020, since the amended development as conditioned will not contribute significantly to the creation of any geologic hazards, will not have adverse impacts on the stability of the coastal bluff or on erosion, will not require the construction

of shoreline protective works, and the Commission will be able to review any future additions to ensure that development will not be located where it might result in the creation of a geologic hazard. Only as conditioned is the proposed amended development consistent with the LCP policies on geologic hazards.

3. Water Quality

Summary of LCP Provisions

LUP Policy 3.1-25 states:

> *"The Mendocino Coast is an area containing many types of marine resources of statewide significance. Marine resources shall be maintained, enhanced and, where feasible, restored; areas and species of special biologic or economic significance shall be given special protection; and the biologic productivity of coastal waters shall be sustained."*

Coastal Zoning Code Section 20.492.020(B) incorporates sedimentation standards and states in part:

> *"(B) To prevent sedimentation of off-site areas, vegetation shall be maintained to the maximum extent possible on the development site. Where necessarily removed during construction, native vegetation shall be replanted to help control sedimentation.*
>
> *(C) Temporary mechanical means of controlling sedimentation, such as hay baling or temporary berms around the site may be used as part of an overall grading plan, subject to the approval of the Coastal Permit Administrator."*

Discussion

Storm water runoff from new residential development can adversely affect the biological productivity of coastal waters by degrading water quality. LUP Policy 3.1-25 requires the protection of the biological productivity of coastal waters. Section 20.492.020 of the Mendocino County Coastal Zoning Code sets forth sedimentation standards to minimize sedimentation of environmentally sensitive areas and off-site areas. Specifically, Section 20.492.020(B) requires that the maximum amount of vegetation existing on the development site shall be maintained to prevent sedimentation of off-site areas, and where vegetation is necessarily removed during construction, native vegetation shall be replanted afterwards to help control sedimentation.

As discussed in the findings for the originally approved development, the subject parcel is located on a coastal terrace atop a steep coastal bluff. Runoff originating from the development site that is allowed to drain over the bluff edge or drain indirectly to the

ocean via the Ross Creek drainage would contain entrained sediment and other pollutants in the runoff that would contribute to degradation of the quality of marine waters.

The Commission attached Special Condition No. 7 to the originally approved CDP (A-1-MEN-01-056) to minimize erosion and sedimentation impacts from the construction of the originally approved residence. This condition required that the applicants submit for the review and approval of the Executive Director an Erosion and Runoff Control Plan that would provide that (1) straw bales be installed to contain runoff from construction areas, (2) on-site vegetation be maintained to the maximum extent possible during construction, (3) any disturbed areas be replanted or seeded with native vegetation following project completion, (4) all on-site stockpiles of construction debris be covered and contained to prevent polluted water runoff, and (5) runoff from the roof, driveway, and other impervious surfaces of the development be collected and directed into pervious areas on the site for infiltration and that velocity reducers be used on roof downspouts. The original permittees (Williams) satisfied this condition by submitting a final Grading, Drainage, and Erosion Control Plan, dated June 15, 2004 prepared by KPFF Engineers of Fort Bragg, CA containing the above required provisions, and a letter dated June 22, 2004 from BACE Geotechnical certifying that they reviewed the plan. Commission staff reviewed the above plan and determined that it provided all the required provisions of the special condition for the originally approved development.

The current amendment proposal slightly changes the design of the residence, keeping it within the original footprint, and neither proposes nor necessitates any changes to the above - approved plan. Therefore, it is not necessary to devise a new erosion and runoff control plan for the new development. Part B of Special Condition No. 7 imposed in the originally approved permit requires that the permittee undertake all development in accordance with the approved Erosion and Runoff Control Plan. Therefore, the Commission imposes Special Condition No. 7, as a condition of Coastal Development Permit Amendment No. A-1-MEN-01-056-A1, which requires that the current permittees undertake development in accordance with the final approved certified Grading, Drainage, and Erosion Control Plan dated June 15, 2004.

The Commission finds that as conditioned, the proposed amended development is consistent with Section 20.492.020 because erosion and sedimentation will be controlled and minimized. Furthermore, the Commission finds that the proposed amended development as conditioned is consistent with the provisions of LUP Policy 3.1-25 requiring that the biological productivity of coastal waters be sustained because storm water runoff from the proposed development would be directed away from the coastal bluff and would be controlled on site by infiltration into vegetated areas.

4. Visual Resources

LCP Provisions

LUP Policy 3.5-1 states in applicable part:

"The scenic and visual qualities of Mendocino county coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas designated by the County of Mendocino Coastal Element shall be subordinate to the character of its setting."

LUP Policy 3.5-3 states, in applicable part:

"The visual resource areas listed below are those which have been identified on the land use maps and shall be designated as "highly scenic areas," within which new development shall be subordinate to the character of its setting. Any development permitted in these areas shall provide for the protection of ocean and coastal views from public areas including highways, roads, coastal trails, vista points, beaches, parks, coastal streams, and waters used for recreational purposes...

- *Portions of the coastal zone within the Highly Scenic Area west of Highway 1 between the south boundary of the City of Point Arena and the Gualala River as mapped with noted exceptions and inclusions of certain areas east of Highway 1.*

In addition to other visual policy requirements, new development west of Highway One in designated 'highly scenic areas' is limited to one story (above natural grade) unless an increase in height would affect public views to the ocean or be out of character with surrounding structures... New development should be subordinate to natural setting and minimize reflective surfaces...[emphasis added]."

NOTE 1: LUP Map No. 28 designates all of the area west of Highway one along the portion of the coast where the project is located as highly scenic.

NOTE 2: Coastal Zoning Ordinance 20.504.015(A)(4) reiterates this section of coastline as being a "highly scenic area."

LUP Policy 3.5-5 states, in applicable part:

"Providing that trees will not block coastal views from public areas such as roads, parks and trails, tree planting to screen buildings shall be encouraged ...[emphasis added]."

Coastal Zoning Ordinance Section 20.504.010 states:

> *"The purpose of this section is to insure that permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas and, where feasible, to restore and enhance visual quality in visually degraded areas."*

Coastal Zoning Ordinance Section 20.504.015(C) states, in applicable part:

> *"(1) Any development permitted in highly scenic areas shall provide for the protection of coastal views from public areas including highways, roads, coastal trails, vista points, beaches, parks, coastal streams, and waters used for recreational purposes.*
>
> *(2) In highly scenic areas west of Highway 1 as identified on the Coastal Element land use plan maps, new development shall be limited to eighteen (18) feet above natural grade, unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures.*
>
> *(3) New development shall be subordinate to the natural setting and minimize reflective surfaces. In highly scenic areas, building materials shall be selected to blend in hue and brightness with their surroundings.*
>
> ...
>
> *(5) Buildings and building groups that must be sited in highly scenic areas shall be sited: (a) Near the toe of a slope; (b) Below rather than on a ridge; and (c) In or near a wooded area.*
>
> *(7) Minimize visual impacts of development on terraces by the following criteria:*
>
> *(a) Avoiding development, other than farm buildings, in large open areas if an alternative site exists;*
>
> *(b) Minimize the number of structures and cluster them near existing vegetation, natural landforms or artificial berms;*
>
> *(c) Provide bluff setbacks for development adjacent to or near public areas along the shoreline;*
>
> *(d) Design development to be in scale with rural character of the area.*
>
> ...
>
> *(10) Tree planting to screen buildings shall be encouraged, however new development shall not allow trees to interfere with coastal/ocean views from public areas.* ... [emphasis added].

Discussion

As previously described, the subject property is located on a blufftop parcel above Bowling Ball Beach on a coastal terrace, in an area along the Mendocino coastline designated highly scenic under the Mendocino County LCP. The site is approximately three miles southeast of Point Arena, situated on the southwest side of Highway One, approximately one mile northwest of Schooner Gulch, and approximately 1,000 feet southeast of Ross Creek. The subject property is currently well forested, predominantly with mature, planted, Monterey pine trees with sparse understory. As was the case for the previously approved residence (A-1-MEN-01-056, Williams), many of the existing trees would be removed to accommodate the proposed amended development. A narrow band of trees would remain to encircle most of the perimeter of the proposed amended residence.

The originally approved application (A-1-MEN-056) included the construction of a 2,460-square-foot, two-story, single-family residence, with a 632-square-foot attached garage/mechanical room. The average height of the approved residence was 23.85 feet above natural grade, with a maximum height from existing grade of twenty-seven feet.

The current amendment application proposes a substantial reduction in the bulk of the roof structure. The total floor area would be reduced from 3092 to 2481 square feet, for a total reduction of 611 square feet. The roof height would be reduced by approximately 2 feet. The size of the west-facing roof gable would be reduced, and the roof design would be angled incorporate a "hipped" style rather than "gabled" style. The previously approved attached deck on the southern portion of the proposed residence is proposed to be re-configured slightly from a triangular to an octagonal shape, and the previously approved porch on the northeastern side of the house would be moved slightly to the northwest, connecting it to the proposed re-located walkway (exhibit 4). Minor door and window changes are also proposed, but the exterior colors would remain the same previously approved colors. The approved roof is composed of walnut colored Owens Corning MiraVista ® resin/glass fiber shake shingles. The approved structural siding and wood trim is cedar or redwood shingles and redwood boards stained an earth-toned color described as Duckback "Canyon Brown" (color chip #DB-1907). Cultured stone facing described as "Chardonnay Limestone" (color chip #CSV-2045) was approved to be used for the lower portion of the building and for the single chimney. The lower portions of the structure where this stone facing is used would be completely screened by landscaping. The chimney presents very minor surface areas visible to the public. The approved Chardonnay Limestone stone facing is composed of dark, earth tone, mottled colors, and is not highly reflective.

The above listed visual resource protection policies set forth three basic criteria that development at the site must meet to be approved. First, LUP Policy 3.5-1 and CZC Section 20.504.010 require that development be sited and designed to protect views to

and along the ocean and scenic coastal areas. Second, LUP Policy 3.5-3 and CZC Section 20.504.015(C)(2) generally require that new development in highly scenic areas be limited to one story and 18 feet in height. Finally, LUP Policies 3.5-1, 3.5-3, and 3.5-4 and CZC Section 20.504.015(C)(3) require that new development in highly scenic areas be subordinate to the character of its setting.

Protecting Views To and Along the Coast

LUP Policy 3.5-1 and CZC Sections 20.504.010 and 20.504.015(C)(1) require permitted development to be sited and designed to protect views to and along the ocean and scenic coastal areas from public areas including roads and trails.

As discussed in the findings for approval of the original permit (see exhibit no. 5), the subject parcel is geographically situated such that the proposed residential development would not affect views to the ocean from public areas including highways, roads, coastal trails, beaches, or coastal streams. As described above, the subject site is a coastal bluff top parcel located on a coastal terrace 45 to 55 feet above the northern-most end of Bowling Ball Beach. The property ranges between approximately 33 feet in elevation at the northern corner of the parcel, to almost 61 feet at the eastern corner. The two corners of the parcel located along the coastal bluff are almost 10 feet higher than the middle portion of the bluff edge, and the entire property tilts slightly toward the south, away from the bluff edge. Highway One is located to the south of the property and is significantly lower than the coastal bluff terrace, effectively eliminating the view of the ocean from the highway in this vicinity.

Therefore, the Commission finds that the proposed development as conditioned will protect public views to and along the ocean and scenic coastal areas consistent with visual resource protection provisions LUP Policy 3.5-1 and CZC Sections 20.504.010 and 20.504.015(C)(1) of the certified LCP.

Consistency with Height Requirements

According to the certified LCP provisions of LUP Policy 3.5-3, new development located in an area designated as highly scenic is limited to one story above natural grade unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures. Likewise, according to CZC Section 20.504.015(C)(2) new development located in an area designated as highly scenic is limited to eighteen feet above natural grade, unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures. If these two criteria can be met, the building height can be raised to a maximum of twenty-eight feet and include two stories.

As noted above, the amended structure would be reduced in height by approximately two-feet below what was originally approved, which would bring the average height

above natural grade to approximately 21-feet, only three feet higher than the 18-foot standard specified by CZC Section 20.504.015(c)(2)). In addition, like the previously approved structure, the amended structure would be two-story, differing from the one-story standard specified by LUP Policy 3.5-3. Thus, the only way the amended development could be found consistent with these LCP policies is if the increased height would not (a) affect public views to the ocean or (b) be out of character with surrounding structures.

As discussed in the previous section and in the findings of approval for the original design, there are no views afforded through the property to the ocean from Highway One or other pubic vantage points. Further, the amended design would be shorter than the previously approved development. Therefore, the proposed height above one story and 18 feet would not affect public views to the ocean.

With regard to whether the height would be out of character with surrounding structures within the same subdivision, as described in the Commission's findings of approval for the original design, there are numerous two-story neighboring houses, including both of the houses on either side of the subject parcel. The Jones residence located on a .67-acre, bluff top lot immediately to the north of the subject parcel is a two-story house built an average of 22 feet above natural grade. This approved development also includes a two-story detached garage and guest room built an average of 20 feet above natural grade. The Calone parcel located immediately to the south of the subject property has an approved two-story residence built an average of 23 feet above natural grade. The proposed amended two-story house on the subject parcel would be built an average of approximately 21 feet from natural grade, conforming to the characteristic height of the adjoining parcel's structures, and substantially shorter than the originally Commission approved development.

As described below, the proposed amended residence would not be out of character with the size and bulk of the neighboring structures on the adjoining parcels. The Calone residence located to the south is a 2,404-square-foot structure with an attached garage and additional decking. The Jones residence located to the north is a 1,550-square-foot structure and an 880-square-foot detached garage and guest room structure, both with additional decking. The proposed amended residential structure would be reduced in size from 3092 square feet to 2481 square feet, including the garage, which is within 51 to 77 square feet of the size of the development on the neighboring parcels. Therefore, the Commission finds that because the approximately 21-foot average height and two-story aspect of the proposed amended structure would (a) not affect views to the ocean, and (b) not be out of character with surrounding structures, the proposed amended development is consistent with the height limitations of LUP Policy 3.5-3 and CZC Section 20.504.015(C)(2).

Subordinate to the Character of its Setting

LUP Policies 3.5-1, 3.5-3, and 3.5-4, and CZC Section 20.504.015(C)(3) require that new development in highly scenic areas be subordinate to the character of its setting. To help ensure that new development will be subordinate, LUP Policy 3.5-4 also requires that buildings located within areas designated highly scenic shall be sited in or near the edge of a wooded area rather than in open areas and utilize natural landforms or artificial berms to screen development. In addition, Policy 3.5-5 states that tree planting to screen buildings be encouraged. Furthermore, the County's Coastal Zoning Ordinance Section 20.504.010 states that permitted development shall be sited and designed to minimize the alteration of landforms. Coastal Zoning Ordinance Section 20.504.015(C)(3) requires that in highly scenic areas, building materials, including siding and roof materials, shall be selected to blend in hue and brightness with their surroundings.

Several aspects of the amended project as proposed will help make the development subordinate to the character of its setting. The single-family residence would be located within a subdivision of other existing two-story structures built on either side of the subject parcel along the bluff top. The proposed house would be placed within a forested setting on the parcel, and the project would retain selected visual screening trees to help protect views along the coast from the highway and public recreational trail. The originally approved development also includes additional tree planting and other landscaping to provide increased visual screening of the residence to help protect public views of scenic coastal areas in the vicinity, and the current amendment proposes no changes to this landscaping plan.

As discussed in the Commission findings for the originally approved residence, public views of the proposed house from Bowling Ball Beach would be extremely limited if existent at all. The proposed amended residence would be barely visible from public roads and trails. Further, the proposed amended residence would be reduced in height and bulk from the previously approved residence, making it even less visible. Finally, only limited views of the proposed amended house through the trees would be afforded to boaters at sea.

Regarding the house itself, the current amendment application proposes no change to the exterior colors of the residence. As discussed in the findings for the originally approved residence, the colors and materials proposed amended residential development would be in character with the neighboring structures in the area. The siding and trim color (Duckback "Canyon Brown") is a dark stain that would adequately blend with the forested setting. Limestone cultured stone (CSV-20-45) would be used as the stone facing for the siding of the lower portion of the structure, and for the single chimney. The color proposed by the applicant for the stone-work is "Chardonnay," a mottled, textured stone facing that is a dark earthtone color, and not highly reflective. The Chardonnay color contains various color elements that would help blend the development with the dappled forest background. The lower portion of the structure that would have stone facing applied, would not be readily visible. Landscaping would help screen what might be visible otherwise. The chimney would also be faced with the same Chardonnay

stonework, but the visible chimney profile would be minimal as seen from the highway and public trails, and would blend with the forested background.

To ensure that the building materials of the amended development as proposed, including siding and roof materials, continue to blend in hue and brightness with their surroundings and are subordinate to the character of its setting during the life of the structure, the Commission attaches Special Condition No. 2. This special condition requires that the current owner and any future owner not repaint or stain the house with products that will lighten the color of the house as approved without a further amendment to the permit. In addition, all exterior materials, including roofs and windows, are required to be non-reflective to minimize glare. Furthermore, Special Condition No. 2 requires that all exterior lights, including any lights attached to the outside of the buildings, shall be the minimum necessary for the safe ingress and egress of the structures, and shall be low-wattage, non-reflective, shielded, and have a directional cast downward such that no light will shine beyond the boundaries of the subject parcel.

The Commission attached Special Condition No. 6 to the originally approved CDP (A-1-MEN-01-056-A1, Williams), which was designed to mitigate the visual affects of the residence on public coastal views by requiring the applicant to submit a revised landscape plan that includes: 1) conformance with the applicant's current proposed landscaping plan and arborist's recommendations; 2) additional landscape planting along the south bluff-facing edge of the parcel to provide additional visual screening; and 3) maintenance and replacement of visual screen trees and landscaping. The additional planting of at least 5 trees and 5 wax myrtle shrubs required by the special condition was imposed to augment the screening along the ocean side of the property and to assure that younger landscaping will remain to continue to screen the development from the Whiskey Shoals trail and the ocean as the mature existing trees eventually reach the end of their normal lifespan. The original permittees (Williams) submitted a revised landscaping plan, dated January 7, 2004, and an addendum received on July 20, 2004. The Executive Director approved this landscape plan and the CDP was issued on July 30, 2004.

The current amendment application does not propose any changes to the approved landscaping plan. As discussed in the findings for the previously approved CDP, as a person walks toward the ocean along the Ross Creek/Whiskey Shoals Trail, the proposed amended house would be mostly screened from view by these trees and the neighboring structures. Likewise, for a person driving south on Highway One, these approved landscaping trees, as well as the trees approved to be planted along the east side of the proposed amended house, would provide visual screening of the proposed amended structure from the approximately 300 feet of roadway along which the house is visible. The approved landscape plan includes wax myrtle plantings to fill in the gaps between the tree trunks, thus creating a solid wall of vegetation as the trees mature.

As discussed in the Commission findings for the originally approved residence, a principal aspect of the proposed amended development that bears on whether the

development would be subordinate to the character of its setting is the proposed removal of 46 of the 77 trees existing on the property to accommodate the proposed development. These trees include 3 dead specimens, 15 trees in the location where the septic system would be established, 4 trees where the driveway would be built and 24 trees where the house would be constructed. The original application included an arborists report, which included additional recommendations for thinning the stand, thereby benefiting the remaining trees by reducing tree-to-tree competition for sunlight, water, and nutrients, protecting the existing trees to be retained from potential damage during construction activities, and incorporating a diversity of new landscape plantings as was included in the original Commission-approved landscape plan. If the trees to be retained are protected from damage during construction as provided for in the arborist's report and final approved landscaping plan, and benefit from increased sunlight, water and nutrients due to a reduction in tree-to-tree competition as discussed above, then the remaining trees would continue to provide visual screening of the proposed amended development and the development would be subordinate to the character of its setting.

As stated above, the current amendment proposal slightly changes the design of the residence, reducing its size and keeping it within the originally approved footprint, and does not propose any changes to the approved landscaping plan. Therefore, it is not necessary for the applicants to devise a new landscaping plan for the amended development and the Commission instead imposes Special Condition No. 6 as a condition of the permit amendment. Special Condition No. 6 requires that the current permittees undertake the amended development in accordance with the final approved revised landscape plan dated January 7, 2004 and the addendum to the revised landscape plan, and that no limbing or pruning of visually screening trees occur unless a permit amendment is obtained from the Commission.

For the originally approved residence, the Commission attached a special condition requiring that the property owners/applicants record and execute a deed restriction against the property approved by the Executive Director that imposes the special conditions of the permit as covenants, conditions and restrictions on the use and enjoyment of the property. This special condition was required, in part, to ensure that any future buyers of the property will be aware of the limitations of Special Condition Nos. 6 and 2 on tree removal and limbing, maintaining the dark colors, prohibiting the use of reflective glass and maintaining a certain kind and array of exterior lighting fixtures. On June 23, 2004, the applicants for the originally approved development recorded a deed restriction on their property and submitted this to the Commission, satisfying the above condition. However, the current amended proposal, as conditioned, includes new special conditions pertaining to the amended residential design. Therefore, the Commission imposes Special Condition No. 1, which requires the applicants to record a similar deed restriction for the amended project, to impose the special conditions of the permit amendment as covenants, conditions and restrictions n the use and enjoyment of the property. As conditioned, the proposed amended development would be subordinate to the character of its setting as required by LUP policy 3.5-1, 3.5-3, 3.5-4, and CZC

Section 20.504.015(c)(3) by providing for perimeter screening in keeping with the forested nature of the property and ensuring that all exterior materials and colors will blend with the hue and brightness of the colors of its surroundings as required by CZC Section 20.504.015(c)(3).

Conclusion

Therefore, for all of the above reasons, the Commission finds that the proposed amended development as conditioned will protect public views to and along the coast, conform to height requirements, and be subordinate to the character of its setting consistent with the visual resource protection provisions of the certified LCP.

5. Public Access and Recreation

Coastal Act Access Policies

Projects located between the first public road and the sea and within the coastal development permit jurisdiction of a local government are subject to the coastal access policies of both the Coastal Act and the LCP. Coastal Act Sections 30210, 30211, and 30212 require the provision of maximum public access opportunities, with limited exceptions. Section 30210 states that maximum access and recreational opportunities shall be provided consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. Section 30211 states that development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation. Section 30212 states that public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, adequate access exists nearby, or agriculture would be adversely affected.

LCP Provisions

The Mendocino County LUP includes a number of policies regarding standards for providing and maintaining public access. Policy 3.6-9 states that offers to dedicate an access easement shall be required in connection with new development for all areas designated on the land use plan maps. Policy 3.6-28 reiterates that new development on parcels containing the accessways identified on the land use maps shall include an irrevocable offer to dedicate an easement.

LUP Policy 3.6-27 states:

> *"No development shall be approved on a site which will conflict with easements acquired by the public at large by court decree. Where evidence of historic public use indicates the potential for the existence of prescriptive rights, but such*

rights have not been judicially determined, the County shall apply research methods described in the Attorney General's 'Manual on Implied Dedication and Prescriptive Rights.' Where such research indicates the potential existence of prescriptive rights, an access easement shall be required as a condition of permit approval. Development may be sited on the area of historic public use only if: (1) no development of the parcel would otherwise be possible, or (2) proposed development could not otherwise be sited in a manner that minimizes risks to life and property, or (3) such siting is necessary for consistent with the policies of this plan concerning visual resources, special communities, and archaeological resources. When development must be sited on the area of historic public use an equivalent easement providing access to the same area shall be provided on the site."

Note: This policy is implemented verbatim in Section 20.528.030 of the Coastal Zoning Code.

Discussion

In its application of the above policies, the Commission is limited by the need to show that any denial of a permit application based on this section, or any decision to grant a permit subject to special conditions requiring public access is necessary to avoid or offset a project's adverse impact on existing or potential access.

As described above, and as discussed in the findings for approval with conditions of the original permit (see exhibit 5), the subject parcel is located on a coastal bluff approximately 33 to 61 feet above the ocean. There is no physical access from the subject parcel to the shoreline due to the very steep drop off. The property is situated approximately 600 feet south of the Ross Creek Shoreline Access to the north and a little more than ¾ of a mile north of the Schooner Gulch/Bowling Ball Beach Shoreline Access, both providing signed vertical coastal shoreline access from Highway One to the beach. The County's Land Use Map #28 for the portion of the county containing the subject parcel designates the beach at the base of the coastal bluff west of the project site for proposed lateral coastal access. The Coastal Element also indicates the intention of establishing a bluff top trail in this location for public coastal access. However, no evidence exists that the parcel has been used by the public to gain access to the coast. Coastal Commission staff did not identify any trails on the subject property. In addition, the construction of the proposed residence would not significantly increase the demand for new public access.

Therefore, the Commission finds that the proposed amended development does not have any significant adverse impact on existing or potential public access, and that the project as proposed, which does not include provision of public access, is consistent with the

requirements of the Coastal Act Sections 30210,30211, and 30212 and the public access policies of the County's certified LCP.

6. California Environmental Quality Act

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirement of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on conformity with LCP policies and the public access and recreation policies of the Coastal Act at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As discussed herein, in the findings addressing the consistency of the proposed project with the certified LCP and the public access and recreation policies of the Coastal Act, the proposed project has been conditioned to be found consistent with the Mendocino County LCP and the access and recreation policies of the Coastal Act. Mitigation measures, which will minimize all adverse environmental impacts have been required. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity may have on the environment. Therefore, the Commission finds that the proposed project can be found to be consistent with the requirements of the Coastal Act to conform to CEQA.

Exhibits:
1. Regional Location Map
2. Vicinity Map
3. Original Approved Project Plans
4. Proposed Amended Project Plans
5. CDP A-1-MEN-01-056 Staff Report
6. Geotechnical Report
7. Supplemental Geotechnical Analyses

ATTACHMENT A

Standard Conditions:

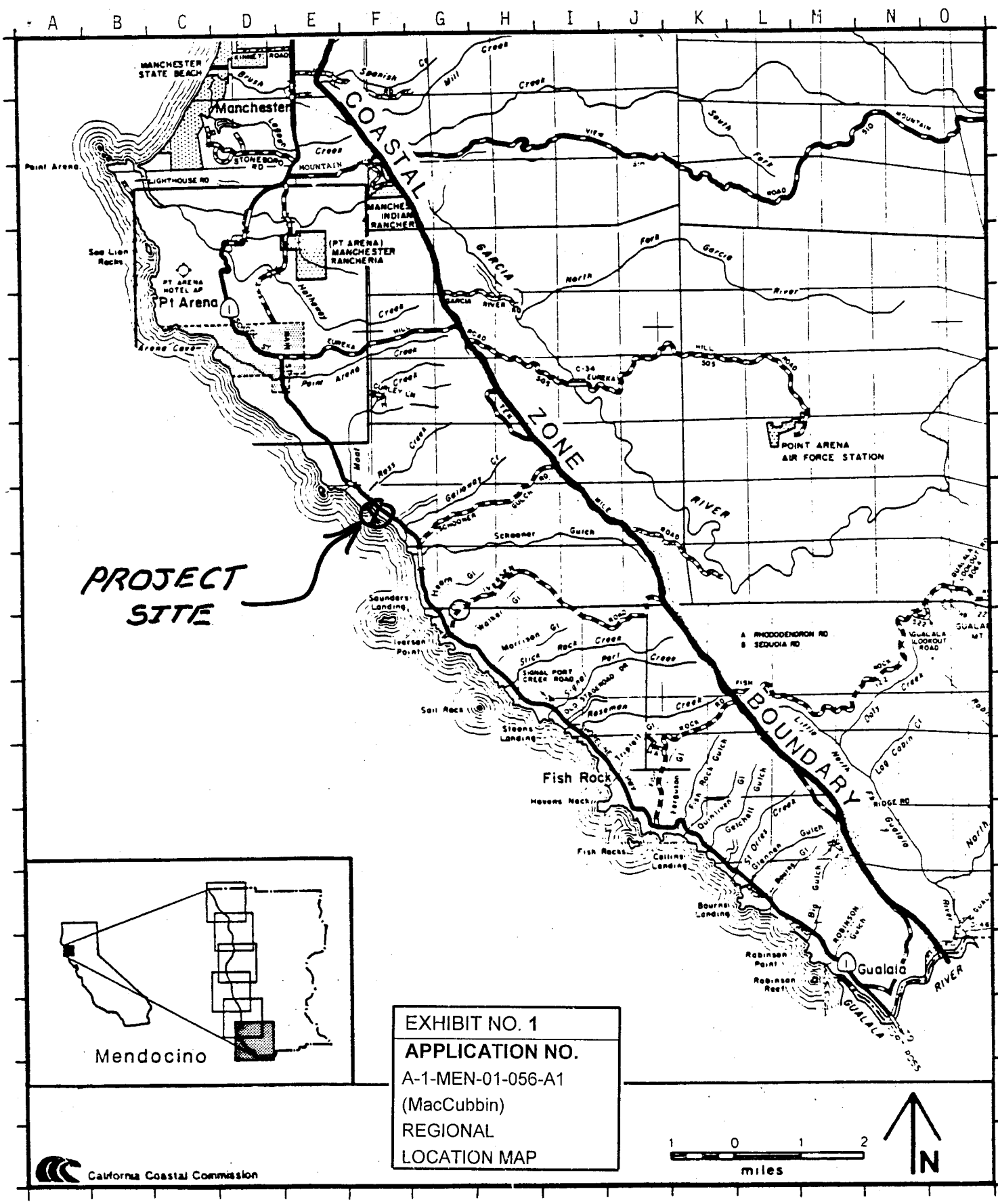
1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director of the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.



County of Mendocino

Sheet 6 of 6

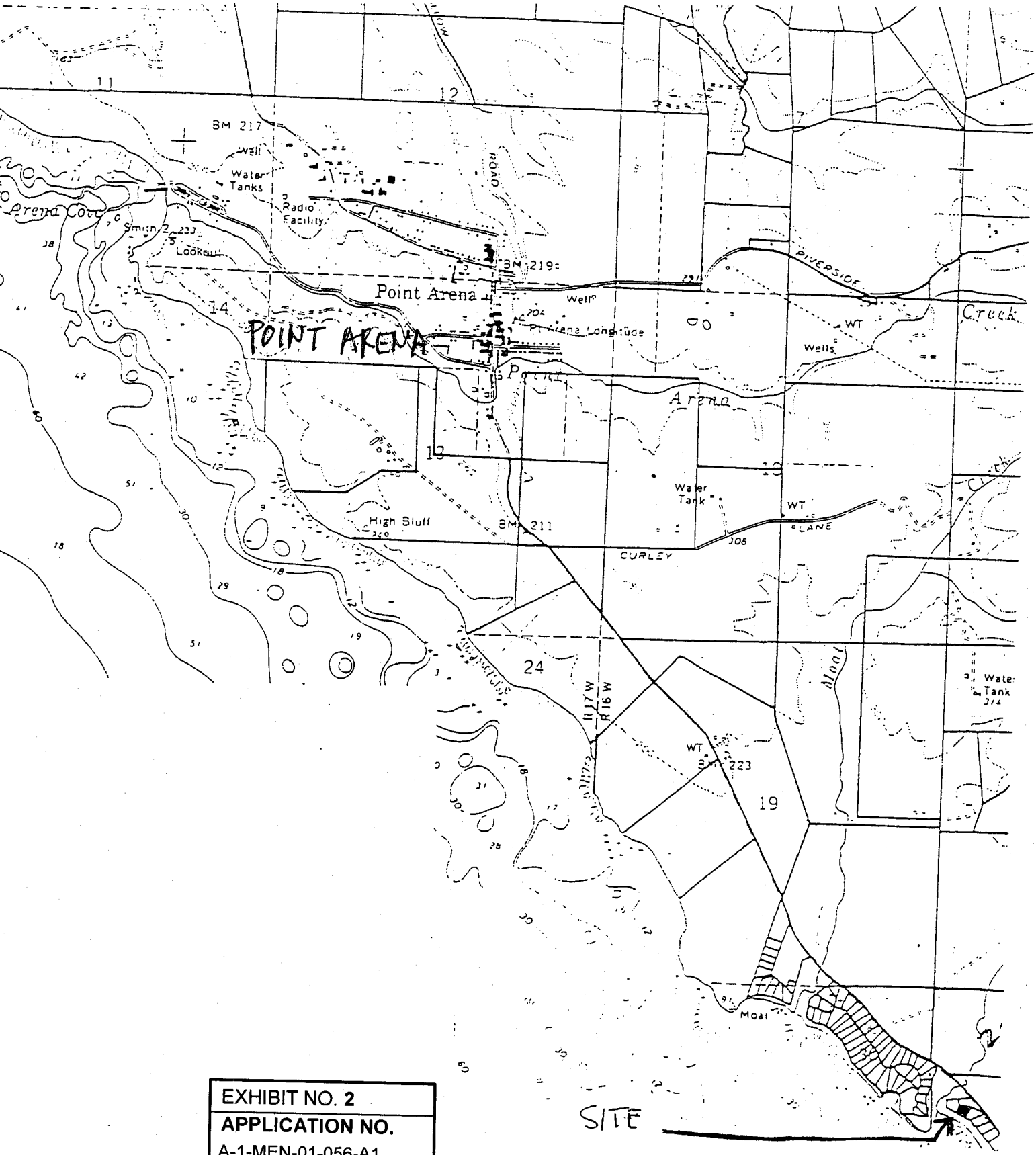


EXHIBIT NO. 2
APPLICATION NO.
A-1-MEN-01-056-A1
(MacCubbin)
PROJECT
VICINITY MAP

EROSION CONTROL PLAN NOTES

1. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND PERMANENT VEGETATION IS ESTABLISHED.
2. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
3. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
4. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
5. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
6. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
7. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
8. REFERENCE LANDSCAPE PLANS FOR PERMANENT EROSION CONTROL FEATURES
9. VEGETATION AT THE SITE SHALL BE MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE AND ANY DISTURBED AREAS SHALL BE REPLANTED OR SEEDED WITH NATIVE VEGETATION IMMEDIATELY FOLLOWING PROJECT COMPLETION.
10. ALL ON-SITE DEBRIS STOCKPILES SHALL BE COVERED AND CONTAINED AT ALL TIMES.

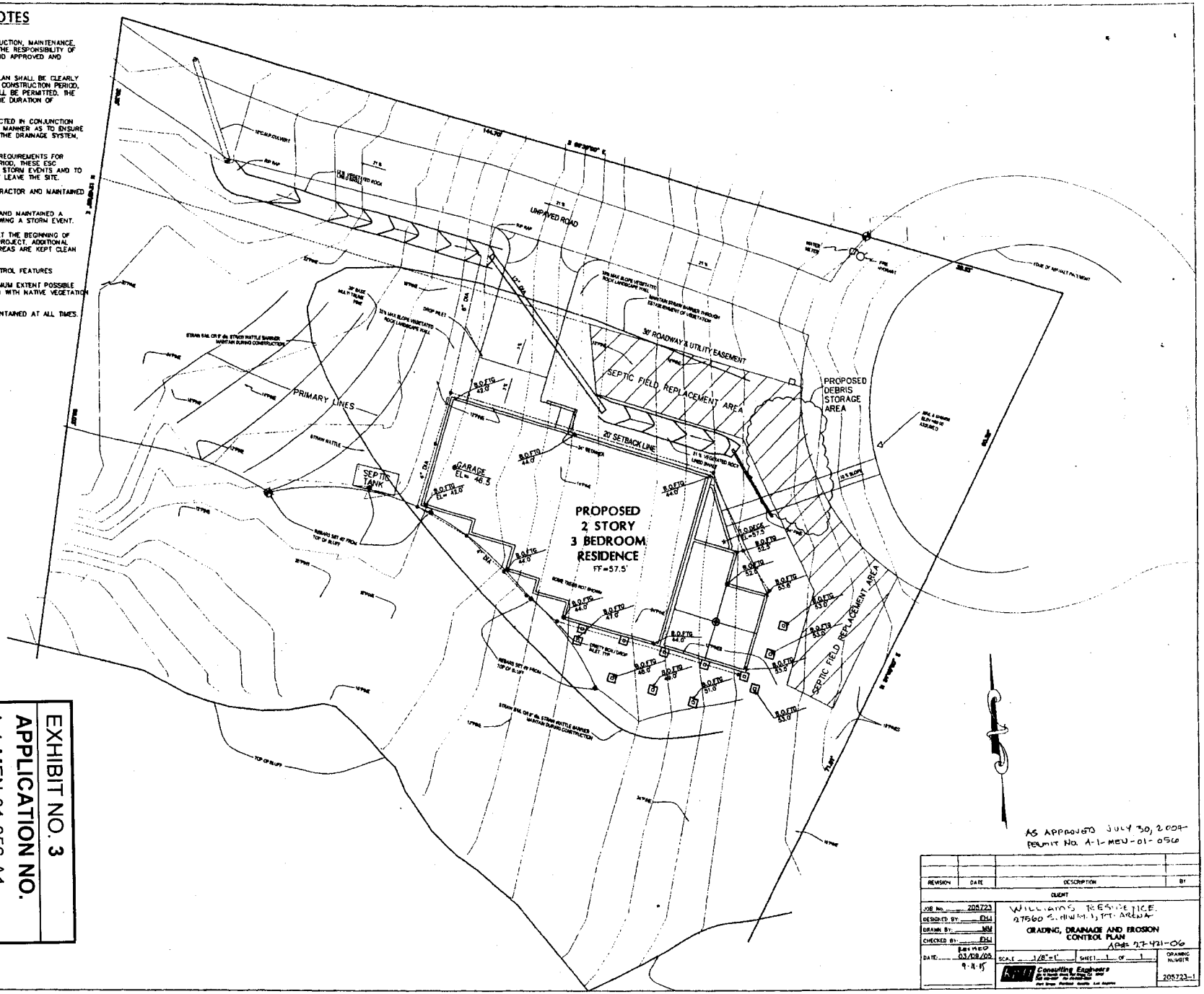


EXHIBIT NO. 3
APPLICATION NO.
A-1-MEN-01-056-A1
(MacCubbin)
ORIGINAL PROJECT PLANS (Page 1 of 5)

AS APPROVED JULY 30, 2004
PERMIT NO. A-1-MEN-01-056

REVISION	DATE	DESCRIPTION	BY

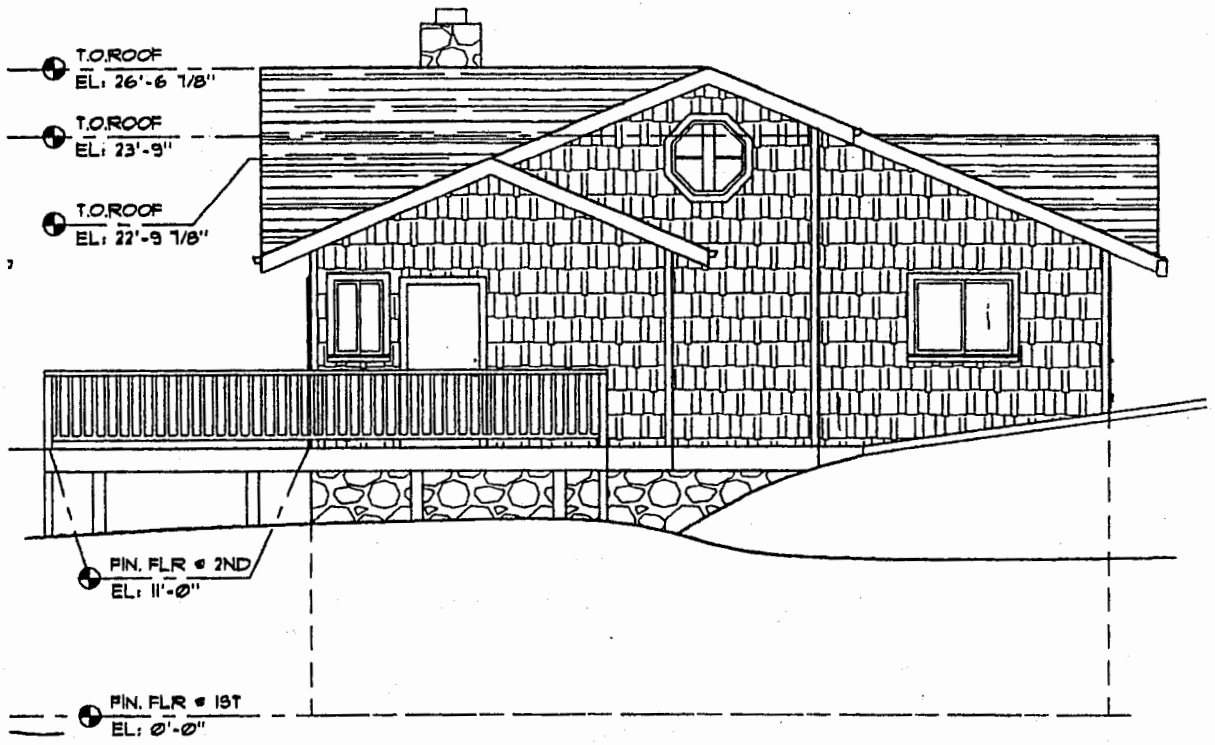
CLIENT: WILLIAMS RESIDENCE
27560 S. HWY. 1, FT. ARENA

GRADING, DRAINAGE AND EROSION CONTROL PLAN
APN# 27-421-06

JOB No.	205723
DESIGNED BY:	EHJ
DRAWN BY:	MM
CHECKED BY:	EHJ
DATE:	REVISED 03/08/05 9-8-05
SCALE:	1/8"=1'
SHEET:	1 OF 1
DRAWING NUMBER	205723-1

Consulting Engineers

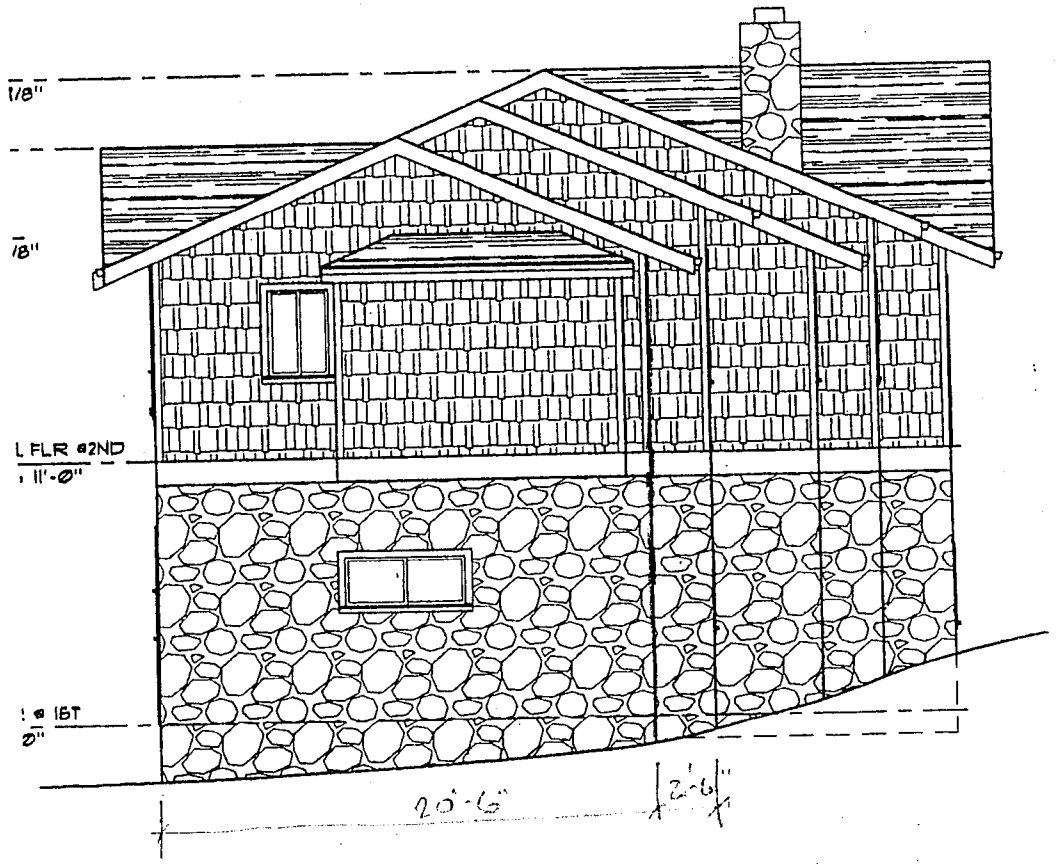
8 OF 12



EXIST. (2) ~~WEST~~ EAST ELEVATION
1/4"=1'-0"

12 of 15

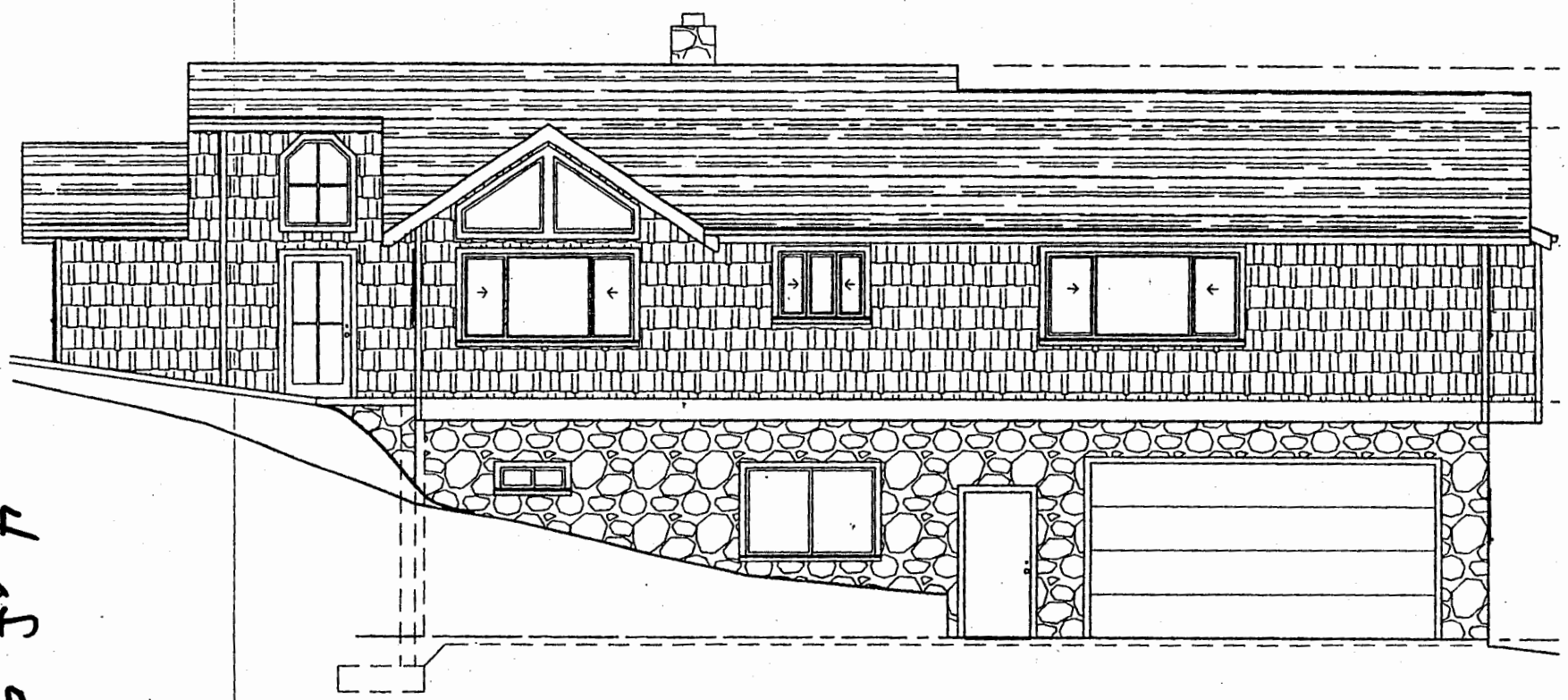
9 OF 12



EXIST (4) ~~EAST~~ WEST ELEVATION
1/4"=1'-0"

13 of 15

12 OF 12

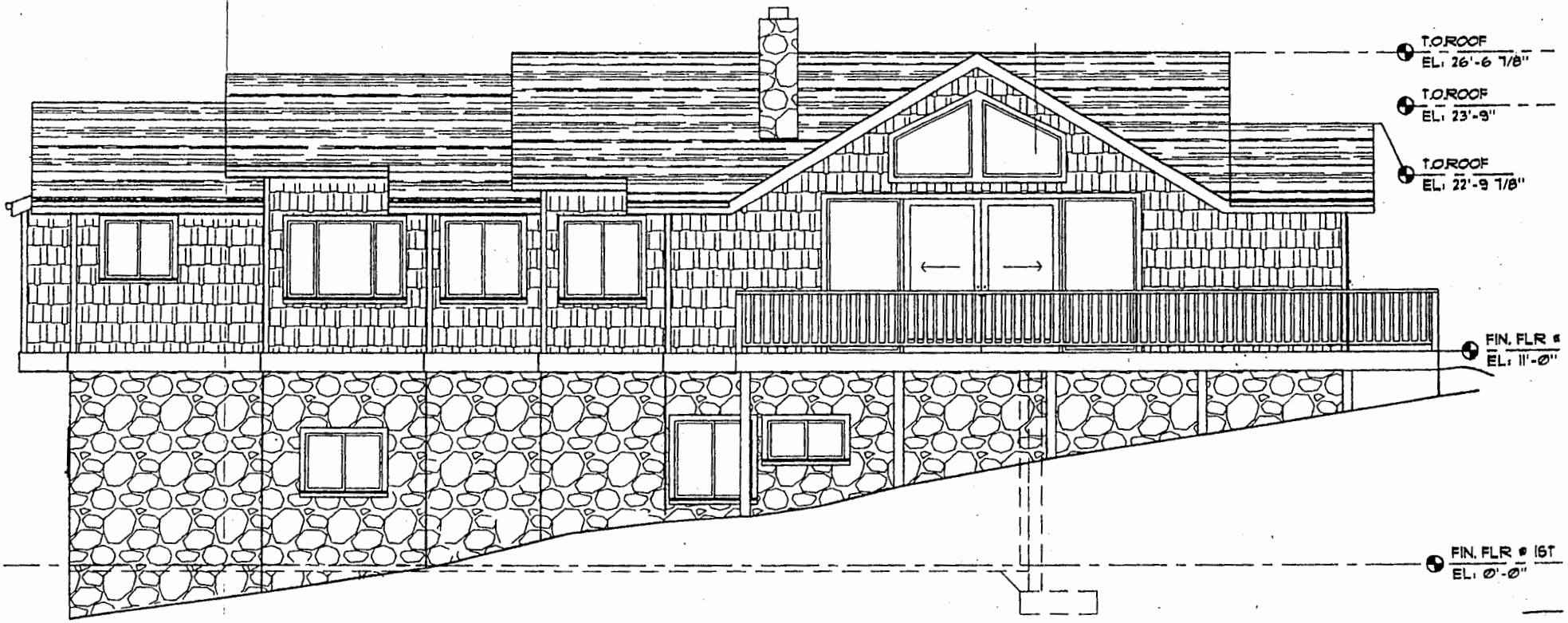


EXIST. (1) NORTH ELEVATION
1/4"=1'-0"

4 of 5

10-OF 12

WILLIAMS ELEVATIONS
AS APPROVED 4.004



EXIST. (3) SOUTH ELEVATION
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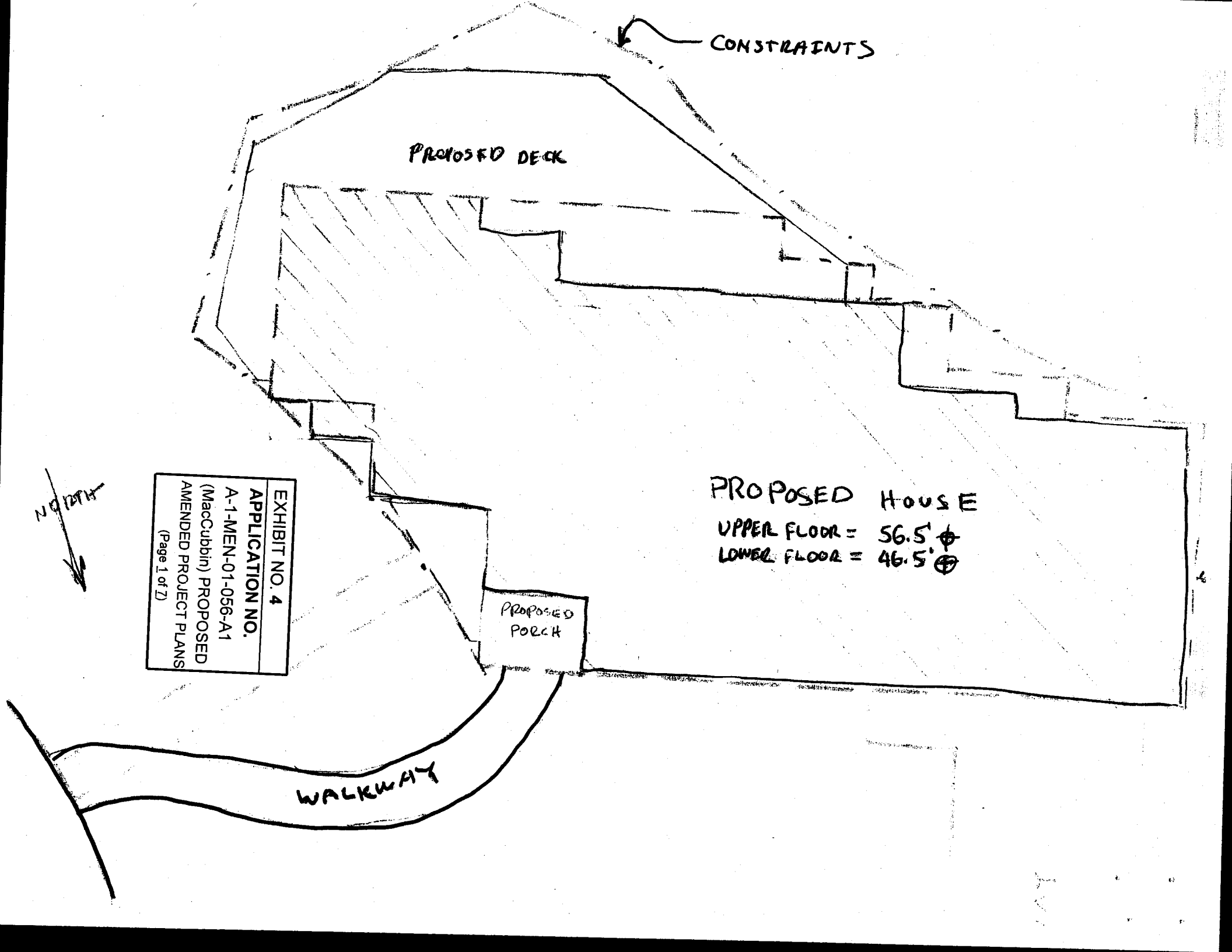
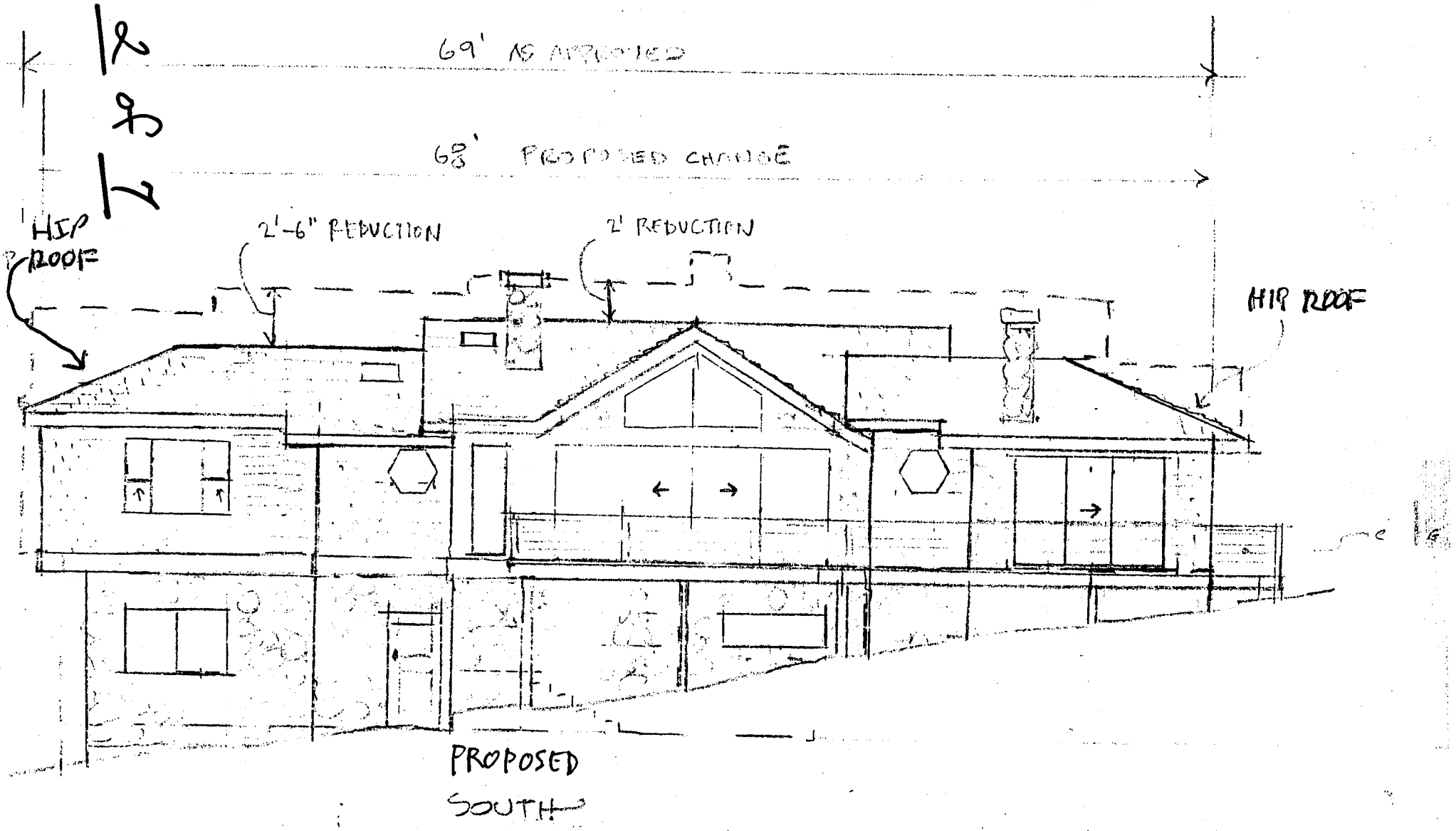
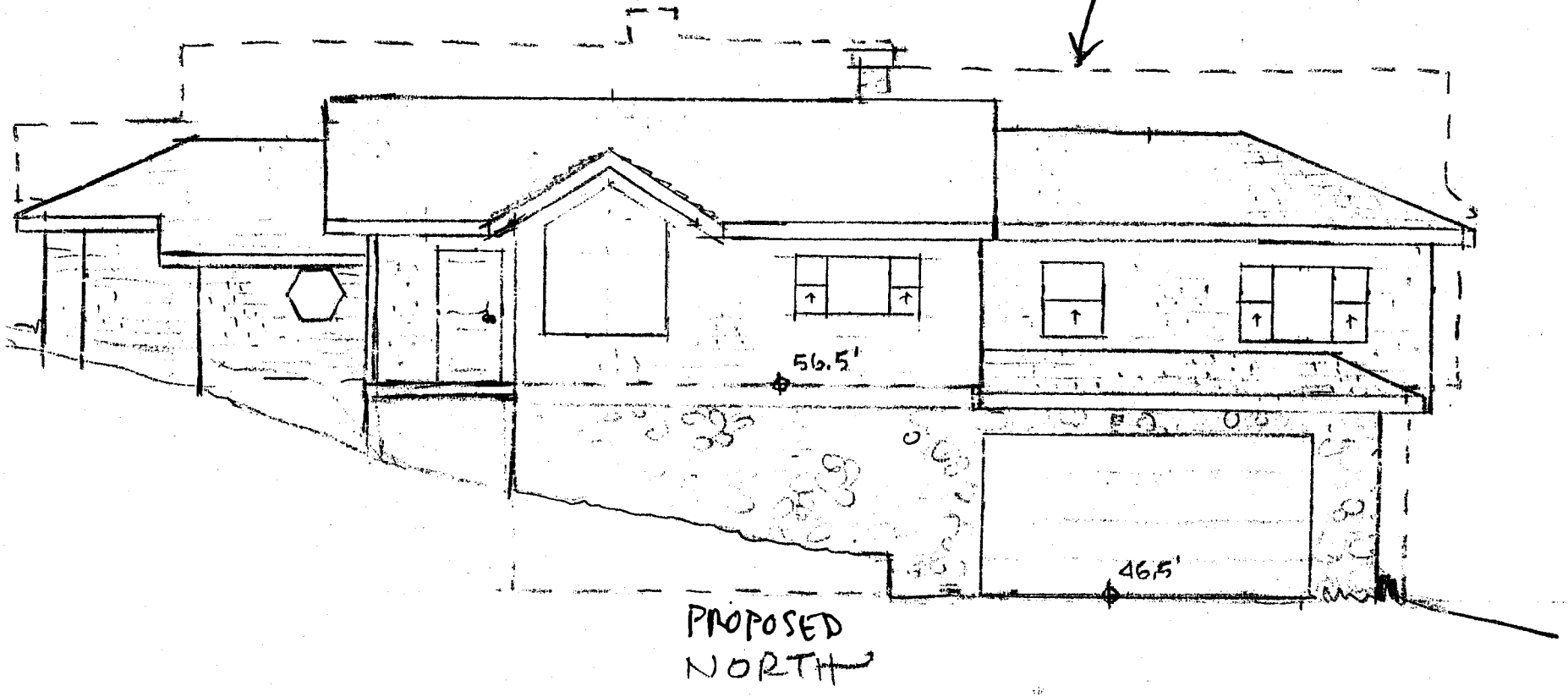
15 of 15


CONSTRAINTS
PROPOSED DECK
PROPOSED HOUSE
UPPER FLOOR = 56.5'
LOWER FLOOR = 46.5'
PROPOSED PORCH
WALKWAY
NORTH
EXHIBIT NO. 4
APPLICATION NO.
A-1-MEN-01-056-A1
(MacCubbin) PROPOSED AMENDED PROJECT PLANS
(Page 1 of 7)


69' AS APPROVED
69 5/8' PROPOSED CHANGE
HIP ROOF
2'-6" REDUCTION
2' REDUCTION
HIP ROOF
PROPOSED
SOUTH

3 of 7

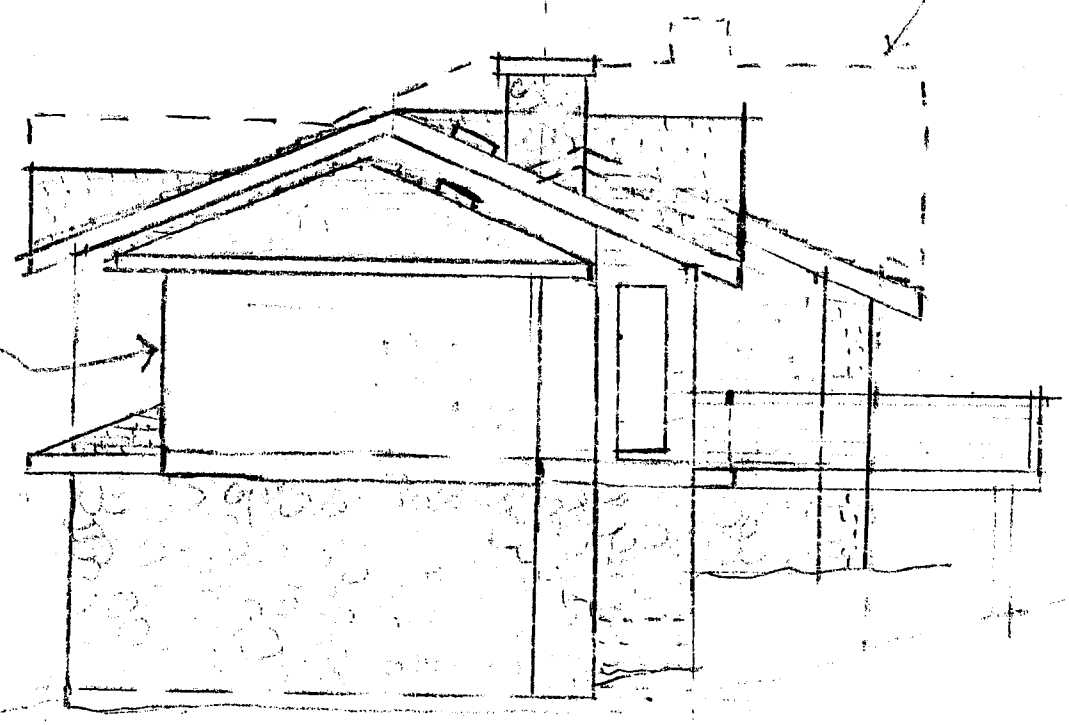


PROPOSED
NORTH →

Rosenthal

SCA
1/8" =
2-2

REDUCE SIZE OF GABLE



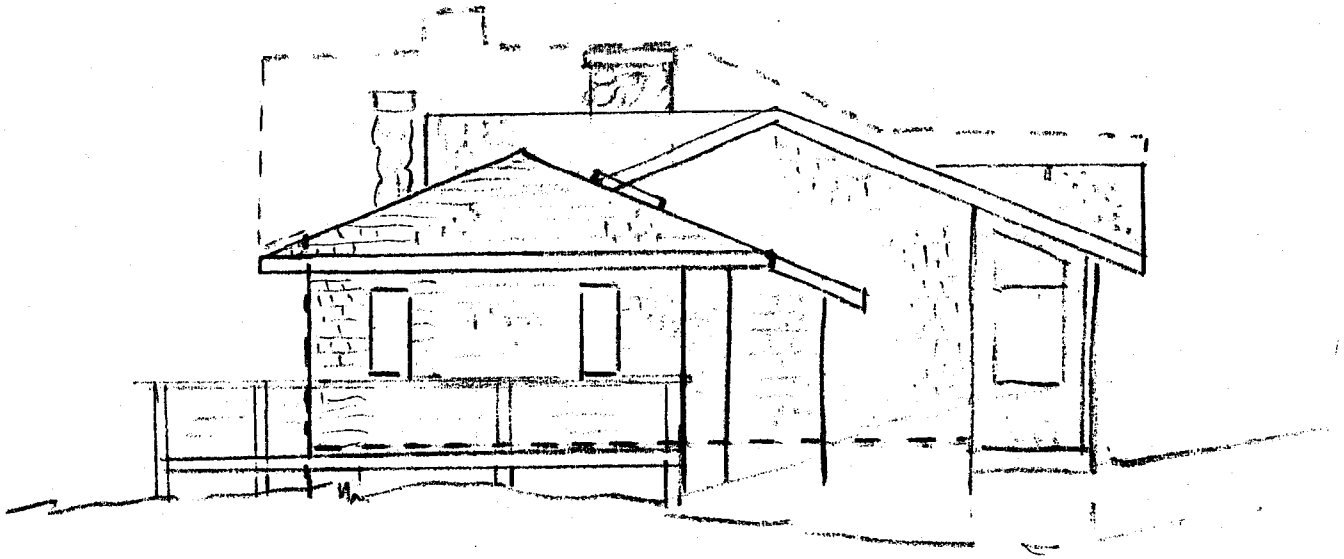
UPPER FLOOR WALL SETBACK OVER GARAGE

PROPOSED

WE

4 of 7

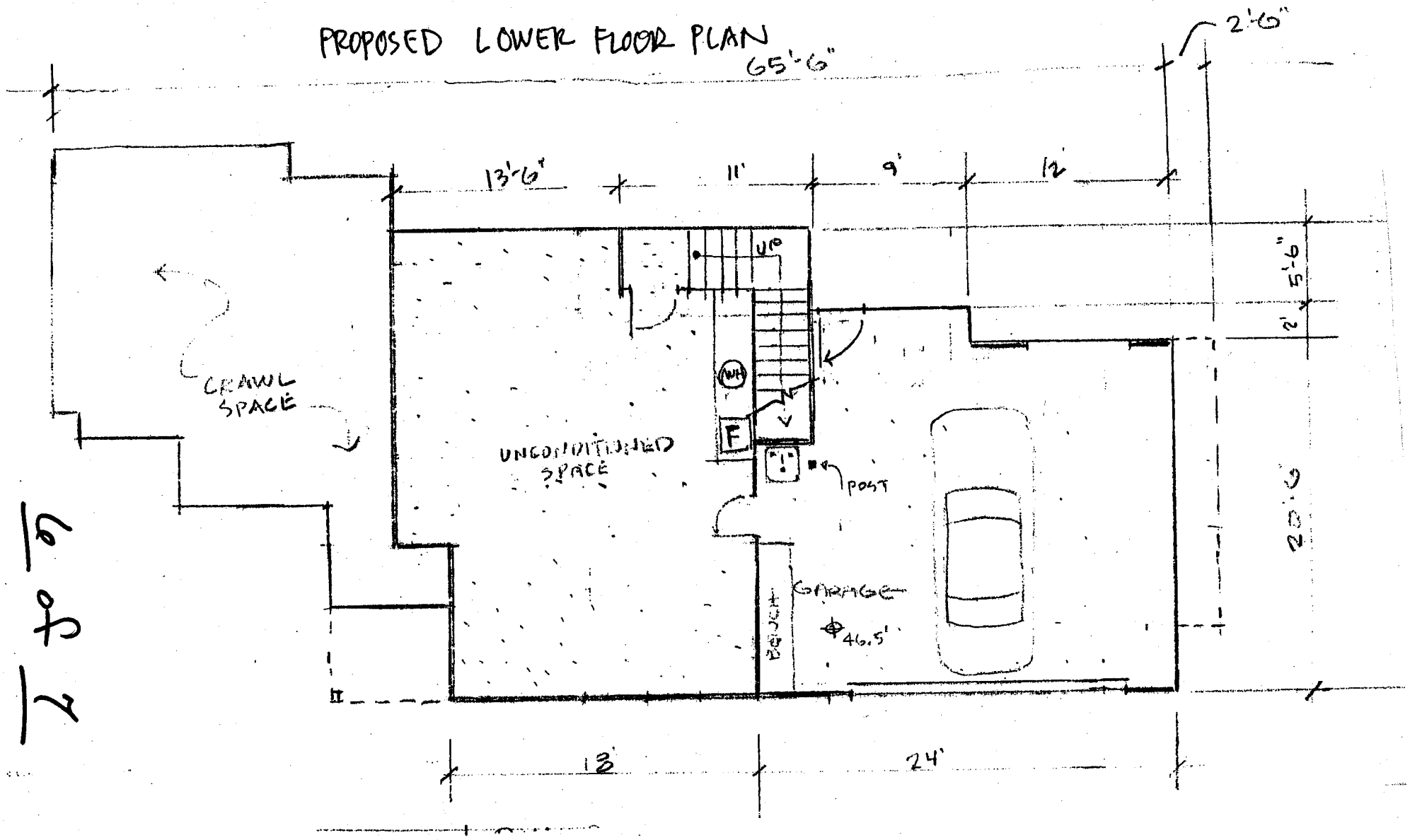
15 of 21

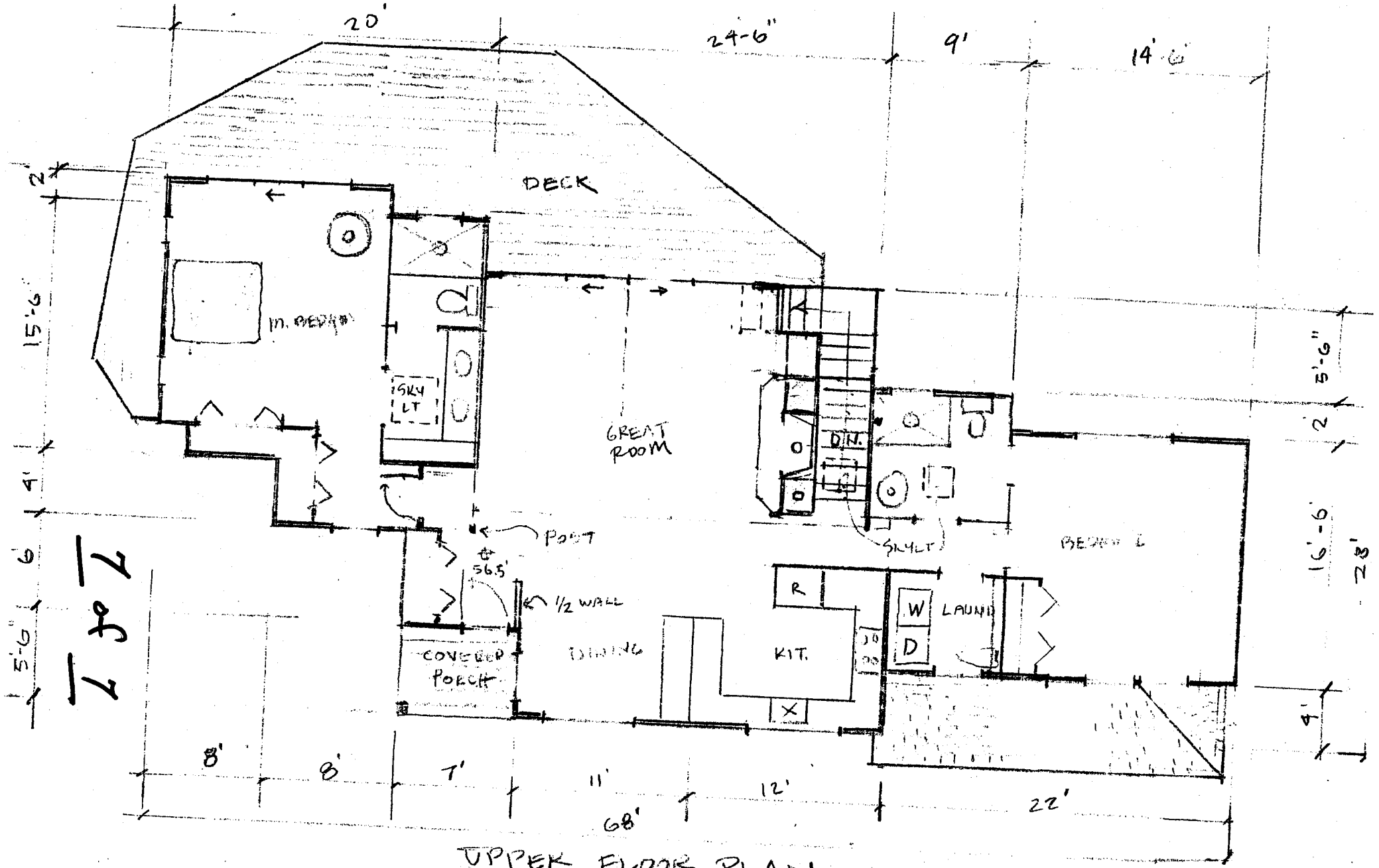


PROPOSED

EAST

PROPOSED LOWER FLOOR PLAN





7 of 7

UPPER FLOOR PLAN

PROPOSED

STATE OF CALIFORNIA -- THE RESOURCES AGENC GRAY DAVIS, GOVERNOR

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FACSIMILE (707) 445-7877

MAILING ADDRESS:
P. O. BOX 4908
EUREKA, CA 95502-4908

RLSM

W 5b

EXHIBIT NO. 5
APPLICATION NO.
A-1-MEN-01-056-A1
(MacCubbin)
STAFF REPORT
(Page 1 of 35)

Filed:	October 16, 2001
49th Day:	Opened and Continued
Staff:	Randall Stemler
Staff Report:	September 25, 2003
Hearing Date:	October 8, 2003
Commission Action:	

STAFF REPORT:
DE NOVO HEARING ON APPEAL

APPEAL NO.:	**A-1-MEN-01-056**
APPLICANTS:	**Gale and Dorothy Williams**
AGENT:	Ed McKinley
LOCAL GOVERNMENT:	County of Mendocino
DECISION:	Approval with Conditions
PROJECT LOCATION:	27560 South Highway One, near Schooner Gulch, south of Point Arena, Mendocino County (APN 027-421-06)
PROJECT DESCRIPTION:	Construction of a 2,460 square-foot, 23.85-foot-high, single-family residence, with a 632-square-foot attached garage/mechanical room, a septic system, connection to an existing private water system, driveway, concrete walkway, and wooden decks.
APPELLANTS:	(1) Friends of Schooner Gulch, Attn: Peter Reimuller; (2) Sierra Club, Mendocino-Lake Group, Attn: Rixanne Wehren; (3) Hillary Adams; (4) Roanne Withers.

SUBSTANTIVE FILE: DOCUMENTS
1) Mendocino County CDP No. 35-01; and
2) Mendocino County Local Coastal Program

STAFF NOTES:

1. Procedure

On January 9, 2002, pursuant to Section 30625 of the Coastal Act and Section 13115 of Title 14 of the California Code of Regulations, the Coastal Commission found that the appeal of Mendocino County's approval raised a substantial issue with respect to the grounds on which the appeal had been filed. As a result, the County's approval is no longer effective, and the Commission must consider the project *de novo*. The Commission may approve, approve with conditions (including conditions different than those imposed by the County), or deny the application. Because the proposed development is between the first road and the sea, the applicable test for the Commission to consider is whether the proposed development is in conformity with the certified Local Coastal Program and with the public access and public recreation policies of the Coastal Act. Testimony may be taken from all interested persons at the *de novo* hearing.

2. Submittal of Additional Information by the Applicant

For the purposes of *de novo* review by the Commission, the applicant has provided Commission staff with supplemental information consisting of a geotechnical slope stability analysis and report and an arborist's investigation and report. The supplemental information addresses issues raised by the appeal and provides additional information that was not a part of the record when the County originally acted to approve the coastal development permit. The supplemental geologic report includes a bluff stability and aerial photograph analysis with revised bluff edge setback recommendations, an updated aerial photographic analysis, and discussion related to the recommended bluff edge setback with regard to sea level rise. The supplemental arborist's report evaluates the existing forest stand composition, age, condition and life expectancy as well as how removal of additional trees to accommodate the proposed development would affect the remaining trees, taking into consideration such factors as disease, wind throw, root loss, and bluff retreat.

SUMMARY OF STAFF RECOMMENDATION *DE NOVO*: APPROVAL WITH CONDITIONS

The staff recommends that the Commission approve with conditions the coastal development permit for the proposed project on the basis that, as conditioned by the Commission, the project is consistent with the County of Mendocino certified LCP and the access policies of Chapter 3 of the Coastal Act.

The development, as approved by the County, consists of a 2,460-square-foot, 23.85-foot-high, single-family residence, with a 632-square-foot attached garage/mechanical room, a septic system, driveway, concrete walkway, and wooden decks. The subject property is an approximately half-acre parcel located within a mature, planted, Monterey pine forest with sparse understory. The parcel is situated at the edge of a bluff on a coastal terrace at an elevation ranging between 33 feet and 61 feet above sea level. A lateral frontage road borders the property on the east side, and runs north-south between the parcel and Highway One.

Since the Commission found that the appeal raised a substantial issue of conformance with the LCP, the applicant has submitted additional information regarding geologic slope stability, arborist investigation and landscaping recommendations to achieve visual screening. Staff recommends that the Commission attach eight (8) special conditions, including conditions to 1) require that all terms and conditions of the permit are recorded as deed restrictions; 2) impose design restrictions on the color and materials used, as well as require lighting to be shielded to ensure the appearance of the proposed structures will blend with their surroundings; 3) require conformance of the design and construction plans to the geotechnical report recommendations to ensure geologic stability; 4) prohibit future bluff or shoreline protective devices; 5) require the applicants to assume the risk of geologic hazard and waive liability for the Commission; 6) require a revised landscape plan that requires the planting of additional trees and the maintenance of landscaping to ensure the development would be subordinate to the character of its setting; 7) require an erosion and runoff control plan to control sedimentation and protect water quality; and 8) acknowledge that the Commission's action has no effect on conditions imposed by the local government pursuant to an authority other than the Coastal Act.

Staff recommends that the Commission find the project, as conditioned, is consistent with the provisions of the certified Mendocino County LCP and the Coastal Act public access and recreation policies.

I. MOTION, STAFF RECOMMENDATION *DE NOVO*, AND RESOLUTION:

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit No. A-1-MEN-01-056 pursuant to the staff recommendation.

Staff Recommendation of Approval:

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

Resolution to Approve Permit:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development, as conditioned, will be in conformity with the certified County of Mendocino LCP, is located between the sea and the nearest public road to the sea, and is in conformance with the public access and public recreation policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment.

II. STANDARD CONDITIONS: (See Attachment)

III. SPECIAL CONDITIONS:

1. Deed Restriction

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property.

2. Design Restrictions

A. All exterior siding and roofing of the proposed structures shall be composed of the colors proposed in the application or darker earthtone colors only. The current owner or any future owner shall not repaint or stain the house or other approved structures with products that will lighten the color of the house or other approved structures without an amendment to this permit. In addition, all exterior materials, including roofs and windows, shall be non-reflective to minimize glare; and

B. All exterior lights, including any lights attached to the outside of the buildings, shall be the minimum necessary for the safe ingress and egress of the structures, and shall be low-wattage, non-reflective, shielded, and have a directional cast downward such that no light will shine beyond the boundaries of the subject parcel.

3. **Conformance of the Design and Construction Plans to the Geotechnical Investigation Report**

A. All final design and construction plans, including foundations, grading and drainage plans, shall be consistent with the recommendations contained in the Geotechnical Investigation report dated March 16, 2001, and Supplemental Bluff Stability and Aerial Photograph Analysis report dated April 18, 2002 prepared by BACE Geotechnical Consultants. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit, for the Executive Director's review and approval, evidence that a licensed professional (Certified Engineering Geologist or Geotechnical Engineer) has reviewed and approved all final design, construction, and drainage plans and has certified that each of those plans is consistent with all of the recommendations specified in the above-referenced geotechnical report approved by the California Coastal Commission for the project site.

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

4. **No Future Bluff or Shoreline Protective Device**

A. By acceptance of this permit, the applicants agree, on behalf of themselves and all successors and assigns, that no bluff or shoreline protective device(s) shall ever be constructed to protect the development approved pursuant to Coastal Development Permit No. A-1-MEN-01-056, including, but not limited to, the residence with the attached garage, foundations, septic system, concrete walkways and driveway in the event that the development is threatened with damage or destruction from waves, erosion, storm conditions, bluff retreat, landslides, ground subsidence or other natural hazards in the future. By acceptance of this permit, the applicants hereby waive, on behalf of themselves and all successors and assigns, any rights to construct such devices that may exist under Public Resources Code Section 30235 or under Mendocino County Land Use Plan Policy No. 3.4-12, and Mendocino County Coastal Zoning Code No 20.500.020(E)(1).

B. By acceptance of this Permit, the applicants further agree, on behalf of themselves and all successors and assigns, that the landowner shall remove the development authorized by this permit, including the residence with the attached garage, foundations, septic system, concrete walkways and driveway

if any government agency has ordered that the structures are not to be occupied due to any of the hazards identified above. In the event that portions of the development fall to the beach before they are removed, the landowner shall remove all recoverable debris associated with the development from the beach and ocean and lawfully dispose of the material in an approved disposal site. Such removal shall require a coastal development permit.

C. In the event the edge of the bluff recedes to within 10 feet of the principal residence but no government agency has ordered that the structures not be occupied, a geotechnical investigation shall be prepared by a licensed geologist or civil engineer with coastal experience retained by the applicant, that addresses whether any portions of the residence are threatened by wave, erosion, storm conditions, or other natural hazards. The report shall identify all those immediate or potential future measures that could stabilize the principal residence without shore or bluff protection, including but not limited to removal or relocation of portions of the residence. The report shall be submitted to the Executive Director and the appropriate local government official. If the geotechnical report concludes that the residence or any portion of the residence is unsafe for occupancy, the permittee shall, within 90 days of submitting the report, apply for a coastal development permit amendment to remedy the hazard which shall include removal of the threatened portion of the structure.

5. **Assumption of Risk, Waiver of Liability and Indemnity**

By acceptance of this permit, the applicants acknowledge and agree: (i) that the site may be subject to hazards from landslide, bluff retreat, erosion, subsidence, and earth movement; (ii) to assume the risks to the applicants and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

6. **Revised Landscape Plan**

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. A-1-MEN-01-056**, the applicants shall submit a revised final landscape plan for review and approval of the Executive Director. The revised landscape plan shall substantially conform with the landscaping plan developed by Greg Ziemer Landscaping, submitted to the California Coastal Commission on

December 11, 2001, and received by the Commission on December 18, 2001, except that the plan shall provide for the following changes to the project:

1. Landscape Plan Revisions

   a. The landscape plan shall be revised to eliminate the use of English holly (*Ilex aquafloium)*. A suitable substitute shall be used in its place. Only native and/or non-invasive plant species appropriate for the growing conditions of the site shall be used in the landscaping plan.

   b. Five additional 5-gallon sized trees from the approved landscaping plant list and five additional wax myrtle shrubs shall be planted in well-distributed locations along the southern bluff-edge portion of the property to augment the long-term effectiveness of the visual screening currently provided by existing trees.

   c. The landscape plan shall include a planting schedule, which ensures that all planting shall be completed within 60 days after completion of construction.

   d. The landscape plan shall provide that all plantings and all existing trees on the parcel be maintained in good growing conditions throughout the life of the project, and to ensure continued compliance with the landscape plan. If any of the existing trees or any of the trees and plants to be planted according to the plan die or are removed for any reason, they shall be immediately replaced in-kind, except for any Monterey pines that die which shall be replaced with new tree or non-invasive species already utilized in the landscaping plan that will grow to a similar or greater height.

   e. No limbing or pruning of the visually screening trees already existing or planted pursuant to the approved landscaping plan shall occur unless a permit amendment is obtained and issued prior to the commencement of limbing and pruning.

   f. The revised landscape plan shall incorporate all recommendations provided by consulting arborist Rob Gross of DendroTech as contained in his report submitted to the California Coastal Commission on June 10, 2003, and received by the Commission on June 13, 2003, including, but not limited to, the recommendations that: (1) a pier and grade beam foundation be used as recommended by the geotechnical consultant, (2) the landscaping be diversified by planting a variety of species, including species that provide foliage lower in the understory, (3) root areas of trees to be retained be mulched and

covered, and tree trunks and limbs be protected from physical damage during project construction, and (4) irrigation and wind screen protection be provided for newly planted landscaping.

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

7. **Erosion and Runoff Control Plan**

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. A-1-MEN-01-056,** the applicants shall submit an Erosion and Runoff Control Plan for review and approval of the Executive Director. The Erosion and Runoff Control Plan shall incorporate design elements and/or Best Management Practices (BMPs) which will serve to minimize the volume and velocity of stormwater runoff leaving the developed site, and to capture sediment and other pollutants contained in stormwater runoff from the development, by facilitating on-site infiltration and trapping of sediment generated from construction. The final drainage and runoff control plans shall at a minimum include the following provisions:

1. A physical barrier consisting of bales of straw placed end to end shall be installed between any construction and the drainage ditch running along the driveway bordering the northern parcel boundary. The bales shall be composed of weed-free rice straw, and shall be maintained in place throughout the construction period.

2. Vegetation at the site shall be maintained to the maximum extent possible and any disturbed areas shall be replanted or seeded with native vegetation immediately following project completion.

3. All on-site debris stockpiles shall be covered and contained at all times.

4. Provide that runoff from the roof, driveway and other impervious surfaces shall be collected and directed into pervious areas on the site (landscaped areas) for infiltration to the maximum extent practicable in a non-erosive manner, prior to being conveyed off-site. Where gutters and downspouts are used, velocity reducers shall be incorporated, to prevent scour and erosion at the outlet.

B. The permittee shall undertake development in accordance with the approved Erosion and Runoff Control plan. Any proposed changes to the approved plan shall be

reported to the Executive Director. No changes to the approved plan shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

8. Conditions Imposed By Local Government.

This action has no effect on conditions imposed by a local government pursuant to an authority other than the Coastal Act.

IV. FINDINGS AND DECLARATIONS:

A. Project History/Background.

On September 27, 2001 the Coastal Permit Administrator (CPA) for Mendocino County approved a Coastal Development Permit for a 2,460-square-foot, 23.85-foot-high, single-family residence, with a 632-square-foot attached garage/mechanical room, septic system, driveway, concrete walkway, and wooden decks at 27560 Highway One, one mile northwest of Schooner Gulch, south of Point Arena. The Coastal Permit Administrator approved the project with a total of five Special Conditions. The conditions are attached on pages 11 and 12 of Exhibit No. 4. The CPA's decision was not appealed at the local level to the Board of Supervisors.

After the close of the local appeal period, the County issued a Notice of Final Action on the coastal development permit, which was received by Commission staff on October 15, 2001 (Exhibit No. 4). The County's approval was appealed to the Coastal Commission in a timely manner on October 16, 2001, within 10 working days of receipt by the Commission of the County's Notice of Final Action. The County's approval was appealed by the Friends of Schooner Gulch, the Mendocino – Lake Group of the Sierra Club, Hillary Adams, and Roanne Withers. The appellants asserted that the proposed development would be inconsistent with 1) the visual policies and standards of the certified LCP for protecting highly scenic areas, 2) bluff setback restrictions, and 3) the requirement for sufficient information to be provided at the time of the application.

On October 22, 2001, staff requested all relevant documents and materials regarding the subject approval from the County. These materials were received by the Commission on November 28, 2001. On November 14, 2001, the Commission opened and continued the appeal hearing.

On January 9, 2002, the Commission found that a substantial issue had been raised with regard to the consistency of the project as approved by the County with the provisions of the certified LCP regarding geologic hazards and the protection of visual resources.

The Commission continued the *de novo* portion of the appeal hearing.

B. Project and Site Description.

Project Setting

The project site is a blufftop parcel above Bowling Ball Beach approximately three miles south of Point Arena, one mile northwest of Schooner Gulch, and 1,000 feet southeast of Ross Creek in an area along the Mendocino coastline designated as highly scenic (See Exhibits 1 and 2). The parcel ranges in elevation between 33 and 61 feet above sea level, and is approximately a half-acre in size. The property is accessed by a paved, common driveway off Highway One to the north-northeast. The common driveway ends in a cul-de-sac at the east-northeast corner of the property. A gravel driveway extends from the cul-de-sac, basically along the northeast property line to the west-northwest neighboring residence. Neighboring two-story single-family houses currently exist on both sides of the project site. The subject property is currently well forested, predominantly with mature, planted, Monterey pine trees with sparse understory consisting of poison oak, coyote brush, and native blackberries. There are no indications of Environmentally Sensitive Habitat Areas (ESHA) existing on the property.

The property is zoned Rural Residential, 5 Acres Minimum, DL. Within the Rural Residential Zone, a single family residence is a permitted use, subject to approval of a coastal development permit.

The parcel is visible from Highway One for a distance of approximately 300 feet for motorists traveling south, but is not visible while traveling north on Highway One due to the nature of the topography. Highway One is at a lower elevation than the subject property, and views are limited due to the forested landscape on the subject property, as well as from thickets of willow vegetation growing along the highway. The view of the property from Schooner Beach and its publicly accessed headlands is very limited. Where the property would be in view, the neighboring house just to the southwest would screen the proposed house. Views of the proposed house would be partially visible from a short portion of the Ross Creek/Whiskey Shoals public coastal access trail across Ross Creek to the west. The uppermost portion of the residence may be visible from Bowling Ball Beach. Multi-species landscape plantings north and east of the residence are intended to provide visual screening to address views from these vantage points.

Project Description

The proposed project is the construction of a 2,460-square-foot two-story single-family residence, with a 632-square-foot attached garage/mechanical room. The average height of the residence would be 23.85 feet above natural grade. The maximum height from existing grade would be no more than twenty-seven feet at any point on the house. The height at the middle of the house would be twenty-five and one-half feet. The project includes installation of a septic system, connection to an existing private water system, and construction of an all-

weather surfaced driveway, concrete walkway, and wooden decks. The project would involve the removal of approximately 44 live Monterey pine trees.

C. Planning and Locating New Development.

LCP Provisions

LUP Policy 3.9-1 of the Mendocino County Land Use Plan states that new development shall be located within or near existing developed areas able to accommodate it or in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. The intent of this policy is to channel development toward more urbanized areas where services are provided and potential impacts to resources are minimized.

LUP Policy 3.8-1 states that Highway 1 capacity, the availability of water and sewage disposal system and other known planning factors shall be considered when considering applications for development permits.

The property is zoned Rural Residential, Five Acres Minimum, Development Limitation Combining District (DL). Within the Rural Residential Zone, a single-family residence is a permitted use, subject to approval of a coastal development permit. Coastal Zoning Code Chapter 20.376 establishes the prescriptive standards for development within Rural Residential (RR) zoning districts. Single-family residences are a principally permitted use in the RR zoning district. The minimum parcel size is 5 acres, pursuant to Coastal Zoning Code (CZC) Section 20.376.020(C). Setbacks for the subject parcel are twenty feet to the front and six feet on the side yards, pursuant to CZC Sections 20.376.045. The project is located in a designated highly scenic area. The proposed residence is 23.85 feet tall as measured from average grade. Per LUP Policy 3.5-3 and CZC Section 20.504.015, the maximum allowable building height in this location is 18 feet (average) above natural grade (and one-story) unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures. If those two criteria can be met, the building height can be raised to a maximum of 28 feet above average grade. CZC Section 20.376.065 sets a maximum of 20% structural coverage on RR lots of less than two acres in size.

Discussion

The proposed single-family residence would be consistent with the rural residential zoning for the site. As discussed above, the development as proposed would consist of a 23.85-foot-tall, two-story, 2,460-square-foot, single-family residence, with a 632-square-foot attached garage. The proposed development represents 17.3% coverage of the approximately .41-acre parcel consistent with the maximum 20% structural coverage standard for the zoning district. As discussed in the visual resource finding below, the development is consistent with the LCP height requirements.

The proposed development would be served by Point Arena Water Works. Sewage would be handled by an on-site septic system. The Mendocino County Division of Environmental Health has determined that the proposed septic system would have adequate capacity to serve the proposed development and has granted its approval. Development of the site as a single-family residence is envisioned under the certified LCP. The significant cumulative adverse impacts on traffic capacity of development approved pursuant to the certified LCP on lots meeting minimum parcel size standards were addressed at the time the LCP was certified. Therefore, as conditioned, the proposed development is located in an area able to accommodate the proposed development, consistent with the applicable provisions of LUP Policy 3.9-1.

As discussed below, the proposed development has been conditioned to include mitigation measures, which will minimize all significant adverse environmental impacts.

Therefore, the Commission finds that as conditioned, the proposed development is consistent with LUP Policies 3.9-1, 3.8-1, and with Zoning Code Sections 20.376 as the development will be located in a developed area, there will be adequate services on the site to serve the proposed development, and the project will not result in significant adverse individual or cumulative impacts on highway capacity, scenic values, or other coastal resources.

D. Geologic Hazards

1. Summary of LCP Provisions

LUP Policy 3.4-1 states the following in applicable part:

> *"The County shall review all applications for Coastal Development permits to determine threats from and impacts on geologic hazards arising from seismic events, tsunami runup, landslides, beach erosion, expansive soils and subsidence and shall require appropriate mitigation measures to minimize such threats. In areas of known or potential geologic hazards, such as shoreline and bluff top lots and areas delineated on the hazards maps, the County shall require a geologic investigation and report, prior to development to be prepared by a licensed engineering geologist or registered civil engineer with expertise in soils analysis to determine if mitigation measures could stabilize the site..."*

LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.020(B) state that:

> *"The County shall require that new structures be set back a sufficient distance from the edges of bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (75 years). Setbacks shall be of sufficient distance to eliminate the need for shoreline protective works. Adequate setback distances will be*

determined from information derived from the required geologic investigation and from the following setback formula:

Setback (meters) = Structure life (years) x Retreat rate (meters/year)

The retreat rate shall be determined from historical observation (e.g., aerial photographs) and/or from a complete geotechnical investigation.
All grading specifications and techniques will follow the recommendations cited in the Uniform Building Code or the engineering geologist's report [emphasis added]."

LUP Policy 3.4-12 and Zoning Code Section 20.500.020(E)(1) state that:

"*Seawalls, breakwaters, revetments, groins, harbor channels and other structures altering natural shoreline processes or retaining walls shall not be permitted unless judged necessary for the protection of existing development, public beaches or coastal dependent uses.*"

Section 20.500.015(A) of the Coastal Zoning Code states in applicable part:

"*(1) Preliminary Investigation. The Coastal Permit Administrator shall review all applications for Coastal Development Permits to determine threats from and impacts on geologic hazards.*

(2) Geologic Investigation and Report. In areas of known or potential geologic hazards such as shoreline and bluff top lots and areas delineated on the hazards maps, a geologic investigation and report, prior to development approval, shall be required. The report shall be prepared by a licensed engineering geologist or registered civil engineer pursuant to the site investigation requirements in Chapter 20.532."

Section 20.500.010 of the Coastal Zoning Code states that development shall:

"*(1) Minimize risk to life and property in areas of high geologic, flood and fire hazard;*

(2) Assure structural integrity and stability; and

(3) Neither create nor contribute significantly to erosion, geologic instability or destruction of the site or surrounding areas, nor in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs."

Section 20.500.020(B) of the Coastal Zoning Code states in applicable part:

> *"(1) New structures shall be set back a sufficient distance from the edges of bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (seventy-five (75) years). New development shall be set back from the edge of bluffs a distance determined from information derived from the required geologic investigation and the setback formula as follows:*
>
> *Setback (meters) = structure life (75 years) x retreat rate (meters/year)*
>
> *Note: The retreat rate shall be determined from historical observation (aerial photos) and/or from a complete geotechnical investigation.*
>
> ...
>
> *(3) Construction landward of the setback shall not contribute to erosion of the bluff face or to instability of the bluff* [emphasis added]."

Discussion

The subject parcel is a bluff top parcel that overlooks the ocean. The bluffs range in height from 33 to 61 feet and are very steep. As described above, the project proposes to construct a new single-family residence with an attached garage/mechanical room and appurtenant development including a septic system, driveway, walkway, and decks. The new residence would be a new structure that Mendocino County LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.020(B) require to be set back a sufficient distance from the edge of the bluff to ensure its safety from bluff erosion and cliff retreat during the economic life span of 75 years. Additionally, these provisions require the setback to be a sufficient distance so as to eliminate the need for shoreline protection devices.

The applicant's geologist, BACE Geotechnical, performed a geotechnical investigation documented in a report dated March 16, 2001, that determined a bluff retreat rate of 1 ½ inches per year. The report recommended a bluff setback of 40 feet for the approved house to protect it from bluff retreat over a 75-year lifespan for the house based on comparison of historical photographs from the years 1964, 1977, and 1981 and a safety factor of four.

The Geotechnical Investigation reviewed photographs over a relatively short time-span equivalent to only half the 75-year economic lifespan of the house. The basic retreat rate of 1½ inches per year, as determined from examination of the photographs, was multiplied by a safety factor of four to arrive at the recommended bluff setback. The applicant's geologist maintained that the relatively high safety factor of four (4) would mitigate for the uncertainties of calculating bluff retreat rates using narrow periods of time for photo comparison, and for the uncertainties of future sea level rise due to global warming.

As discussed above, the County approval of the permit was appealed to the Commission and the appeal raised issues related to the adequacy of the coastal bluff setback in regard to the time-span of the photographs analyzed, and in relation to an advance in coastal bluff retreat

due to sea level rise. At the January 9, 2002 meeting, the Commission found that a substantial issue had been raised by the appeal.

For the purposes of the Commission's *de novo* review, additional information was requested from the applicants. These items included additional information that was not a part of the record when the County originally acted to approve the coastal development permit: 1) copies of the aerial photographs used in Mr. Olsborg's evaluation of the bluff retreat rate at the site and other supplemental information supporting his estimated rate; 2) a bluff stability analysis of the site; and 3) responses to comments the Commission received from the appellant and others concerning the effect of sea level rise on bluff retreat and other concerns about geologic hazards. Mr. Erik Olsborg of BACE Geotechnical prepared the requested geologic information and transmitted this information to Commission staff in letters dated April 18, 2002, and January 23, 2003.

Mr. Olsborg's April 18, 2002 transmittal contained results of the slope stability analysis with copies of the strength parameter plots. The strength parameters used in the stability analysis were determined from strength test results obtained from the 2001 geotechnical investigation, supplemented with test data and the geologist's experience from similar, nearby projects. As shown in the materials submitted, the pseudo static stability analysis indicated a factor of safety equal to 1.28. Mr. Olsborg's transmittal also included copies of the 1964 and 1981 aerial photographs used during the earlier geotechnical investigation, as well as a recently-obtained 2000 aerial photograph. In addition, as part of this supplemental analysis, two other points on the bluff edge south of the applicant's property were measured on the photographs.

As mentioned above, the original geotechnical investigation found a 1½- inch per year bluff retreat rate based on the analysis of three (3) historical aerial photographs covering a time span of 17 years. The addition of the year-2000 aerial photograph expanded the time span of coverage to 36 years. The revised photographic analysis using the 2000 aerial photograph concluded that the bluff retreat rate would average 3.3 inches per year, eroding back 20.6 feet over the 75-year economic lifespan of the house. This erosion estimate is greater than the original estimate, but allows for a factor of safety of almost 2 for the recommended 40-foot setback. Finally, the April 18, 2002 letter from Mr. Olsborg contained responses to comments received from the appellant and others related to slope stability and increased erosion as the sea level rises due to global warming. Mr. Olsborg stated that the landslide located a few properties to the south "is a localized feature with no potential impact on the Williams' property. As previously stated in BACE's 2001 geotechnical investigation report, there are no landslides in the near vicinity of the William's property." In regard to the appellant's contention that an increased bluff retreat rate can be expected from sea level rise, Mr. Olsborg replies that: "[s]ea level rise appears probable, however, the projected rise (1.6 feet over the next century, or 1.2 feet in the next 75 years) will be a gradual process, not an over-night event." Mr. Olsborg refers to the cross-sectional schematic drawing provided in a letter dated January 7, 2002 from the appellant to the Commission to illustrate "contrary geological evidence" supporting the contention that "when the sea level rises a measurable amount it will rapidly and without hesitation further erode the cliffs to arrive at a new

equilibrium with the slope of the wave-cut terrace." Mr. Olsborg states that the cross section sketch provided by the appellant of the bluff and adjacent wave-cut terrace showing a slope of two percent (one foot vertical in 50 feet horizontal) is misleading, because in reality

> *"most of the wave-cut terrace is exposed at only minus tides, and the full terrace is relatively flat and extends seaward for hundreds of feet. The terrace is being planed-off flat by the ocean since current sea levels were achieved approximately 5 to 7 thousand years ago. As indicated by our test pits, borings, and our laboratory strength tests at the several properties investigated by BACE at Bowling Ball Beach, the site bedrock is low to moderate in hardness. The bedrock becomes friable to soft on the bluff face where exposed to wind and water (slaking). It takes time for the rocks to be weakened enough to erode by slaking. This relatively slow erosion rate should continue, even as the sea level rises."*

Coastal Commission staff geologist Dr. Mark Johnsson has reviewed the BACE reports, visited the site, and conferred with the applicants' geologist. After reviewing the additional materials submitted, Dr. Johnsson opined that the applicant's geologist's projection of the bluff retreat rate is appropriate.

Mendocino County LUP Policy 3.4-7 and CZC Section 20.500.020(B) require that new structures be set back a sufficient distance from the edge of the bluffs to ensure their safety from bluff erosion and cliff retreat during their economic life spans (75 years) and the setback be of sufficient distance to eliminate the need for shoreline protection devices. As discussed above, BACE Geotechnical concluded that the bluff is eroding at an average rate of about 3.3-inches-per-year. Therefore, over a period of 75 years representing the economic life span of a house, the bluff would erode back approximately 20.6 feet. A factor-of-safety of almost two was applied to arrive at the 40-foot recommended bluff setback. After reviewing the requested additional documentation concerning the analysis of aerial photos, bluff retreat rate, and the recommended bluff top setback as well as the quantitative slope stability analysis and erosion potential, the Commission staff geologist opined that the applicants' geologist's projection of the bluff retreat rate and the other recommendations were reasonable. Special Condition No. 3 requires that all future development must be located no closer than 40 feet from the bluff edge. Therefore, the proposed development as conditioned will be set back a sufficient distance from the bluff edge to provide for a 75-year design life of the development consistent with LUP Policy 3.4-7 and CZC Section 20.500.020(B).

LUP Policy 3.4-1 states, in part, that geologic investigations for development in areas of known or potential geologic hazards shall determine if mitigation measures could stabilize the site. In its investigation of the site, BACE geotechnical advised that the structure should be supported on a system of cast-in-place drilled concrete piers interconnected with grade beams. To ensure that the applicants adhere to the recommendations suggested in their consultant's geotechnical reports, and that the development does not contribute significantly to geologic hazards, the Commission

attaches Special Condition No. 3. The special condition requires all final design and construction plans, including foundations, grading and drainage plans to be consistent with the recommendations contained in the geotechnical reports dated March 16, 2001, prepared by BACE Geotechnical Consultants. As conditioned, the development will include the measures determined by the geologic investigation to be necessary to stabilize the site consistent with LUP Policy 3.4-1.

The Commission also attaches Special Condition No. 4, which prohibits the construction of shoreline protective devices on the parcel, requires that the landowner provide a geotechnical investigation and remove the house and its foundation if bluff retreat reaches the point where the structure is threatened, and requires that the landowners accept sole responsibility for the removal of any structural debris resulting from landslides, slope failures, or erosion of the site. These requirements are consistent with LUP Policy 3.4-7 and Section 20.500.010 of the Mendocino County Coastal Zoning Ordinance, which state that new development shall minimize risk to life and property in areas of high geologic, flood, and fire hazard, assure structural integrity and stability, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas, nor in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. The Commission finds that the proposed development could not be approved as being consistent with LUP Policy 3.4-7 and Zoning Code Section 20.500.010 and 20.500.020(B) if projected bluff retreat would affect the proposed development and necessitate construction of a seawall to protect it.

The applicants are proposing to construct a residence with portions of the development as close as approximately 40 feet to a bluff that is gradually eroding. Thus, the proposed development will be located in an area of high geologic hazard. The proposed development can only be found consistent with the above-referenced LCP provisions if the risks to life and property from the geologic hazards are minimized and if a protective device will not be needed in the future. The applicant has submitted information from a registered engineering geologist which states that if the new development is set back forty (40) feet from the bluff edge, it will be safe from erosion and will not require any devices to protect the proposed development during its useful economic life.

Although a comprehensive geotechnical evaluation is a necessary and useful tool that the Commission relies on to determine if proposed development is permissible at all on any given bluff top site, the Commission finds that a geotechnical evaluation alone is not a guarantee that a development will be safe from bluff retreat. It has been the experience of the Commission that in some instances, even when a thorough professional geotechnical analysis of a site has concluded that a proposed development will be safe from bluff retreat hazards, unexpected bluff retreat episodes that threaten development during the life of the structure sometimes still do occur. Examples of this situation include:

- The Kavich Home at 176 Roundhouse Creek Road in the Big Lagoon Area north of Trinidad (Humboldt County). In 1989, the Commission approved the construction of a

new house on a vacant blufftop parcel (Permit 1-87-230). Based on the geotechnical report prepared for the project it was estimated that bluff retreat would jeopardize the approved structure in about 40 to 50 years. In 1999 the owners applied for a coastal development permit to move the approved house from the blufftop parcel to a landward parcel because the house was threatened by 40 to 60 feet of unexpected bluff retreat that occurred during a 1998 El Nino storm event. The Executive Director issued a waiver of coastal development permit (1-99-066-W) to authorize moving the house in September of 1999.

- The Denver/Canter home at 164/172 Neptune Avenue in Encinitas (San Diego County). In 1984, the Commission approved construction of a new house on a vacant blufftop lot (Permit 6-84-461) based on a positive geotechnical report. In 1993, the owners applied for a seawall to protect the home (Permit Application 6-93-135). The Commission denied the request. In 1996 (Permit Application 6-96-138), and again in 1997 (Permit Application 6-97-90) the owners again applied for a seawall to protect the home. The Commission denied the requests. In 1998, the owners again requested a seawall (Permit Application 6-98-39) and submitted a geotechnical report that documented the extent of the threat to the home. The Commission approved the request on November 5, 1998.

- The Bennett home at 265 Pacific Avenue, Solana Beach (San Diego County). In 1995, the Commission approved a request to construct a substantial addition to an existing blufftop home (Permit 6-95-23). The minimum setback for the area is normally 40 feet. However, the applicants agreed to waive future rights to shore/bluff protection if they were allowed to construct 25 feet from bluff edge based on a favorable geotechnical report. The Commission approved the request on May 11, 1995. In 1998, a substantial bluff failure occurred, and an emergency permit was issued for a seawall. The follow-up regular permit (#6-99-56) was approved by Commission on May 12, 1999. On August 18, 1999, the Commission approved additional seawall and upper bluff work on this and several other properties (Permit #6-99-100).

- The Arnold project at 3820 Vista Blanca in San Clemente (Orange County). Coastal development permit (Permit # 5-88-177) for a blufftop project required protection from bluff top erosion, despite geotechnical information submitted with the permit application that suggested no such protection would be required if the project conformed to 25-foot blufftop setback. An emergency coastal development permit (Permit #5-93-254-G) was later issued to authorize blufftop protective works.

The Commission notes that the examples above are not intended to be absolute indicators of bluff erosion on the subject parcel, as coastal geology can vary significantly from location to location. However, these examples do illustrate that site-specific geotechnical evaluations cannot always accurately account for the spatial and temporal variability associated with coastal processes and therefore cannot always absolutely predict bluff erosion rates. Collectively, these examples have helped the Commission form it's opinion on the vagaries of geotechnical evaluations with regard to predicting bluff erosion rates.

The BACE Geotechnical Investigation report states that their geological and engineering services and review of the proposed development was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. *"No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in the report."* This language in the report itself is indicative of the underlying uncertainties of this and any geotechnical evaluation and supports the notion that no guarantees can be made regarding the safety of the proposed development with respect to bluff retreat.

Geologic hazards are episodic, and bluffs that may seem stable now may not be so in the future. Therefore, the Commission finds that the subject lot is an inherently hazardous piece of property, that the bluffs are clearly eroding, and that the proposed new development will be subject to geologic hazard and could potentially someday require a bluff or shoreline protective device, inconsistent with LUP Policy 3.4-7 and CZC Sections 20.500.010 and 20.500.020(B). The Commission finds that the proposed development could not be approved as being consistent with LUP Policy 3.4-7 and Coastal Zoning Code Section 20.500.010 and 20.500.020(B) if projected bluff retreat would affect the proposed development and necessitate construction of a seawall to protect it.

Based upon the geologic report prepared by the applicants geologist and the evaluation of the project by the Commission's staff geologist, the Commission finds that the risks of geologic hazard are minimized if the residence is set back approximately 40 feet or more from the bluff edge as proposed. However, given that the risk cannot be eliminated and the geologic report cannot assure that shoreline protection will never be needed to protect the residence, the Commission finds that the proposed development is consistent with the certified LCP only if it is conditioned to provide that shoreline protection will not be constructed. Thus, the Commission further finds that due to the inherently hazardous nature of this lot, the fact that no geology report can conclude with any degree of certainty that a geologic hazard does not exist, the fact that the approved development and its maintenance may cause future problems that were not anticipated, and because new development shall not engender the need for shoreline protective devices, it is necessary to attach Special Condition No. 4 prohibiting the construction of seawalls and Special Condition No. 5 requiring the waiver of liability.

In addition, as noted above, some risks of an unforeseen natural disaster, such as an unexpected landslide, massive slope failure, erosion, etc. could result in destruction or partial destruction of the house or other development approved by the Commission. In addition, the development itself and its maintenance may cause future problems that were not anticipated. When such an event takes place, public funds are often sought for the clean-up of structural debris that winds up on the beach or on an adjacent property. As a precaution, in case such an unexpected event occurs on the subject property, the Commission attaches Special Condition No. 4, which requires the landowner to accept sole responsibility for the removal of any structural debris resulting from landslides, slope failures, or erosion on the site, and agree to remove the house should the bluff

retreat reach the point where a government agency has ordered that the structure not be occupied.

The Commission finds that Special Condition No. 1 is required to ensure that the proposed development is consistent with the LCP and Special Condition No. 1 is required to provide notice of potential hazards of the property and help eliminate false expectations on the part of potential buyers of the property, lending institutions, and insurance agencies that the property is safe for an indefinite period of time and for further development indefinitely into the future, or that a protective device could be constructed to protect the approved development. The condition requires that the applicant record and execute a deed restriction approved by the Executive Director against the property that imposes the special conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property.

Additionally, the Commission attaches Special Condition No. 5, which requires the landowner to assume the risks of extraordinary erosion and geologic hazards of the property and waive any claim of liability on the part of the Commission. Given that the applicants have chosen to implement the project despite these risks, the applicants must assume the risks. In this way, the applicants are notified that the Commission is not liable for damage as a result of approving the permit for development. The condition also requires the applicants to indemnify the Commission in the event that third parties bring an action against the Commission as a result of the failure of the development to withstand hazards. In addition, the requirement of Special Condition No. 1 that a deed restriction be recorded will ensure that future owners of the property will be informed of the risks, the Commission's immunity from liability, and the indemnity afforded the Commission.

The Commission notes that Section 30610(a) of the Coastal Act and Chapter 20.532 of the County's Coastal Zoning Code exempt certain additions to existing single family residential structures from coastal development permit requirements. Pursuant to this exemption, once a house has been constructed, certain additions and accessory buildings that the applicant might propose in the future are normally exempt from the need for a permit or permit amendment. However, in this case because the project site is located within a highly scenic area, future improvements to the approved project are not exempt from permit requirements pursuant to Section 30610(a) and Section 13250(b)(1) of the Commission's regulations. Section 30610(a) requires the Commission to specify by regulation those classes of development, which involve a risk of adverse environmental effects and require that a permit be obtained for such improvements. Pursuant to Section 30610(a) of the Coastal Act, the Commission adopted Section 13250 of Title 14 of the California Code of regulations. Section 13250 specifically authorizes the Commission to require a permit for additions to existing single-family residences that could involve a risk of adverse environmental effect. Moreover, Section 13250(b)(1) indicates that improvements to a single-family structure in an area designated as highly scenic in a certified land use plan involve a risk of adverse environmental effect and therefore are not exempt. As discussed previously, the entire subject property is within an area designated in the certified Mendocino Land Use Plan as

highly scenic. Therefore, pursuant to Section 13250(b)(1) of the Commission's regulations, future improvements to the approved development would not be exempt from coastal development permit requirements and the County and the Commission will have the ability to review all future development on the site to ensure that future improvements will not be sited or designed in a manner that would result in a geologic hazard.

The Commission thus finds that the proposed development, as conditioned, is consistent with the policies of the certified LCP regarding geologic hazards, including LUP Policies 3.4-1, 3.4-7, 3.4-12, and Coastal Zoning Code Sections 20.500.010, 20.015.015, and 20.500.020, since the development as conditioned will not contribute significantly to the creation of any geologic hazards, will not have adverse impacts on the stability of the coastal bluff or on erosion, will not require the construction of shoreline protective works, and the Commission will be able to review any future additions to ensure that development will not be located where it might result in the creation of a geologic hazard. Only as conditioned is the proposed development consistent with the LCP policies on geologic hazards.

D. Water Quality

1. Summary of LCP Provisions

LUP Policy 3.1-25 states:

> *"The Mendocino Coast is an area containing many types of marine resources of statewide significance. Marine resources shall be maintained, enhanced and, where feasible, restored; areas and species of special biologic or economic significance shall be given special protection; and the biologic productivity of coastal waters shall be sustained."*

Coastal Zoning Code Section 20.492.020(B) incorporates sedimentation standards and states in part:

> *"(B) To prevent sedimentation of off-site areas, vegetation shall be maintained to the maximum extent possible on the development site. Where necessarily removed during construction, native vegetation shall be replanted to help control sedimentation.*
>
> *(C) Temporary mechanical means of controlling sedimentation, such as hay baling or temporary berms around the site may be used as part of an overall grading plan, subject to the approval of the Coastal Permit Administrator."*

2. Discussion

Storm water runoff from new residential development can adversely affect the biological productivity of coastal waters by degrading water quality. LUP Policy 3.1-25 requires the

protection of the biological productivity of coastal waters. Section 20.492.020 of the Mendocino County Coastal Zoning Code sets forth sedimentation standards to minimize sedimentation of environmentally sensitive areas and off-site areas. Specifically, Section 20.492.020(B) requires that the maximum amount of vegetation existing on the development site shall be maintained to prevent sedimentation of off-site areas, and where vegetation is necessarily removed during construction, native vegetation shall be replanted afterwards to help control sedimentation.

As discussed above, the subject parcel is located on a coastal terrace atop a steep coastal bluff. Runoff originating from the development site that is allowed to drain over the bluff edge or drain indirectly to the ocean via the Ross Creek drainage would contain entrained sediment and other pollutants in the runoff that would contribute to degradation of the quality of marine waters.

Sedimentation impacts from runoff would be of greatest concern during and immediately after construction. Consistent with CZC Section 20.492.020(B), the Commission attaches Special Condition No. 7 to minimize erosion and sedimentation impacts from the proposed construction of the residence. Special Condition No. 7 requires that the applicants submit for the review and approval of the Executive Director an Erosion and Runoff Control Plan that would provide that (1) straw bales be installed to contain runoff from construction areas, (2) on-site vegetation be maintained to the maximum extent possible during construction, (3) any disturbed areas be replanted or seeded with native vegetation following project completion, (4) all on-site stockpiles of construction debris be covered and contained to prevent polluted water runoff, and (5) runoff from the roof, driveway, and other impervious surfaces of the development be collected and directed into pervious areas on the site for infiltration and that velocity reducers be used on roof downspouts.

The Commission finds that as conditioned, the proposed development is consistent with Section 20.492.020 because erosion and sedimentation will be controlled and minimized by (1) maintaining on-site vegetation to the maximum extent possible; (2) replanting or seeding any disturbed areas with native vegetation following project completion; (3) covering and containing debris stockpiles at all times; (4) using straw bales to control runoff during construction; and (5) directing runoff from the completed development in a manner that would provide for infiltration into the ground. Furthermore, the Commission finds that the proposed development as conditioned is consistent with the provisions of LUP Policy 3.1-25 requiring that the biological productivity of coastal waters be sustained because storm water runoff from the proposed development would be directed away from the coastal bluff and would be controlled on site by infiltration into vegetated areas.

E. Visual Resources

1. Summary of LCP Provisions

LCP Provisions

LUP Policy 3.5-1 states in applicable part:

> *"The scenic and visual qualities of Mendocino county coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas designated by the County of Mendocino Coastal Element shall be subordinate to the character of its setting."*

LUP Policy 3.5-3 states, in applicable part:

> *"The visual resource areas listed below are those which have been identified on the land use maps and shall be designated as "highly scenic areas," within which new development shall be subordinate to the character of its setting. Any development permitted in these areas shall provide for the protection of ocean and coastal views from public areas including highways, roads, coastal trails, vista points, beaches, parks, coastal streams, and waters used for recreational purposes...*
>
> - *Portions of the coastal zone within the Highly Scenic Area west of Highway 1 between the south boundary of the City of Point Arena and the Gualala River as mapped with noted exceptions and inclusions of certain areas east of Highway 1.*
>
> *In addition to other visual policy requirements, new development west of Highway One in designated 'highly scenic areas' is limited to one story (above natural grade) unless an increase in height would affect public views to the ocean or be out of character with surrounding structures... New development should be subordinate to natural setting and minimize reflective surfaces...*[emphasis added]."

NOTE 1: LUP Map No. 28 designates all of the area west of Highway one along the portion of the coast where the project is located as highly scenic.

NOTE 2: Coastal Zoning Ordinance 20.504.015(A)(4) reiterates this section of coastline as being a "highly scenic area."

LUP Policy 3.5-5 states, in applicable part:

> *"Providing that trees will not block coastal views from public areas such as roads, parks and trails, tree planting to screen buildings shall be encouraged* ...[emphasis added]."

Coastal Zoning Ordinance Section 20.504.010 states:

> *"The purpose of this section is to insure that permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas and, where feasible, to restore and enhance visual quality in visually degraded areas."*

Coastal Zoning Ordinance Section 20.504.015(C) states, in applicable part:

> *"(1) Any development permitted in highly scenic areas shall provide for the protection of coastal views from public areas including highways, roads, coastal trails, vista points, beaches, parks, coastal streams, and waters used for recreational purposes.*
>
> *(2) In highly scenic areas west of Highway 1 as identified on the Coastal Element land use plan maps, new development shall be limited to eighteen (18) feet above natural grade, unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures.*
>
> *(3) New development shall be subordinate to the natural setting and minimize reflective surfaces. In highly scenic areas, building materials shall be selected to blend in hue and brightness with their surroundings.*
>
> ...
>
> *(5) Buildings and building groups that must be sited in highly scenic areas shall be sited: (a) Near the toe of a slope; (b) Below rather than on a ridge; and (c) In or near a wooded area.*
>
> *(7) Minimize visual impacts of development on terraces by the following criteria:*
>
> *(a) Avoiding development, other than farm buildings, in large open areas if an alternative site exists;*
>
> *(b) Minimize the number of structures and cluster them near existing vegetation, natural landforms or artificial berms;*

(c) Provide bluff setbacks for development adjacent to or near public areas along the shoreline;

(d) Design development to be in scale with rural character of the area.

...

(10) Tree planting to screen buildings shall be encouraged, however new development shall not allow trees to interfere with coastal/ocean views from public areas.

... [emphasis added]."

2. Discussion.

As previously described, the subject property is located on a blufftop parcel above Bowling Ball Beach on a coastal terrace, in an area along the Mendocino coastline designated highly scenic under the Mendocino County LCP. The site is approximately three miles southeast of Point Arena, situated on the southwest side of Highway One, approximately one mile northwest of Schooner Gulch, and approximately 1,000 feet southeast of Ross Creek. The subject property is currently well forested, predominantly with mature, planted, Monterey pine trees with sparse understory. Many of the existing trees would be removed to accommodate the proposed development. A narrow band of trees would remain to encircle most of the perimeter of the proposed residence.

As described above, the application proposes to construct a 2,460-square-foot, two-story, single-family residence, with a 632-square-foot attached garage/mechanical room. The average height of the residence would be 23.85 feet above natural grade. The maximum height from existing grade would be no more than twenty-seven feet at any point on the house. The height at the middle of the house would be twenty-five and one-half feet. The height of the residence would be 23.85 feet tall as measured from average grade. The roof would be composed of walnut colored Owens Corning MiraVista ® resin/glass fiber shake shingles. The structural siding and wood trim would be cedar or redwood shingles and redwood boards stained an earth toned color described as Duckback "Canyon Brown" (color chip #DB-1907). Cultured stone facing described as "Chardonnay Limestone" (color chip #CSV-2045) would be used for the lower portion of the building and for the single chimney. The lower portions of the structure where this stone facing would be used would be completely screened by landscaping. The chimney presents very minor surface areas visible to the public. The Chardonnay Limestone stone facing is composed of dark, earth tone, mottled colors, and is not highly reflective.

The above listed visual resource protection policies set forth three basic criteria that development at the site must meet to be approved. First, LUP Policy 3.5-1 and CZC Section 20.504.010 require that development be sited and designed to protect views to and along the ocean and scenic coastal areas. Second, LUP Policy 3.5-3 and CZC Section 20.504.015(C)(2) generally require that new development in highly scenic areas be limited to one story and 18 feet in height. Finally, LUP Policies 3.5-1, 3.5-3, and 3.5-

4 and CZC Section 20.504.015(C)(3) require that new development in highly scenic areas be subordinate to the character of its setting.

1. Protecting Views To and Along the Coast

LUP Policy 3.5-1 and CZC Sections 20.504.010 and 20.504.015(C)(1) require permitted development to be sited and designed to protect views to and along the ocean and scenic coastal areas from public areas including roads and trails.

The subject parcel is geographically situated such that the proposed residential development would not affect views to the ocean from public areas including highways, roads, coastal trails, beaches, or coastal streams. As described above, the subject site is a coastal bluff top parcel located on a coastal terrace 45 to 55 feet above the northern-most end of Bowling Ball Beach. The property ranges between approximately 33 feet in elevation at the northern corner of the parcel, to almost 61 feet at the eastern corner. The two corners of the parcel located along the coastal bluff are almost 10 feet higher than the middle portion of the bluff edge, and the entire property tilts slightly toward the south, away from the bluff edge. Highway One is located to the south of the property and is significantly lower than the coastal bluff terrace, effectively eliminating the view of the ocean from the highway in this vicinity.

Therefore, the Commission finds that the proposed development as conditioned will protect public views to and along the ocean and scenic coastal areas consistent with visual resource protection provisions LUP Policy 3.5-1 and CZC Sections 20.504.010 and 20.504.015(C)(1) of the certified LCP.

2. Consistency with Height Requirements

According to the certified LCP provisions of LUP Policy 3.5-3, new development located in an area designated as highly scenic is limited to one story above natural grade unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures. Likewise, according to CZC Section 20.504.015(C)(2) new development located in an area designated as highly scenic is limited to eighteen feet above natural grade, unless an increase in height would not affect public views to the ocean or be out of character with surrounding structures. If these two criteria can be met, the building height can be raised to a maximum of twenty-eight feet and include two stories.

As noted above, the average height above natural grade of the proposed structure is 23.85 feet, only six feet higher than the 18-foot standard specified by CZC Section 20.504.015(c)(2). In addition, the structure would be two story, differing from the one-story standard specified by LUP Policy 3.5-3. Thus, the only way the development could be found consistent with these LCP policies is if the increased height would not (a) affect public views to the ocean or (b) be out of character with surrounding structures.

As discussed in the previous section, there are no views afforded through the property to the ocean from Highway One or other pubic vantage points. Therefore, the increased height above one story and 18 feet would not affect public views to the ocean.

With regard to whether the increase height would be out of character with surrounding structures, within the same subdivision as the proposed development there are numerous two-story houses, including both of the houses on either side of the subject parcel (Exhibit No. 11). The Jones residence located on a .67-acre, bluff top lot immediately to the north of the subject parcel is a two-story house built an average of 22 feet above natural grade. This approved development also includes a two-story detached garage and guest room built an average of 20 feet above natural grade. The Calone parcel located immediately to the south of the subject property has an approved two-story residence built an average of 23 feet above natural grade. The proposed two-story house on the subject parcel would be built an average of 23.85 feet from natural grade, conforming to the characteristic height of the adjoining parcel's structures. As described below, the proposed residence would not be out of character with the size and bulk of the neighboring structures on the adjoining parcels. The Calone residence located to the south is a 2,404-square-foot structure with an attached garage and additional decking. The Jones residence located to the north is a 1,550-square-foot structure and an 880-square-foot detached garage and guest room structure, both with additional decking. The proposed residential structure would be 2,460 square feet, which is within 30 to 56 square feet of the size of the development on the neighboring parcels. Therefore, the Commission finds that because of the 23.85-foot height and two story aspect of the proposed structure would (a) not affect views to the ocean, and (b) not be out of character with surrounding structures, the proposed development is consistent with the height limitations of LUP Policy 3.5-3 and CZC Section 20.504.015(C)(2).

3. Subordinate to the Character of its Setting

LUP Policies 3.5-1, 3.5-3, and 3.5-4, and CZC Section 20.504.015(C)(3) require that new development in highly scenic areas be subordinate to the character of its setting. To help ensure that new development will be subordinate, LUP Policy 3.5-4 also requires that buildings located within areas designated highly scenic shall be sited in or near the edge of a wooded area rather than in open areas and utilize natural landforms or artificial berms to screen development. In addition, Policy 3.5-5 states that tree planting to screen buildings be encouraged. Furthermore, the County's Coastal Zoning Ordinance Section 20.504.010 states that permitted development shall be sited and designed to minimize the alteration of landforms. Coastal Zoning Ordinance Section 20.504.015(C)(3) requires that in highly scenic areas, building materials, including siding and roof materials, shall be selected to blend in hue and brightness with their surroundings.

Several aspects of the project as proposed will help make the development subordinate to the character of its setting. The single-family residence would be located within a subdivision of other existing two-story structures built on either side of the subject parcel along the bluff top. The proposed house would be placed within a forested setting on the

parcel, and the project would retain selected visual screening trees to help protect views along the coast from the highway and public recreational trail. The proposed development includes additional tree planting and other landscaping to provide increased visual screening of the residence to help protect public views of scenic coastal areas in the vicinity.

Public views of the proposed house from Bowling Ball Beach would be extremely limited if existent at all. Commission staff conducted a site visit of the subject area to assess the visibility of the proposed project from public viewing locations. Story poles had been erected to indicate the maximum height of the proposed residential structure. Regarding views from the public beach, using a pair of binoculars and an open-reel tape measure, it was determined that the public would have to be 90 to 95 feet out from the sandy beach at the base of the bluffs (walking across the bedrock trenches below the mean high tide line that, in part, give Bowling Ball Beach its name) to see the very tip of a story pole. However, most public use of Bowling Ball Beach in the vicinity of the proposed development occurs along the very narrow fringe of sand and cobble at the immediate base of the bluffs, landward from the location where the tips of the story pole was visible. In addition, beach users can only access the part of Bowling Ball Beach from which the tips of the story pole was visible during very low tides; the tide was a minus tide of 1.3 at the time the visual resource survey along the beach was conducted by staff.

Regarding views from public roads and trails, there would be a brief view of the property for motorists and bicyclists traveling south on Highway One from Point Arena. The proposed house site juxtaposed on the east-facing hillside against a backdrop of trees would be within view to passing motorists for a few seconds. A similar view of the proposed house site more from the northwest would be afforded to hikers using the Ross Creek/Whiskey Shoals public access trail. This short, vertical access trail traverses the hillslope to the north and west above Ross Creek from Highway One to the northern end of Bowling Ball Beach and provides access to the Whiskey Shoals lateral trail to the north along the ocean, as well as to the very narrow strand of sandy beach leading south along Bowling Ball Beach at the base of the steep bluffs to Schooner Gulch State Park. The proposed residence would also be partially visible from the headlands of the Whiskey Shoals subdivision along the southern portion of the Whiskey Shoals public trail. The view of the proposed residence from this angle would be to the southeast across Ross Creek. From this vantage point, one already sees a two-story residence and detached guest house in the foreground. The proposed residence would be located in the stand of Monterey pine trees on the knoll behind this neighboring development. Finally, only limited views of the proposed house through the trees would be afforded to boaters at sea.

Regarding the house itself, the colors and materials proposed for the residential development would be in character with the neighboring structures in the area. The siding and trim color (Duckback "Canyon Brown") is a dark stain that would adequately blend with the forested setting. Limestone cultured stone (CSV-20-45) would be used as the stone facing for the siding of the lower portion of the structure, and for the single chimney. The color proposed

by the applicant for the stone-work is "Chardonnay," a mottled, textured stone facing that is a dark earthtone color, and not highly reflective. The Chardonnay color contains various color elements that would help blend the development with the dappled forest background. The lower portion of the structure that would have stone facing applied, would not be readily visible. Landscaping as proposed would help screen what might be visible otherwise. The chimney would also be faced with the same Chardonnay stone-work, but the visible chimney profile would be minimal as seen from the highway and public trails, and would blend with the forested background. To ensure that the building materials of the development as proposed, including siding and roof materials, continue to blend in hue and brightness with their surroundings and are subordinate to the character of its setting during the life of the structure, the Commission attaches Special Condition No. 2. This special condition requires that the current owner and any future owner not repaint or stain the house with products that will lighten the color of the house as approved without an amendment to the permit. In addition, all exterior materials, including roofs and windows, are required to be non-reflective to minimize glare. Furthermore, Special Condition No. 2 requires that all exterior lights, including any lights attached to the outside of the buildings, shall be the minimum necessary for the safe ingress and egress of the structures, and shall be low-wattage, non-reflective, shielded, and have a directional cast downward such that no light will shine beyond the boundaries of the subject parcel.

The applicant has also proposed a landscape plan that would help screen the proposed house from public views along the identified Ross Creek/Whiskey Shoals trail and Highway One corridors. Visual screening would be achieved by planting a combination of lower growing shore pines and Leyland cypress along the north property line, and backing these with taller growing white fir as well as the existing Monterey pine. As a person walks toward the ocean along the Ross Creek/Whiskey Shoals Trail, the proposed house would be mostly screened from view by these trees and the neighboring structures. Likewise, for a person driving south on Highway One, these proposed landscaping trees, as well as the trees proposed for planting along the east side of the house, would provide visual screening of the proposed structure from the approximately 300 feet of roadway along which the house is visible. The landscape plan includes wax myrtle plantings to fill in the gaps between the tree trunks, thus creating a solid wall of vegetation as the trees mature.

A principal aspect of the proposed development that bears on whether the development would be subordinate to the character of its setting is the proposed removal of 46 of the 77 trees existing on the property to accommodate the proposed development. These trees include 3 dead specimens, 15 trees in the location where the septic system would be established, 4 trees where the driveway would be built and 24 trees where the house would be constructed.

As mentioned above, the applicant provided an arborist's report for the purposes of the Commission's *de novo* review. This report evaluates the existing forest stand composition, age, condition and life expectancy as well as how removal of additional trees to accommodate the proposed development would affect the remaining trees, taking into

consideration such factors as disease, wind throw, root loss, and bluff retreat. The arborist, Rob Gross, reported that the predominant stand of trees on the parcel consists of Monterey pine, planted about 30 years ago. Mr. Gross states that the trees were planted close together forming an "artificially dense" stand. His report continues:

> "[T]*his uncommonly dense planting has led to the characteristic skinny trees here. These trees all compete for sun so much that all the foliage is at the treetops, with the exception of some of the edge trees, which have foliage on the sides. This growth form is weak, due to top-heavy weight distribution and poor stem taper both of which are structural flaws and both of which can individually or together lead to tree failure... The stand density will be a problem for the trees in the long run, the trees can live much longer if they are cultivated and well maintained... Thinning limited stems from this stand would reduce tree-to-tree competition for limited soil and water nutrients... The lower trunk will not re-foliate with this tree species. New landscape plants are indicated to specifically foliate the understory, which currently has little live foliage."*

In addition to numbering, mapping the location and species and calculating the diameter-at-breast-height of each of the 77 trees existing on the property, Mr. Gross conducted an evaluation of their relative health by rating their condition. Four condition levels were established: 1) dead; 2) poor condition (less than 20% crown, considerable dead materials or slow growing); 3) okay condition (with a thick canopy, some dead materials); and 4) fine condition (no visible dead or missing foliage, vigorous). Out of the 46 trees that would be removed to accommodate the proposed development, only 6 are considered to be in good condition, including 3 in the area where the septic system would be located and 3 in the area where the house would be constructed. All of the other trees to be removed are either already dead or considered to be in poor condition.

The subject parcel is less than half an acre in size and the applicant is constrained by setbacks on all sides limiting the siting of the residence to roughly the center of the property, thereby removing alternatives for siting that would require the removal of fewer trees. The only available location for the house on the site is as proposed. From the north side of the property, the residence must be set back 50 feet from the property line to accommodate the neighbors' existing 30-feet driveway easement and a 20-feet setback from the easement required by the County Zoning Code. From the rear, along the ocean side of the property, development would abide by the recommended 40-foot geologic hazard setback from the edge of the coastal bluff. The side yard to the west includes the on-site septic system which forces the house up against the opposite side yard setback. The proposed house is moderate in size, consisting of a 1, 431-square-foot footprint that includes a 632-square-foot attached garage. The second story increases the total living space to a modest 2,460 square feet.

Placement of the building does allow existing visually screening trees to be retained around the periphery of the property rather than siting the house against one or more sides of the property requiring their removal. One of the recommendations that Mr. Gross makes is that

thinning of the stand would benefit the remaining trees by reducing tree-to-tree competition for sunlight, water, and nutrients. Mr. Gross makes recommendations for protecting the existing trees to be retained from potential damage during construction activities and also recommends a diversity of new landscape plantings as proposed in the landscape plan. If the trees to be retained are protected from damage during construction as recommended, and benefit from increased sunlight, water and nutrients due to a reduction in tree-to-tree competition as discussed above, then the remaining trees would continue to provide visual screening of the proposed development and the development would be subordinate to the character of its setting. Therefore, the Commission attaches Special Condition No. 6, designed to mitigate the visual affects of the residence on public coastal views by requiring the applicant to submit a revised landscape plan that includes 1) conformance with the applicant's current proposed landscaping plan and arborist's recommendations; 2) additional landscape planting along the south bluff-facing edge of the parcel to provide additional visual screening; and 3) maintenance and replacement of visual screen trees and landscaping. The additional planting of at least 5 trees and 5 wax myrtle shrubs required by the special condition would augment the screening along the ocean side of the property and would assure that younger landscaping will remain to continue to screen the development from the Whiskey Shoals trail and the ocean as the mature existing trees eventually reach the end of their normal lifespan.

To ensure that any future buyers of the property will be aware of the limitations of Special Condition Nos. 6 and 2 on tree removal and limbing, maintaining the dark colors, prohibiting the use of reflective glass and maintaining a certain kind and array of exterior lighting fixtures, the Commission imposes Special Condition No. 1. This condition requires that the applicant execute and record a deed restriction approved by the Executive Director against the property that imposes the special conditions of this permit as covenants, conditions, and restrictions on the use and enjoyment of the property. As conditioned, the proposed development would be subordinate to the character of its setting as required by LUP policy 3.5-1, 3.5-3, 3.5-4, and CZC Section 20.504.015(c)(3) by providing for perimeter screening in keeping with the forested nature of the property and ensuring that all exterior materials and colors will blend with the hue and brightness of the colors of its surroundings as required by CZC Section 20.504.015(c)(3).

4. Conclusion

Therefore, for all of the above reasons, the Commission finds that the proposed development as conditioned will protect public views to and along the coast, conform to height requirements, and be subordinate to the character of its setting consistent with the visual resource protection provisions of the certified LCP.

F. Public Access and Recreation

1. Coastal Act Access Policies

Projects located between the first public road and the sea and within the coastal development permit jurisdiction of a local government are subject to the coastal access policies of both the Coastal Act and the LCP. Coastal Act Sections 30210, 30211, and 30212 require the provision of maximum public access opportunities, with limited exceptions. Section 30210 states that maximum access and recreational opportunities shall be provided consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. Section 30211 states that development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation. Section 30212 states that public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, adequate access exists nearby, or agriculture would be adversely affected.

2. LCP Provisions

The Mendocino County LUP includes a number of policies regarding standards for providing and maintaining public access. Policy 3.6-9 states that offers to dedicate an access easement shall be required in connection with new development for all areas designated on the land use plan maps. Policy 3.6-28 reiterates that new development on parcels containing the accessways identified on the land use maps shall include an irrevocable offer to dedicate an easement.

LUP Policy 3.6-27 states:

> *"No development shall be approved on a site which will conflict with easements acquired by the public at large by court decree. Where evidence of historic public use indicates the potential for the existence of prescriptive rights, but such rights have not been judicially determined, the County shall apply research methods described in the Attorney General's 'Manual on Implied Dedication and Prescriptive Rights.' Where such research indicates the potential existence of prescriptive rights, an access easement shall be required as a condition of permit approval. Development may be sited on the area of historic public use only if: (1) no development of the parcel would otherwise be possible, or (2) proposed development could not otherwise be sited in a manner that minimizes risks to life and property, or (3) such siting is necessary for consistent with the policies of this plan concerning visual resources, special communities, and archaeological resources. When development must be sited on the area of historic public use an equivalent easement providing access to the same area shall be provided on the site."*

Note: This policy is implemented verbatim in Section 20.528.030 of the Coastal Zoning Code.

3. Discussion

In its application of the above policies, the Commission is limited by the need to show that any denial of a permit application based on this section, or any decision to grant a permit subject to special conditions requiring public access is necessary to avoid or offset a project's adverse impact on existing or potential access.

As described above, the subject parcel is located on a coastal bluff approximately 33 to 61 feet above the ocean. There is no physical access from the subject parcel to the shoreline due to the very steep drop off. The property is situated approximately 600 feet south of the Ross Creek Shoreline Access to the north and a little more than ¾ of a mile north of the Schooner Gulch/Bowling Ball Beach Shoreline Access, both providing signed vertical coastal shoreline access from Highway One to the beach. The County's Land Use Map #28 for the portion of the county containing the subject parcel designates the beach at the base of the coastal bluff west of the project site for proposed lateral coastal access. The Coastal Element also indicates the intention of establishing a bluff top trail in this location for public coastal access. However, no evidence exists that the parcel has been used by the public to gain access to the coast. Coastal Commission staff did not identify any trails on the subject property. In addition, the construction of the proposed residence would not significantly increase the demand for new public access.

Therefore, the Commission finds that the proposed development does not have any significant adverse impact on existing or potential public access, and that the project as proposed, which does not include provision of public access, is consistent with the requirements of the Coastal Act Sections 30210,30211, and 30212 and the public access policies of the County's certified LCP.

G. California Environmental Quality Act.

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirement of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on conformity with LCP policies at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As discussed herein, in the findings addressing the consistency of the proposed project with the certified LCP, the proposed project has been conditioned to be found consistent with the Mendocino County LCP and the access and recreation policies of the Coastal Act. Mitigation measures, which will minimize all adverse environmental impacts have been required. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity may have on the environment. Therefore, the Commission finds that the proposed project can be found to be consistent with the requirements of the Coastal Act to conform to CEQA.

Exhibits

1. Regional Location Map
2. Vicinity Map
3. Project Plans
4. Notice of Final Action
5. Appeal
6. Geological Investigation
7. Landscape Plan
8. Arborist's Report
9. Appellant's Correspondence
10. Correspondence
11. Photographs of Neighboring Houses

ATTACHMENT

Standard Conditions:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director of the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

GEOTECHNICAL INVESTIGATION

WILLIAMS RESIDENCE
27560 SOUTH HIGHWAY ONE
POINT ARENA, CALIFORNIA

11509.1

March 16, 2001

Brunsing Associates, Inc.

GEOTECHNICAL INVESTIGATION

WILLIAMS RESIDENCE
27560 SOUTH HIGHWAY ONE
POINT ARENA, CALIFORNIA

11509.1

prepared for

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March 16, 2001

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1.0 INTRODUCTION

This report presents the results of the Geotechnical Investigation performed by BACE Geotechnical (BACE), a division of Brunsing Associates, Inc., for the proposed residential development of 27560 South Highway One, Mendocino County, California. The property, A.P. No. 27-421-06, is located on a coastal bluff above Bowling Ball Beach, approximately three miles south of Point Arena, as shown on the Vicinity Map, Plate 1.

The property is shown on a topographic map prepared by Richard A. Seale, dated December 1999. It is anticipated that the project will include a new single-family residence on the easterly half of the property and a leach field on the westerly half of the site, as shown on the Site Geologic Map presented on Plate 2.

According to preliminary project plans, dated March 12, 2001, prepared by Rosenthal Construction, the new residence will be one and two-story, wood-frame construction. The residence will have both slab-on-grade and supported floors. The garage is expected to have slab-on-grade floors. Retaining walls will be required on the uphill sides of the structure. The extent of site grading has not been determined at this time. However it is anticipated that the cut and fill slopes will not exceed two to three feet in height in the building areas to create a level building pad with proper site drainage.

Our approach to providing geotechnical guidelines for the design of this project utilized our knowledge of the geologic conditions in the site vicinity, and experience with similar projects. As outlined in our Service Agreement transmitted June 12, 2000, our scope of services for the geotechnical investigation included subsurface exploration, laboratory testing and engineering and geologic analyses in order to provide recommendations regarding:

1. The geologic suitability of the site for the proposed development, including discussion of areas of geologic hazards (bluff stability);
2. The potential effects of seismicity and fault rupture;
3. Site grading;
4. Foundation support;
5. Support of concrete slab-on-grade floors;
6. Site drainage;
7. Retaining wall design criteria;
8. Additional geotechnical services, as appropriate.

2.0 INVESTIGATION

2.1 Research

As part of our investigation, we studied aerial photographs and researched various published geologic maps and reports and unpublished consultants' reports for other properties on the bluffs above Bowling Ball Beach. The aerial photographs, dated 1964 and 1981, were enlarged to a scale of one-inch equals approximately 200 feet. The published and unpublished references reviewed for this project include:

- Davenport, C.W., Geology and Geomorphic Features Related to Landsliding, Point Arena 7.5 - Minute Quadrangle, Mendocino County, California, dated 1984, California Division of Mines and Geology (CDMG).

- Hays, T.D., Geotechnical Investigation, A.P. No. 27-433-01, Mendocino County, California, dated March 22, 1977, Thomas D. Hays & Associates

- Konigsmark, T., A Trip to Bowling Ball Beach, in Geologic Trips, Sea Ranch, dated 1994.

- Olsborg, E.E., Faulted Wave-Cut Terrace Near Point Arena, Mendocino County, California, in California Geology, Volume 45/Number 1, dated January/February, 1992, California Division of Mines and Geology (CDMG)

- Olsborg, E.E., and A.H. Graff, Geotechnical Investigation, A.P. No. 27-433-01, Mendocino County, California, dated October 12, 1994, BACE Geotechnical

- Olsborg, E.E., and A.H. Graff, Geotechnical Investigation, A.P. No. 27-421-10, Mendocino County, California, dated July 11, 1988, Field Engineering Associates, Inc.

- Wagner, D.L. and E.J. Bortugno, Geologic Map of the Santa Rosa Quadrangle, Regional Geologic Map No. 2A, dated 1982, CDMG

- Williams, J.W. and T.L. Bedrossian, Geologic Factors in Coastal Zone Planning, Schooner Gulch to Gualala River, Mendocino County, California, dated 1976, CDMG.

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The undersigned, Erik E. Olsborg, performed the field exploration/geologic reconnaissance portion of the Geotechnical Investigation by Thomas D. Hays & Associates while an employee of that firm in 1977. As part of the study for A.P. No. 27-433-01, field photographs of the property bluffs taken in 1977 were compared with the bluffs as they appeared in 1994.

2.2 Field Exploration

The field exploration consisted of geologic reconnaissance and subsurface exploration. Our reconnaissance consisted of observations of the bedrock and soils exposed on the bluff face in the property vicinity. Our subsurface exploration included drilling and logging four test borings to depths ranging from approximately 14½ to 20¼ feet below the ground surface. The boring locations are shown on Plate 2. The field exploration was conducted on July 19, 2000 with a track-mounted drill rig. Our engineering geologist logged each boring and obtained samples of the soil and rock materials for visual classification and laboratory testing.

Relatively undisturbed tube samples of the soil and rock materials encountered were obtained by driving a 3-inch outside diameter Sprague & Henwood split-barrel sampler using a 140 pound drop hammer falling 30 inches per blow. The inside of the sampler barrel contained 2.4 inch I.D. brass liners for retaining the soil and weathered rock materials. The blows required to drive the sampler were converted to equivalent "Standard Penetration" blow counts for correlation with empirical test data. Sampler penetration resistance (blow counts) provides a relative measure of soil/rock consistency and strength.

The test boring logs, showing the soil and rock materials encountered and the depths of the samples taken, are presented on Plates 3 through 6. The soil classification system used to describe the soils is outlined on Plate 7, and the physical properties criteria used for the soil descriptions are presented on Plate 8. The rock characteristics used to describe the rock materials are presented on Plate 9.

2.3 Laboratory Testing

Representative samples of the soil and rock materials obtained from the borings were tested in our laboratory to evaluate their geotechnical engineering characteristics. Laboratory testing included moisture content, dry density, and triaxial shear strength. The test results are summarized on the boring logs in the manner shown on the Key to Test Data, Plate 7.

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3.0 SITE CONDITIONS

The property is located on a coastal bluff on the southwest side of Highway One, approximately one mile northwest of Schooner Gulch. The ocean bluff is about 70 to 75 feet in vertical height, with a slope gradient of about one half horizontal to one vertical (1/2 H:1V) and localized portions that are near vertical. The bluff rises above a near-level wave-cut platform that is fully exposed only at low (minus) tides. The wave-cut platform, which is comprised of bare rock, extends several hundred feet out into the ocean. The platform is striated by the truncated strikes of the individual rock beds that comprise the platform and adjacent bluff.

The property is accessed by a paved, common driveway off Highway One. The common driveway ends in a cul-de-sac at the east-northeast corner of the property. A gravel driveway extends from the cul-de-sac along the northeast property line to the west-northwest neighboring residence.

The upper terrace level and bluff line undulates at the property. The east-southeast half and the northeast side of the property slopes to the west-northwest with a moderately steep slope gradient of approximately 5H:1V. A swale extends from the central portion of the bluff edge toward (landward) the north-northeast property corner. The swale slopes very gently, about 10H:1V, back from the bluff, then moderately steeply, about 5H:1V, near the neighbor's driveway. The bluff edge slopes up again from the swale to the southwest corner of the site.

The bluff face is striated by differential erosion of the exposed, tilted rock beds. Talus piles periodically form at the bluff toe below the more-erodible beds. A small sandy beach is located at the bluff toe. The beach (as typical of near-shore environments) diminishes during the winter months. Waves wash across this beach at high tides, removing the talus piles frequently.

The upper terrace level contains a thicket of pine trees with some fallen branches and underbrush. The ground surface in the proposed residence site is covered with 4 to 8 inches of pine needle mulch. The bluff face is mostly bare rock. No surface water or evidence of ground-water seepage was observed during our September 2000 field exploration.

4.0 REGIONAL GEOLOGY

Mendocino County is within the northern Coast Ranges geomorphic province of California. The coastal region of southwesterly Mendocino County is comprised of rocks of the Point Arena Terrane of the Salinian Block. The Point Arena

Terrane extends west of the San Andreas Fault from Manchester to Fort Ross in Sonoma County. The rocks of this terrane consist of a sequence of consolidated continental and marine sediments from Late Cretaceous to Eocene age. The sedimentary rocks (primarily sandstone, shale and conglomerate) are generally well-bedded, occasionally fractured and friable to hard. The basement rocks underlying the Point Arena Terrane are comprised of spilitized basalt (altered by low grade metamorphism), representative of oceanic crust.

5.0 SITE GEOLOGY AND SOILS

Site bedrock, as found in our test borings and exposed on the bluff face adjacent to the property, consists of interbedded claystone, siltstone, sandstone and minor shale of the Miocene Epoch, Gallaway-Skooner Gulch Formation. The gray to orange-brown rock strata are thin-bedded, closely to little fractured, low to moderate in hardness and moderately to deeply weathered. Site bedding orientation consists of a north-northwest trending strike with a moderately steep dip (50 to 54 degrees from horizontal) to the southwest.

Slaking (crumbling when exposed to air and water) of the claystone, siltstone and shale beds is causing erosion of the bluff face. Small (sand-sized) rock particles intermittently drift down the bluff face when subject to wind action. The slaking forms a talus deposit, up to several feet in thickness, at the bluff toe. The talus deposits are periodically washed away by waves during high tides and storms.

The upper terrace level of the property was created during the Pleistocene Epoch, when glaciation caused sea level fluctuations which created a series of steps or terraces cut into the coastal bedrock by wave erosion. Shallow marine sediments were deposited on the wave-cut, bedrock platforms while they were submerged beneath the ocean. Some of these marine deposits have been locally eroded away as the terrace began to emerge from the ocean approximately 14,000 years ago. Present sea levels were achieved about five to seven thousand years ago.

No evidence of landsliding was observed at the site. In the referenced 1992 California Geology article, Olsborg noted (from a distance) an "apparent landslide where the top of the bluff tilts back." This "tilts back" area is a portion of the subject property bluff. Upon closer observation during our present study, the top of the bluff has apparently been previously eroded at an angle. The rock beds exposed on the bluff face dip uniformly with the rest of the rock beds of the bluff. Therefore, Pleistocene, or somewhat later erosion, is responsible for the "tilts back" appearance, not landsliding.

One to three feet of Pleistocene terrace deposits were observed within portions of the upper bluff edges at the property. The terrace deposits consist of dark gray silty sand. Terrace deposits were not encountered in our test borings.

The bedrock in the proposed residence site is covered by 4 to 7 feet of silt and clay residual soils at our test boring locations. The majority of the silts and clays are medium stiff to hard; the upper 1 to 2 feet of these soils are soft, porous and contain roots.

No evidence of faulting was observed in the property vicinity, and generally available published references show no active faults on, or trending towards, the property. Two inactive faults (no rupture in Holocene time) are located several hundred feet southeast of the property. The active San Andreas Fault is located within the Garcia River Canyon, approximately six kilometers northeast of the site.

The Coast Ranges geomorphic province is in a zone of high seismic activity associated with the San Andreas Fault system, which passes through the south Mendocino coastal area. Future damaging earthquakes could occur on the San Andreas Fault during the lifetime of the proposed structure.

6.0 CONCLUSIONS

6.1 General

From a geotechnical engineering standpoint, we judge that the site is suitable for the proposed residential development. The main geotechnical considerations affecting the project are bluff retreat, bluff stability, seismic ground shaking, weak soils, and the impact of the residential construction on the site. These and other issues are discussed below.

6.2 Bluff Retreat/Building Setback

Comparison between file photographs taken in 1977, and the 1964 and 1981 aerial photographs of the area as it appears today show that the bluff has retreated at an average rate of about 1-½ inches per year. Such a rate would result in the loss of as much as about 9 ½ feet of the bluff in 75 years (considered by the California Coastal Commission to be the economic lifespan of a house). Multiplying by a factor of safety of four, and rounding up slightly, a bluff setback of 40 feet should be suitable for the proposed residence and leachfield.

6.3 Bluff Stability

No evidence of gross instability, such as landsliding, was observed on the bluff at the property or near the vicinity. However, as with all ocean bluff or hillside sites in general, some risk of instability exists and must be accepted by the property owner. The current standard of practice in geotechnical engineering makes it possible to identify most areas of existing instability, and/or to make recommendations which lower the risk of instability to levels that are generally acceptable, but cannot make total assurances of mitigating all possible future instability.

6.4 Seismicity and Fault Rupture

The site will be subject to strong ground shaking during future, nearby, large magnitude earthquakes. In general, the intensity of the ground shaking at the site will depend on the distance to the causative earthquake epicenter, the magnitude of the shock and the response characteristics of the underlying earth materials. Structures founded in firm soil or rock, and designed in accordance with the current Uniform Building Code (UBC), are well suited to resist the detrimental effects of seismic shaking.

Since the active San Andreas Fault is about six kilometers away from the site, and the faults observed by BACE several hundred feet from the site were found to be inactive, we judge the potential for surface fault rupture at this site to be very low.

6.5 Weak Soils

The near surface topsoils are weak, porous and moderately compressible. These soils could undergo erratic and detrimental settlement under the planned structure foundation loads. Foundations will, therefore, have to be supported on the underlying firm soil or bedrock, to mitigate these potential detrimental effects.

6.6 Construction Impact

In general, the proposed development, constructed in accordance with our recommendations, should have very little effect upon the bluff stability. The planned leach field location, as shown approximately on Plate 2, is geologically suitable. The property should not be adversely affected by the installation and operation of an approved septic tank/leachfield waste disposal system at this location. To reduce the possibility of adverse effects of sewage effluent on the

soils exposed on the upper bluff, the final leachfield location should not be closer than 40 feet from the edge of the bluff.

7.0 RECOMMENDATIONS

7.1 Site Grading

Grading should be kept to the minimum required to provide access to the building site and to construct proper site drainage within the building envelope.

Areas to be graded should be cleared to remove vegetation. Surface soils containing weeds, brush, mulch, and root growth should be stripped from planned grading areas. In general, the depth of stripping should be about 4 to 10 inches. Deeper stripping may be locally required to remove concentrations of organics such as tree roots. Strippings should not be reused as fill material; however, they may be stockpiled for future use in landscaping, if desired.

After stripping, soft/weak soils should be removed to their full depth, which is expected to be about one to two feet at our boring locations. Soils exposed by this operation should be scarified, moisture conditioned to near optimum moisture content, and compacted to at least 90 percent relative compaction per ASTM D 1557 test procedures.

Fill material should be free of organic matter, rocks greater than four inches in larges dimension, and be low in expansion potential (expansion index less than 40 per ASTM D 4829). On-site soils in a "cleaned" condition (i.e., less organics and oversized rock) should be suitable for re-use as fill within planned building areas.

Fill, on-site or imported, should be placed in thin lifts, moisture conditioned to near optimum moisture content, and compacted to at least 90 percent relative compaction based on the ASTM D 1557 test procedures.

7.2 Drilled Pier Foundation Support

The structure should be supported on a system of cast-in-place drilled concrete piers interconnected with grade beams. The piers should be a minimum of 16 inches in diameter. Piers should extend through the weak, near-surface soils a minimum of 6 feet below the lowest adjacent soil grade, and at least 4 feet into firm, weathered bedrock materials. Typical pier depths are anticipated to range from 8 to 11 feet below the ground surface, as determined by BACE during the drilling operations.

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Spacing for the piers should be no closer than 3 pier diameters, center to center. Support for the piers may be gained from skin friction resistance equal to 800 pounds per square foot (psf) of pier surface area for dead plus long-term live downward loads. For the total downward load design, including wind or seismic forces, increase downward capacity by 50 percent. Uplift frictional capacity for piers should be limited to 2/3 of the allowable downward capacity.

Resistance to lateral loads can be obtained using passive earth pressure against the face of the piers. An allowable passive pressure of 250 psf per foot of depth, plus 450 psf (triangular distribution) is appropriate for design. Passive pressure should be neglected in the weak soil zones, and within the upper six inches of subgrade soils, unless the surface is confined by concrete slabs or pavement. Below the weak soil zones, passive pressure can be projected over two pier diameters, and should be limited to depths above 7 times pier diameter.

When final pier depths have been achieved, as determined by BACE, the bottoms of the pier holes should be thoroughly cleaned of loose material. BACE should observe the drilling and final clean out of the pier holes and the placement of reinforcing steel and concrete.

No ground water was encountered in our test borings during our July 2000 field exploration. If ground water is encountered during construction, the pier holes should be dewatered prior to placement of reinforcing steel and concrete. Alternatively, concrete can be tremied into place with an adequate head to displace water or slurry, if more than six inches of ground water has entered the pier hole. Concrete should not be placed by freefall in such a manner as to hit the sidewalls of the excavation.

During bidding, we recommend that proposed foundation drillers be given a copy of this report to review. The foundation contractor should be prepared to case pier holes where caving occurs.

7.3 Seismic Design Criteria

The structure should be designed and constructed to resist the effects of strong ground shaking (up to at least Modified Mercali Intensity IX) in accordance with current building codes. The Uniform Building Code (UBC), 1997 edition, indicates the following seismic criteria are appropriate for design:

Seismic Zone Factor, Z = 0.40
Soil Profile Type = S_c
Seismic Coefficients, $C_a = 0.40\ N_a$
$C_v = 0.56\ N_v$
Near Source Factors $N_a = 1.2$
$N_v = 1.5$
Seismic Source Type = A (San Andreas Fault)
Distance to Fault = 6 km

7.4 Retaining Walls

The retaining or subsurface walls should be provided with permanent drainage to prevent buildup of hydrostatic pressure. Drainage and backfill details are presented on Plate 10. Quality, placement and compaction requirements for backfill behind subsurface walls are the same as previously presented for select fill. Light compacting equipment should be used near the wall to avoid overstressing the walls.

Our recommended lateral earth pressures for retaining wall design are presented on Plate 11. These pressures do not consider additional loads resulting from adjacent foundations, vehicles, or other downward loads. BACE can provide consultation regarding surcharge loads, if needed.

7.5 Concrete Slabs-on-Grade

During foundation and utility trench construction, previously compacted subgrade surfaces may be disturbed. Where this is the case, the subgrade should be moisture conditioned as necessary, and recompacted to provide a firm, smooth, unyielding surface compacted to at least 90 percent relative compaction.

Slab-on-grade floors should be underlain by at least 4 inches of clean, free-draining gravel or washed crushed rock, graded in size from 1-1/2 or ¾ inches maximum to ¼ inches minimum to act as a capillary moisture break. In areas where movement of moisture through the slab would be detrimental to it's intended use, installation of a vapor barrier should be considered.

Exterior concrete flatwork (e.g., sidewalks and patios) can be placed directly on compacted subgrade soils as described in the previous sections of this report.

7.6 Driveway Construction

Grading for the driveway should be performed in accordance with the recommendations presented in Section 6.1. The upper 6 inches of driveway subgrade soils should be compacted to at least 95 percent relative compaction, prior to the placement of aggregate base. The subgrade should also be non-yielding under heavy equipment loads. Aggregate base should be placed in 6 to 8 inch lifts, moisture conditioned as necessary to near optimum moisture content, then compacted to at least 95 percent relative compaction.

7.7 Site Drainage

Uncontrolled surface and/or subsurface water is often the cause of slope instability and foundation problems. Care must be taken to intercept and divert concentrated surface flows and subsurface seepage away from the structural improvements, building foundations and bluff edges. Concentrated flows such as from roof downspouts, driveways, area drains and the like should be collected in a closed pipe and discharged into a functioning storm drain system or into a natural drainage area well away from foundations and the bluff.

7.8 Additional Services

Prior to construction, BACE should review the final grading and building plans, and geotechnical-related specifications for conformance with our recommendations.

During construction, BACE should be retained to provide periodic observations, together with field and laboratory testing, during site preparation, placement and compaction of fills and backfills, and foundation construction. Drilled pier excavations should be reviewed by BACE while the excavation operations are being performed. Our reviews and testing would allow us to verify conformance of the work to project guidelines, determine that the soil and rock conditions are as anticipated, and to modify our recommendations, if necessary.

8.0 LIMITATIONS

This investigation and review of the proposed development was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, either expressed or implied, is provided as to the conclusions and professional advice presented in this report. Our conclusions are based upon reasonable geologic and engineering interpretation of available data.

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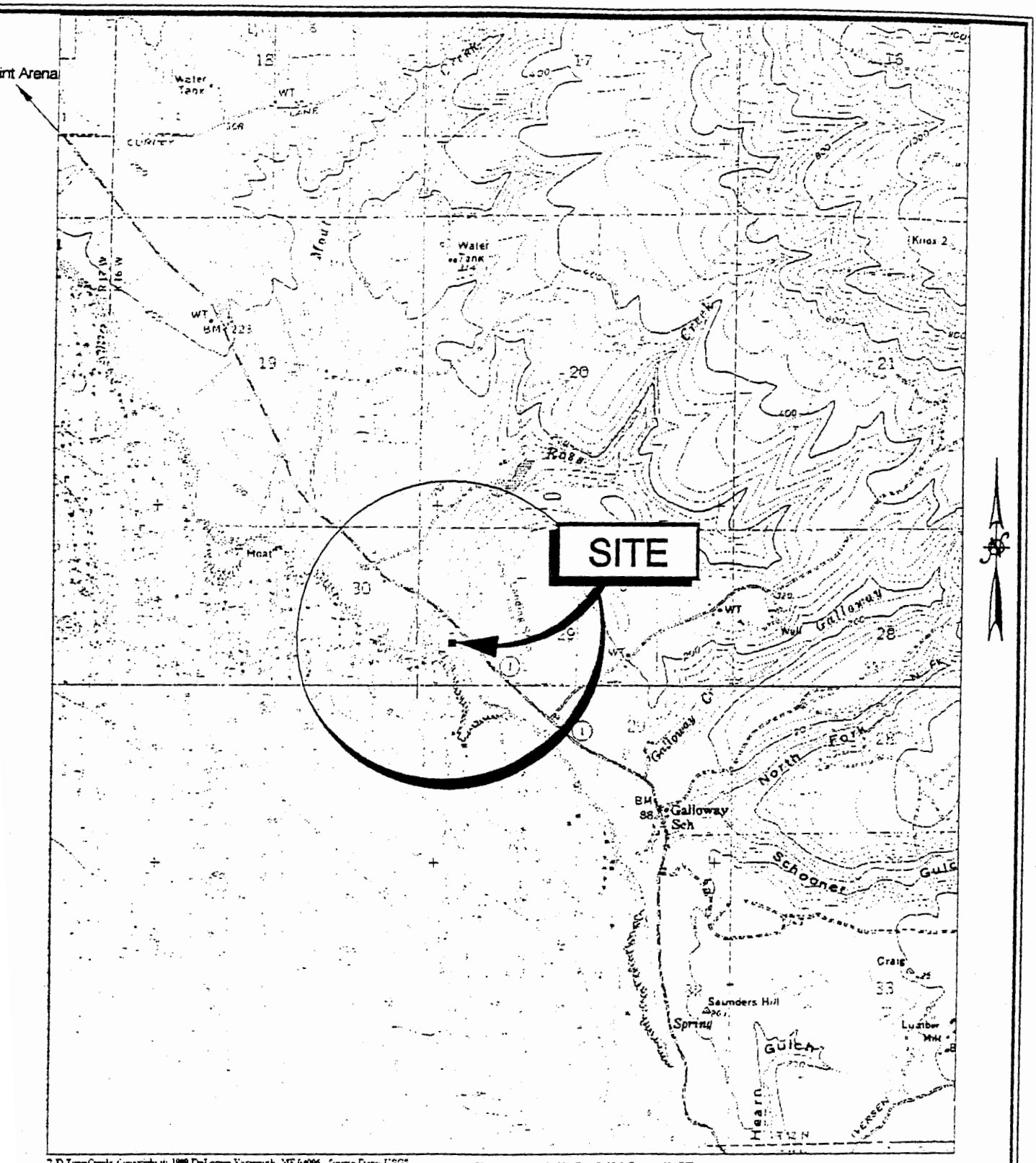
The soil and rock samples taken and tested, and the observations made, are considered to be representative of the site; however, soil and geologic conditions may vary significantly between points of subsurface exploration. As in most projects, conditions revealed during construction may be at variance with the preliminary findings of our investigation. If this occurs the changed conditions must be evaluated by BACE Geotechnical and revised recommendations provided as required.

This report is issued with the understanding that it is the responsibility of the Owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of all other design professionals for the project, and incorporated into the plans, and that the Contractor and Subcontractors implement such recommendations in the field. The safety of others is the responsibility of the Contractor. The Contractor should notify the Owner and BACE if the Contractor considers any of the recommended actions presented herein to be unsafe or otherwise impractical.

Changes in the conditions of a site can occur with the passage of time, whether they are due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

The recommendations contained in this report are based on certain specific project information regarding type of construction and building location which has been made available to us. If conceptual changes are undertaken during final project design, BACE should be allowed to review them in light of this report to determine if our recommendations are still applicable.

ILLUSTRATIONS



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 700 ft Scale: 1 : 24,000 Detail: 13-0 Datum: NAD27

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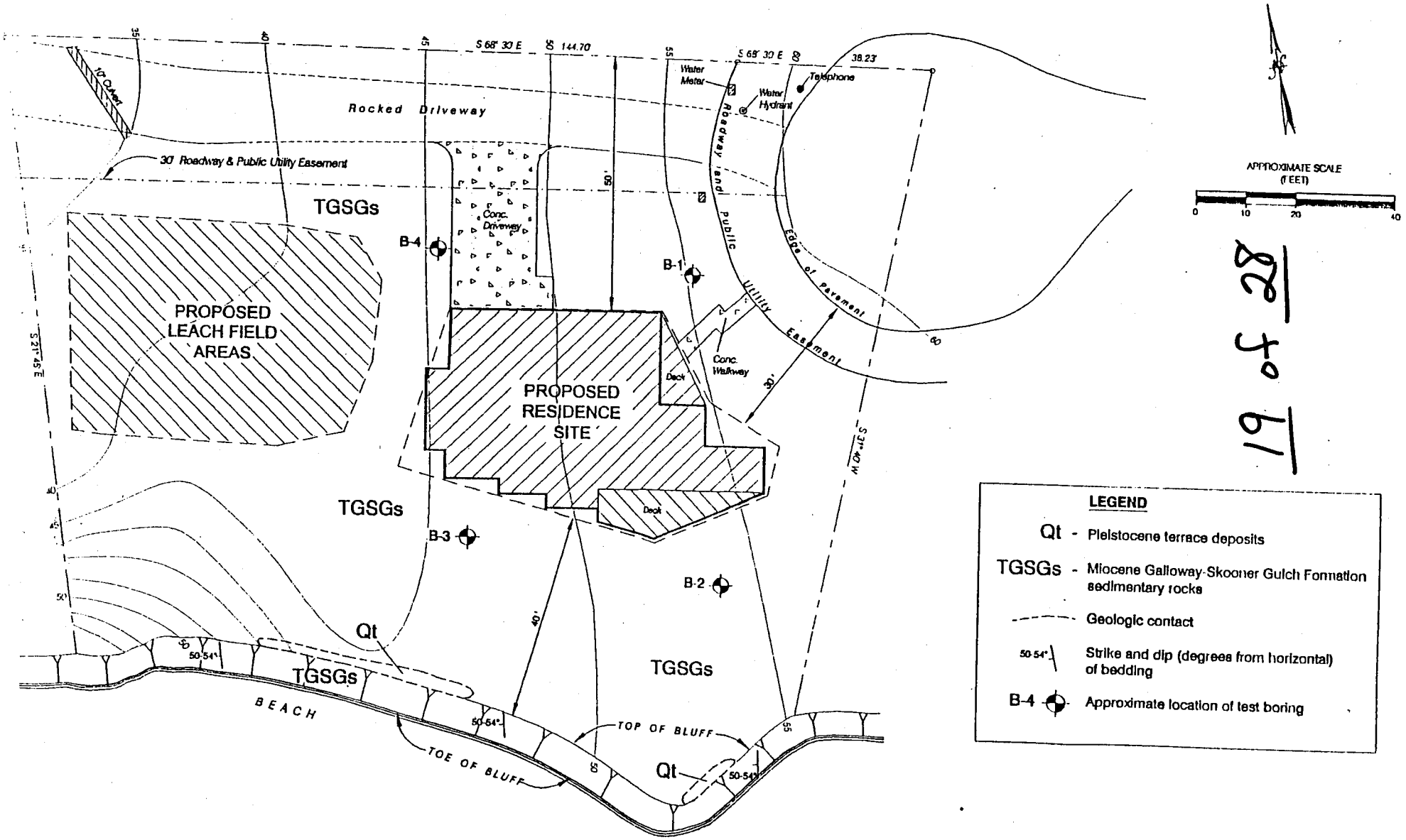
Job No.: 11509.1
Appr.: EEO
Date: 03/23/01

VICINITY MAP
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE
1



28 to 61

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Job No.: 11509.1

SITE GEOLOGIC MAP
WILLIAMS RESIDENCE

PLATE

Log of Boring B-1

Equipment: Morooka "B-40" Drill rig

Date: 7/19/00

Logged By: WAS **Elevation:** 55.0' **

Laboratory Tests	Moisture Content (%)	Dry Density (pcf)	Blows/foot*	Depth (ft.)	Sample	
				1		6" of pine needle mulch at surface DARK GRAY CLAYEY SILT (ML) soft, dry, porous with roots and angular rock fragments 1/4" to 2"
	15.5	86	44	2		DARK GRAY CLAYEY SILT (ML-CL) medium stiff to stiff
				3		
				4		
				5		LIGHT BROWN and LIGHT ORANGE-BROWN SILTSTONE close fracturing, low to moderate hardness, deep to moderate weathering, moist
			60/4"	6		
				7		
				8		
				9		
				10		
				11		
				12		
	30.0	80	50/3"	13		DARK GRAY to BLACK CLAYSTONE little fractured, low hardness, moderate weathering, damp
				14		
				15		DARK GRAY SANDSTONE little fracturing, low to moderate hardness, little weathering damp
				16		
				17		
				18		
				19		
			60/3"	20		

NOTES:
(1) No Caving
(2) No Free Water Encountered

20 of 28

Equivalent "Standard Penetration Blowcounts"

Elevations interpolated from Topographic Site Map by R.A. Seale, L.S.4455, dated December 1999.

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Appr.: EEO
Date: 8/23/01

LOG OF BORING B-1
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE
3

Log of Boring B-2

Equipment: Morooka "B-40" Drill ng

Date: 7/19/00

Logged By: WAS Elevation: 54.5' **

Laboratory Tests	Moisture Content (%)	Dry Density (pcf)	Blows/foot*	Depth (ft.)	Sample	
				1		6" to 8" of pine needle mulch at surface DARK GRAY CLAYEY SILT (ML-CL) soft, damp, porous with roots
			38	2		MOTTLED DARK GRAY AND BROWN CLAY (CL) hard, dry to damp, with 1/4" rock fragments
				3		
				4		
				5		LIGHT BROWN CLAYSTONE angular rock fragments up to 1/2", close fracturing, low hardness, deep weathering, moist
Tx 2635 (576)	21.6	88	40/3"	6		
				7		
				8		RED ORANGE BROWN SANDY SILTSTONE little fracturing, low to moderate hardness, moderate weathering, damp
				9		
				10		
	19.4	102	75/3"	11		DARK BROWN SANDY CLAYSTONE moderate fracturing, moderate hardness, moderate weathering, damp
				12		
				13		
			65/1.5"	14		DARK GRAY SANDSTONE little fracturing, low hardness, moderate weathering, damp

NOTES:
(1) No Caving
(2) No Free Water Encountered

* Equivalent "Standard Penetration Blowcounts"

** Elevations interpolated from Topographic Site Map by R.A. Seale, L.S.4455, dated December 1999.

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Appr.: EEO
Date: 3/23/01

LOG OF BORING B-2
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE 4

BORING LOG 11509 GPJ BACE GDT 3/23/01

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Log of Boring B-3

Equipment: Morooka "B-40" Drill rig

Date: 7/19/00

Logged By: WAS Elevation: 46.5' **

Laboratory Tests	Moisture Content (%)	Dry Density (pcf)	Blows/foot*	Depth (ft.)	Sample	
				1		6" to 8" of pine needle mulch DARK GRAY-BROWN SILTY CLAY (CL) soft to stiff, damp, upper 1 foot is porous with roots
				2		
				3		DARK GRAY to BLACK SANDY CLAY (CL) with 1/2" angular rock fragments, hard, damp to dry
			48	4		
				5		
				6		
	17.3	101	45/3"	7		DARK GRAY to BLACK SANDY CLAYSTONE close fracturing, low hardness, deep weathering, damp
				8		
				9		
				10		
Tx 5798 (1296)	16.5	107	75/4.5"	11		
				12		LIGHT BROWN to GRAY SANDSTONE close fracturing, low to moderate hardness, moderate weathering, damp
				13		
				14		
			93	15		DARK RED-BROWN SHALE/SILTSTONE close fracturing, low hardness, moderate weathering, damp
				16		

NOTES:
(1) No Caving
(2) No Free Water Encountered

* Equivalent "Standard Penetration Blowcounts"

** Elevations interpolated from Topographic Site Map by R.A. Seale, L.S.4455, dated December 1999.

BORING LOG 11509.GPJ BACE GDT 3/23/01

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Job No.: 11509.1
Appr.: EEO
Date: 3/23/01

LOG OF BORING B-3
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE 5

Log of Boring B-4

Equipment: Morooka "B-40" Drill rig

Date: 7/19/00

Logged By: WAS Elevation: 45.5' **

boratory Tests	Moisture Content (%)	Dry Density (pcf)	Blows/foot*	Depth (ft.)	Sample	
				1		4" to 6" of pine needle mulch DARK GRAY CLAYEY SILT to SILTY CLAY (ML-CL) soft to stiff, dry to damp, upper 1 foot is porous with roots
			20	2		
				3		DARK GRAY to BROWN CLAYEY SILT (ML) with occasional 3/4" rock fragments, hard, damp
	13.2	78	43/3"	4		
	17.4	97	25/1"	5		
				6		LIGHT BROWN SANDSTONE little fracturing, moderate hardness, moderate weathering, damp
			60/3"	7		
				8		
				9		
				10		
				11		DARK BROWN SILTY CLAYSTONE little fracturing, low hardness, moderate weathering, damp
				12		
				13		
			50/3.5"	14		
				15		
				16		
				17		DARK GRAY to DARK BLUE-GRAY CLAYSTONE little fracturing, low hardness, moderate weathering, damp
				18		
			50/2"	19		

NOTES:
(1) No Caving
(2) No Free Water Encountered

23 of 28

ient "Standard Penetration Blowcounts"

tions interpolated from Topographic Site Map by R.A. Seale, L.S. 4455, dated December 1999.

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Job No.: 1509.1
Appr.: EED
Date: 3/23/01

LOG OF BORING B-4
WILLIAMS RESIDENCE
27550 South Highway One
Mendocino County, California

PLATE
6

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

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KEY TO TEST DATA

Consol - Consolidation
LL - Liquid Limit
PI - Plasticity Index
EI - Expansion Index
SA - Sieve Analysis
■ - Retained, recovered Sample
▨ - Retained, not recovered
⊠ - Bulk Sample

Shear Strength, psf	Confining Pressure, psf	
Tx 320	(2600)	- Unconsolidated Undrained Triaxial
TxCU 320	(2600)	- Consolidated Undrained Triaxial
DS 2750	(2600)	- Consolidated Drained Direct Shear
FVS 470		- Field Vane Shear
UC 2000		- Unconfined Compression
PP 2000		- Field Pocket Penetrometer
Sat		- Sample saturated prior to test

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Job No.: 11509.1
Appr.: EEO
Date: 03/23/01

SOIL CLASSIFICATION CHART
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE 7

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	Standard Penetration Test Blow Count (blows per foot)
Very loose	Less than 4
Loose	5 to 10
Medium dense	11 to 30
Dense	31 to 50
Very dense	More than 50

CONSISTENCY OF FINE-GRAINED SOILS

Consistency	Identification Procedure	Approximate Shear Strength (psf)
Very soft	Easily penetrated several inches with fist	Less than 250
Soft	Easily penetrated several inches with thumb	250 to 500
Medium stiff	Penetrated several inches by thumb with moderate effort	500 to 1000
Stiff	Readily indented by thumb, but penetrated only with great effort	1000 to 2000
Very stiff	Readily indented by thumb nail	2000 to 4000
Hard	Indented with difficulty by thumb nail	More than 4000

NATURAL MOISTURE CONTENT

Dry	No noticeable moisture content. Requires considerable moisture to obtain optimum moisture content* for compaction.
Damp	Contains some moisture, but is on the dry side of optimum.
Moist	Near optimum moisture content for compaction.
Wet	Requires drying to obtain optimum moisture content for compaction.
Saturated	Near or below the water table, from capillarity, or from perched or ponded water. All void spaces filled with water.

* Optimum moisture content as determined in accordance with ASTM Test Method D1557-91.

Where laboratory test data are not available, the above field classifications provide a general indication of material properties; the classifications may require modification based upon laboratory tests.

Generalized Graphic Rock Symbols


Siltstone or Claystone


Limestone


Tuff (Volcanic Ash)


Shale


Chert


Deeply (Spheroidally) Weathered Lava


Sandstone


Serpentine


Little Weathered Lava or Greenstone


Conglomerate


Metamorphic Rock


Granite

Stratification

Bedding of Sedimentary Rocks	Thickness of Beds
Massive	No apparent bedding
Very thick bedded	Greater than 4 feet
Thick bedded	2 feet to 4 feet
Thin bedded	2 inches to 2 feet
Very thin bedded	0.5 inches to 2 inches
Laminated	0.125 inches to 0.5 inch
Thinly laminated	less than 0.125 inch

Fracturing

Fracturing Intensity	Thickness of Beds
Little	Greater than 4 feet
Occasional	1 foot to 4 feet
Moderate	6 inches to 1 foot
Close	1 inch to 6 inches
Intense	0.5 inches to 1 inch
Crushed	less than 0.5 inches

Strength

Soft	Plastic or very low strength.
Friable	Crumbles by hand.
Low hardness	Crumbles under light hammer blows.
Moderate hardness	Crumbles under a few heavy hammer blows.
Hard	Breaks into large pieces under heavy, ringing hammer blows.
Very hard	Resists heavy, ringing hammer blows and will yield with difficulty only dust and small flying fragments.

Weathering

Deep	Moderate to complete mineral decomposition, extensive disintegration, deep and thorough discoloration, many extensively coated fractures.
Moderate	Slight decomposition of minerals, little disintegration, moderate discoloration, moderately coated fractures.
Little	No megascopic decomposition of minerals, slight to no effect on cementation, slight and intermittent, or localized discoloration, few stains on fracture surfaces.
Fresh	Unaffected by weathering agents, no disintegration or discoloration, fractures usually less numerous than joints.

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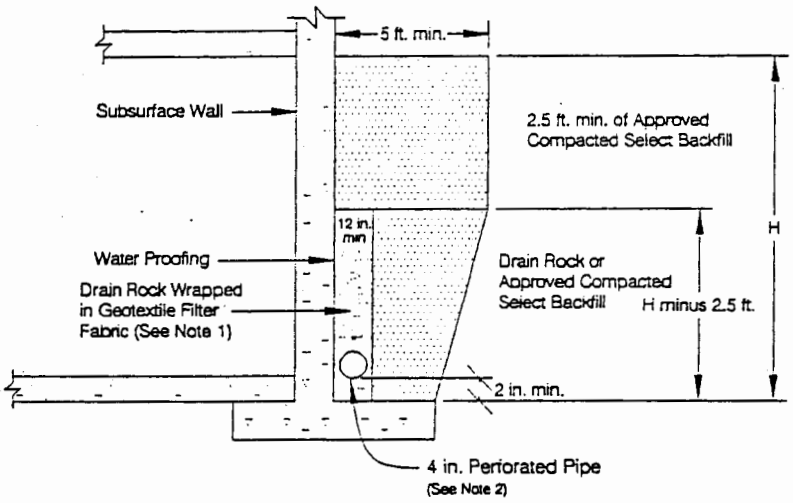

SUBSURFACE WALL DRAINAGE DETAIL
(Not to Scale)

(1) Drain rock should be clean, free-draining and meet the requirements for Class 1, Type B, Permeable Material, Section 68, State of California "Caltrans" Standard Specifications, latest edition, and should be wrapped in geotextile filter fabric (Mirafi 140 or equivalent).

(2) Pipe should conform to the requirements of Section 68 of Standard Specifications, perforations should be placed down, sloped at 1% to drain to gravity outlet or sump with automatic pump.

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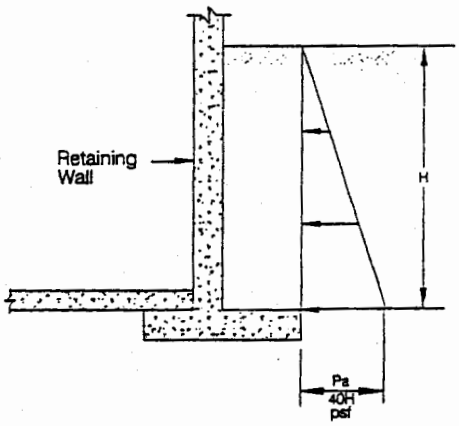
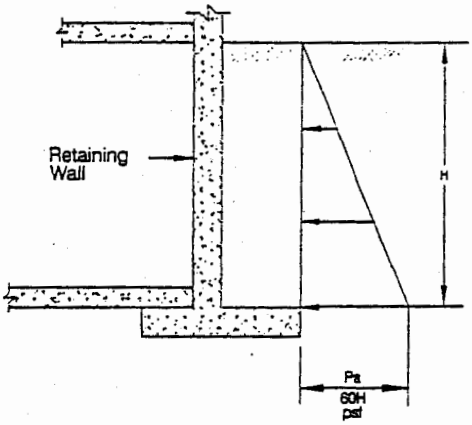
Job No.: 11508.1
Appr.: SEO
Date: 3/23/01

RETAINING WALL DRAINAGE DETAIL
WILLIAMS RESIDENCE
27560 South Highway One
Mendocino County, California

PLATE
10



ACTIVE SOIL PRESSURE DIAGRAM
For walls that are free to yield slightly
(See Note 2)



AT-REST SOIL PRESSURE DIAGRAM
For braced walls of substantial rigidity
(See Note 2)

NOTES:

(1) The above are soil pressures only and do not include lateral loads resulting from traffic, floor loads or other vertical loads.

(2) If the wall, at surface of the backfill, cannot yield about 0.1% of its height, the wall should be considered as a braced wall and the at-rest soil pressures should be used.

(3) The above pressures assume a fully drained condition: See Plate 10 for drainage and backfill details.

(4) The above pressures should be used where backfill slope is flatter than 3 horizontal to 1 vertical (3H:1V).

28 of 28

BACE Geotechnical
A Division of Brunsing Associates, Inc.

April 18, 2002

11509.2

Dr. Mark Johnsson
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Supplemental Bluff Stability and Aerial Photograph Analyses, Planned Williams Residence, 27560 South Highway One, Bowling Ball Beach, Mendocino County, California

Dear Dr. Johnsson:

As per your request during our site meeting on February 26, 2002, BACE Geotechnical (BACE) is providing our bluff stability analysis, as well as copies of the aerial photographs, used in our evaluation of the bluff retreat rate at the Williams property, 27560 South Highway One, Mendocino County, California. BACE previously performed a geotechnical investigation for the project and presented the results in a report dated March 16, 2001. BACE subsequently responded to comments from Friends of Schooner Gulch in BACE's letter dated September 25, 2001.

Stability Analysis

The results of the slope stability analysis of the bluff are attached. The strength parameters used in the stability analysis were determined from the strength test results from our 2001 geotechnical investigation, supplemented with test data and our experience from similar, nearby projects. Copies of the strength parameter plots are attached. As shown, the pseudo static stability analysis (assumed earthquake load of 0.15g) indicates a factor of safety equal to 1.28.

Aerial Photograph Analysis

Enclosed are copies of the 1964 and 1981 aerial photographs used during our investigation as well as a recently-obtained 2000 aerial photograph. As shown on the attached photograph copies, BACE first determined the scale of the photographs by measuring identical points on the photographs with identical points on the U. S. Geological Survey, Point Arena and Saunders Reef 7-1/2 Minute Quadrangle topographic maps (points A, B, C, and D on the attached photograph and map copies). The distance between the Highway One centerline

and a point on the Williams' bluff was then measured on each photograph. In addition, as part of this supplemental analysis, two other points on the bluff edge south of the Williams' property were measured on the photographs.

The distances measured between Highway One and the projecting point (measuring point 1) on the Williams' bluff on the 1964 and 1981 photographs indicate a retreat rate of 1.5 inches per year, which was presented in our geotechnical investigation report. However, comparison of the distances between the same measuring points on the 1981 and 2000 photographs show a retreat rate of 4.9 inches per year, and between the 1964 and 2000 photographs a retreat rate of 3.3 inches per year. Further comparisons between the Highway One centerline and two other points (measuring points 2 and 3) on the bluff south of the Williams' property show retreat rates between 1964 and 2000 of 2.6 and 2.2 inches per year.

Evaluation of Retreat Rate

Based on the retreat rate of 3.3 inches per year for the Williams' property from the 1964 and 2000 aerial photographs, the bluff should erode back 20.6 feet over the 75-year lifespan of the house. This gives a safety factor of almost 2 for our recommended 40-foot setback. However, aerial photograph analysis is not the only tool used in determining bluff retreat rates. The undersigned also relies upon site observations, field measurements and photographs taken during previous investigations at Bowling Ball Beach over the last 25 years (one third of a 75-year lifespan). The undersigned has twice investigated a property at Bowling Ball Beach, south of the Williams' property. The first investigation was in 1977 (while with a different geotechnical firm) and the second investigation was in 1994. Field photographs of the upper bluff edge taken in 1977 were compared with conditions in 1994. The bluff appeared to have eroded back 1-1/2 to 2 feet during that 17-year period, showing a retreat rate of 1.4 inches per year.

At our February 26, 2002 site meeting at Bowling Ball Beach, you were present when we measured the distance between a neighboring house corner and the bluff edge. The house was built in 1993 with a bluff setback of 45 feet, as confirmed by the son of the original owner (oral communication, March 6, 2002). Our measurement showed the bluff-edge vegetation was still at 45 feet, but there was an approximately one-foot overhang beneath the vegetation. Thus, the bluff appears to have eroded back about one foot in nine years, indicating a retreat rate of approximately 1.3 inches per year. Since the house owners had originally

wanted to build closer than 45 feet from the bluff edge, it is unlikely that they built their house further back than the required 45 feet.

Response to Additional Comments

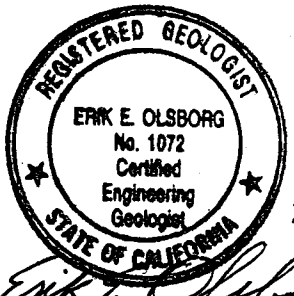
BACE has reviewed letters from Dr. Hillary Adams dated January 4, 2002, and from Friends of Schooner Gulch dated October 11, 2001 and January 7, 2002.

- Dr. Adams states that BACE apparently "overlooked the huge slideout at the Kennedy property just a few lots to the south". The undersigned has been observing this landslide since his first project at Bowling Ball Beach in 1977. During a study in 1999, BACE determined that this landslide had a retreat rate of approximately 5 inches per year. The landslide is a localized feature with no potential impact on the Williams' property. As previously stated in BACE's 2001 geotechnical investigation report, there are no landslides in the near vicinity of the Williams' property.

- The primary issue of the Friends of Schooner Gulch's letters is increased erosion as sea level rises due to global warming. Sea level rise appears probable, however, the projected rise (1.6 feet over the next century, or 1.2 feet in the next 75 years) will be a gradual process, not an over-night event. In their January 7, 2002 letter they present a cross section of the bluff and adjacent wave-cut terrace showing a slope of two percent (one foot vertical in 50 feet horizontal). This slope is misleading; most of the wave-cut terrace is exposed at only minus tides, and the full terrace is relatively flat and extends seaward for hundreds of feet. The terrace is being planed-off flat by the ocean since current sea levels were achieved approximately 5 to 7 thousand years ago. As indicated by our test pits, borings, and our laboratory strength tests at the several properties investigated by BACE at Bowling Ball Beach, the site bedrock is low to moderate in hardness. The bedrock becomes friable to soft on the bluff face where exposed to wind and water (slaking). It takes time for the rocks to be weakened enough to erode by slaking. This relatively slow erosion rate should continue, even as the sea level rises.

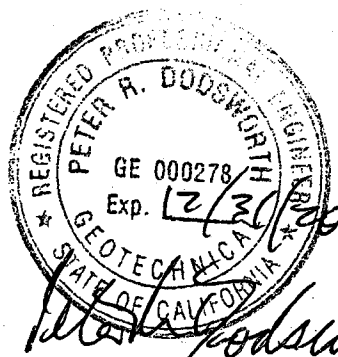
We trust our above responses are satisfactory at this time. Please contact us if we can be of further service to you on this project.

Respectfully submitted,



3/28/03

Erik E. Olsborg
Engineering Geologist – 1072



Peter R. Dodsworth
Geotechnical Engineer - 278

EEO/PRD/mjw

Attachments: Stability Analysis
Strength Parameters
Spliced portions of the Point Arena and Saunders Reef Quad Sheets
1964, 1981 and 2000 Aerial Photographs

Cc: Gale & Dorothy Williams
Rosenthal Construction
Ed Mckinley

XSTABL File: WILLIAMS 4-25-02 15:46

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 98       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.202                96 Ä 1663  *
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Problem Description : Williams Residence

SEGMENT BOUNDARY COORDINATES

---

4 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	5.0	20.5	5.0	2
2	20.5	5.0	53.5	69.5	2
3	53.5	69.5	57.5	77.0	1
4	57.5	77.0	125.0	81.0	1

1 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	53.5	69.5	115.0	76.0	2

ISOTROPIC Soil Parameters

---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	99.0	99.0	200.0	20.00	.000	.0	0
2	107.0	107.0	800.0	40.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .150 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

2500 trial surfaces will be generated and analyzed.

50 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 10.0 ft
and x = 55.0 ft

Each surface terminates between x = 50.0 ft
and x = 120.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****

-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)

****

Negative effective stresses were calculated at the base of a slice.

```
**    This will be ignored for final summary of results    **
************************************************************

Circular surface (FOS=   .0015) is defined by: xcenter =      3.91
ycenter =     80.97   Init. Pt. =     43.98   Seg. Length =   8.00
------------------------------------------------------------------

************************************************************
**     Factor of safety calculation for surface #  1895    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was    .0046    **
**    This will be ignored for final summary of results    **
************************************************************

Circular surface (FOS=   .0046) is defined by: xcenter =     -7.39
ycenter =     89.09   Init. Pt. =     43.98   Seg. Length =   8.00
------------------------------------------------------------------

************************************************************
**     Factor of safety calculation for surface #  1901    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was    .0039    **
**    This will be ignored for final summary of results    **
************************************************************

Circular surface (FOS=   .0039) is defined by: xcenter =     25.64
ycenter =     71.83   Init. Pt. =     44.90   Seg. Length =   8.00
------------------------------------------------------------------

************************************************************
**     Factor of safety calculation for surface #  1983    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was    .0038    **
**    This will be ignored for final summary of results    **
************************************************************

Circular surface (FOS=   .0038) is defined by: xcenter =     33.44
ycenter =     69.10   Init. Pt. =     45.82   Seg. Length =   8.00
------------------------------------------------------------------

************************************************************
**     Factor of safety calculation for surface #  2236    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was    .0014    **
**    This will be ignored for final summary of results    **
```

```
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
**************************************************************************

    ------------------------------------------------------------
    USER SELECTED option to maintain strength greater than zero
    ------------------------------------------------------------

    ************************************************************
    **     Factor of safety calculation for surface #  1746   **
    **     failed to converge within FIFTY iterations         **
    **                                                        **
    **    The last calculated value of the FOS was    .0046  **
    **    This will be ignored for final summary of results  **
    ************************************************************

Circular surface (FOS=    .0046) is defined by: xcenter =      -8.79
ycenter =      82.83   Init. Pt. =      41.22   Seg. Length =    8.00
-------------------------------------------------------------------

    ************************************************************
    **     Factor of safety calculation for surface #  1786   **
    **     failed to converge within FIFTY iterations         **
    **                                                        **
    **    The last calculated value of the FOS was    .0038  **
    **    This will be ignored for final summary of results  **
    ************************************************************

Circular surface (FOS=    .0038) is defined by: xcenter =      -4.25
ycenter =      83.81   Init. Pt. =      42.14   Seg. Length =    8.00
-------------------------------------------------------------------

    ************************************************************
    **     Factor of safety calculation for surface #  1864   **
    **     failed to converge within FIFTY iterations         **
    **                                                        **
    **    The last calculated value of the FOS was    .0016  **
    **    This will be ignored for final summary of results  **
    ************************************************************

Circular surface (FOS=    .0016) is defined by: xcenter =       6.13
ycenter =      79.44   Init. Pt. =      43.98   Seg. Length =    8.00
-------------------------------------------------------------------

    ************************************************************
    **     Factor of safety calculation for surface #  1892   **
    **     failed to converge within FIFTY iterations         **
    **                                                        **
    **    The last calculated value of the FOS was    .0015  **
```

****

Circular surface (FOS= .0014) is defined by: xcenter = 42.74
ycenter = 73.30 Init. Pt. = 50.41 Seg. Length = 8.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	21.02	6.02
2	27.95	10.01
3	34.67	14.35
4	41.16	19.03
5	47.39	24.04
6	53.36	29.37
7	59.05	35.00
8	64.44	40.91
9	69.51	47.10
10	74.26	53.53
11	78.67	60.21
12	82.73	67.10
13	86.43	74.19
14	88.56	78.84

**** Simplified BISHOP FOS = 1.284 ****

****
**
** Out of the 2500 surfaces generated and analyzed by XSTABL, **
** 8 surfaces were found to have MISLEADING FOS values. **
**
****

The following is a summary of the TEN most critical surfaces

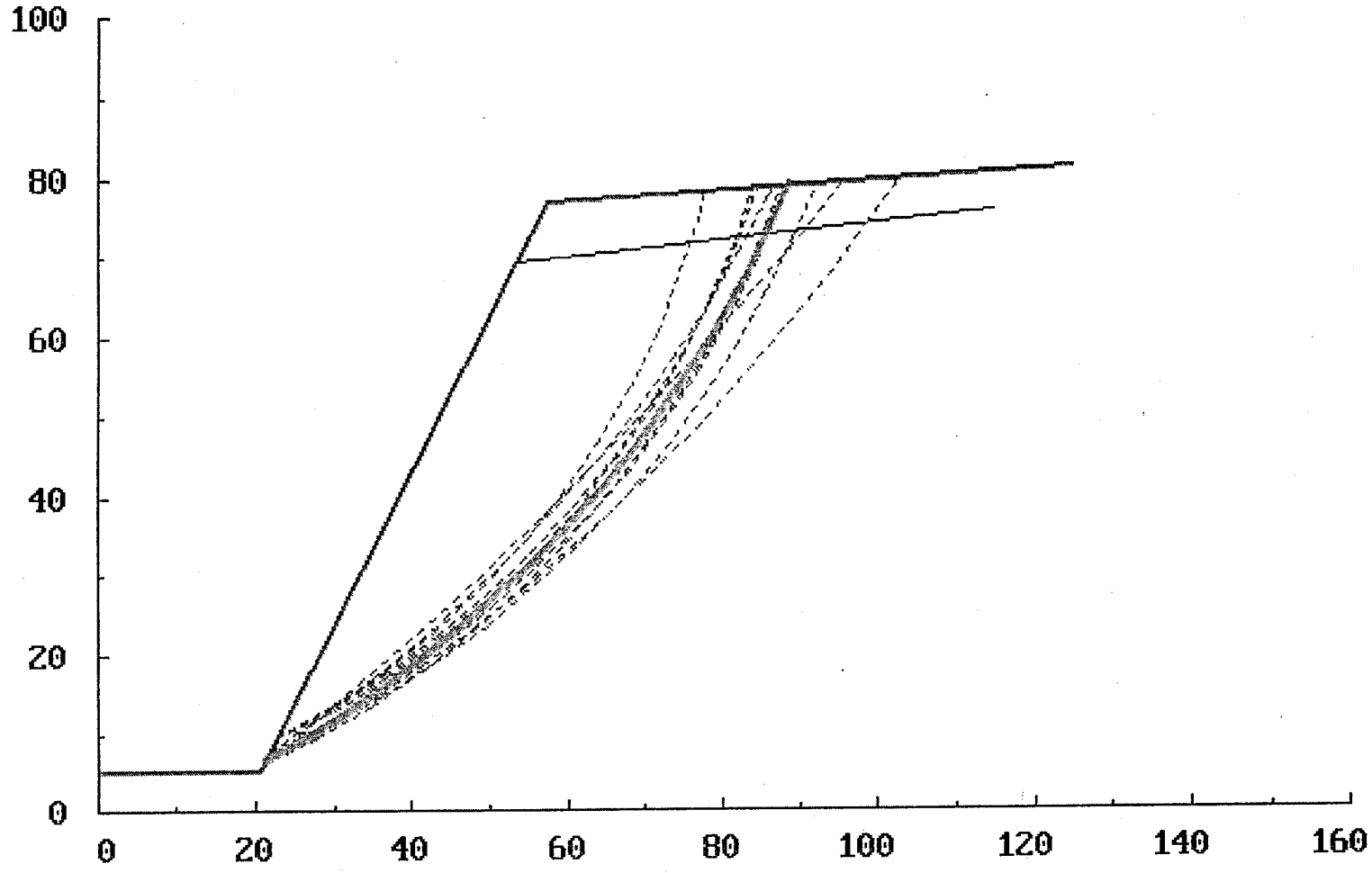
Problem Description : Williams Residence

FOS Circle Center Radius Initial Terminal Resisting

	(BISHOP)	x-coord (ft)	y-coord (ft)	(ft)	x-coord (ft)	x-coord (ft)	Moment (ft-lb)
1.	1.284	-52.78	142.29	154.98	21.02	88.56	2.343E+07
2.	1.290	-34.05	123.27	129.55	21.02	87.55	2.020E+07
3.	1.303	-76.09	162.30	182.97	21.94	86.65	2.470E+07
4.	1.318	-33.76	122.45	126.25	22.86	84.60	1.737E+07
5.	1.319	-99.87	221.92	247.44	21.02	102.58	4.552E+07
6.	1.321	-29.54	128.95	131.62	21.94	92.23	2.216E+07
7.	1.322	-26.35	115.05	116.36	22.86	84.11	1.625E+07
8.	1.329	-25.64	121.20	121.68	22.86	88.37	1.863E+07
9.	1.330	-26.12	105.16	107.37	22.86	77.74	1.301E+07
10.	1.334	-316.76	424.89	538.10	21.02	95.65	7.892E+07

* * * END OF FILE * * *

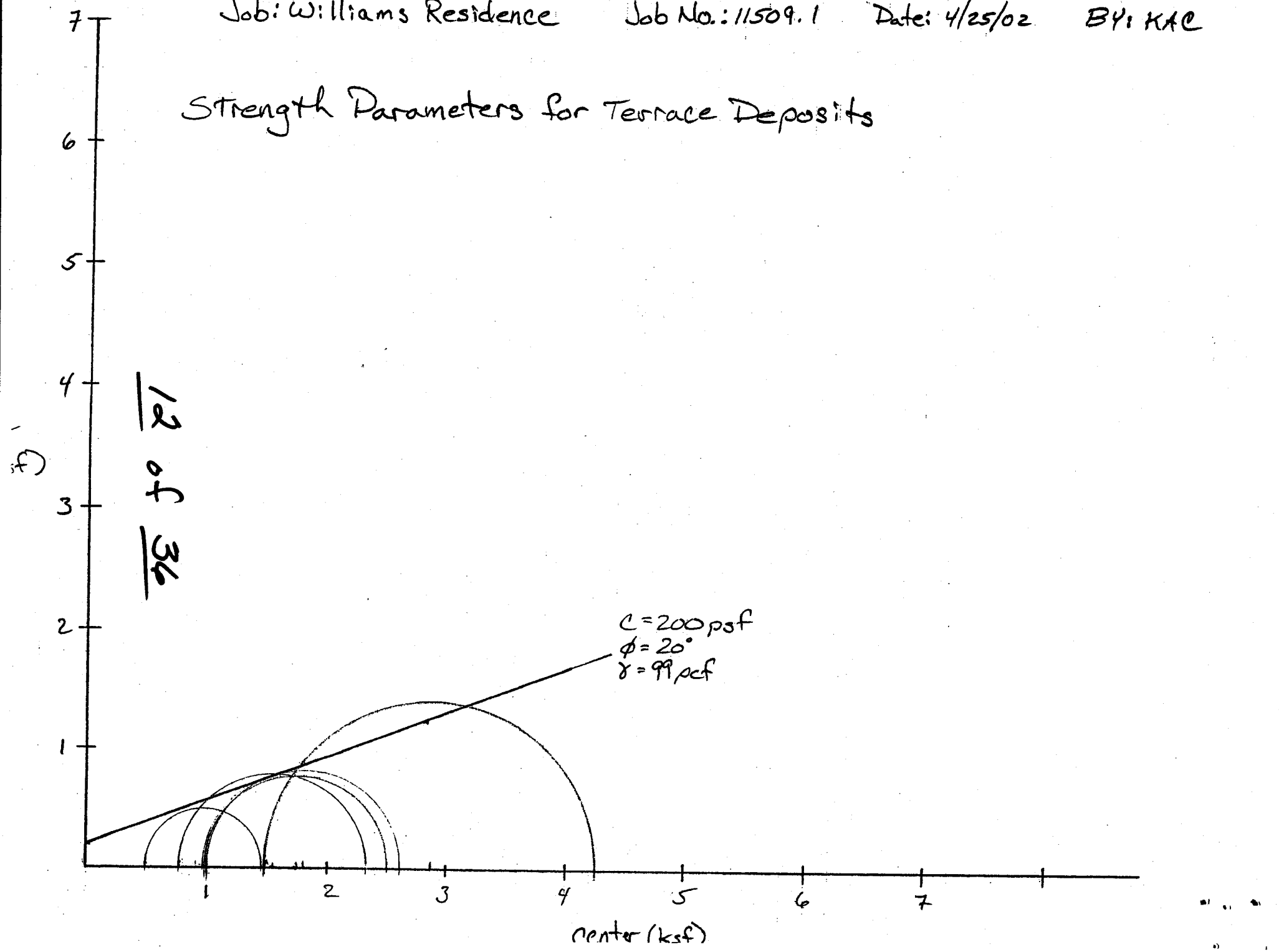
Williams Residence
10 most critical surfaces, MINIMUM BISHOP FOS = 1.284



11 of 36

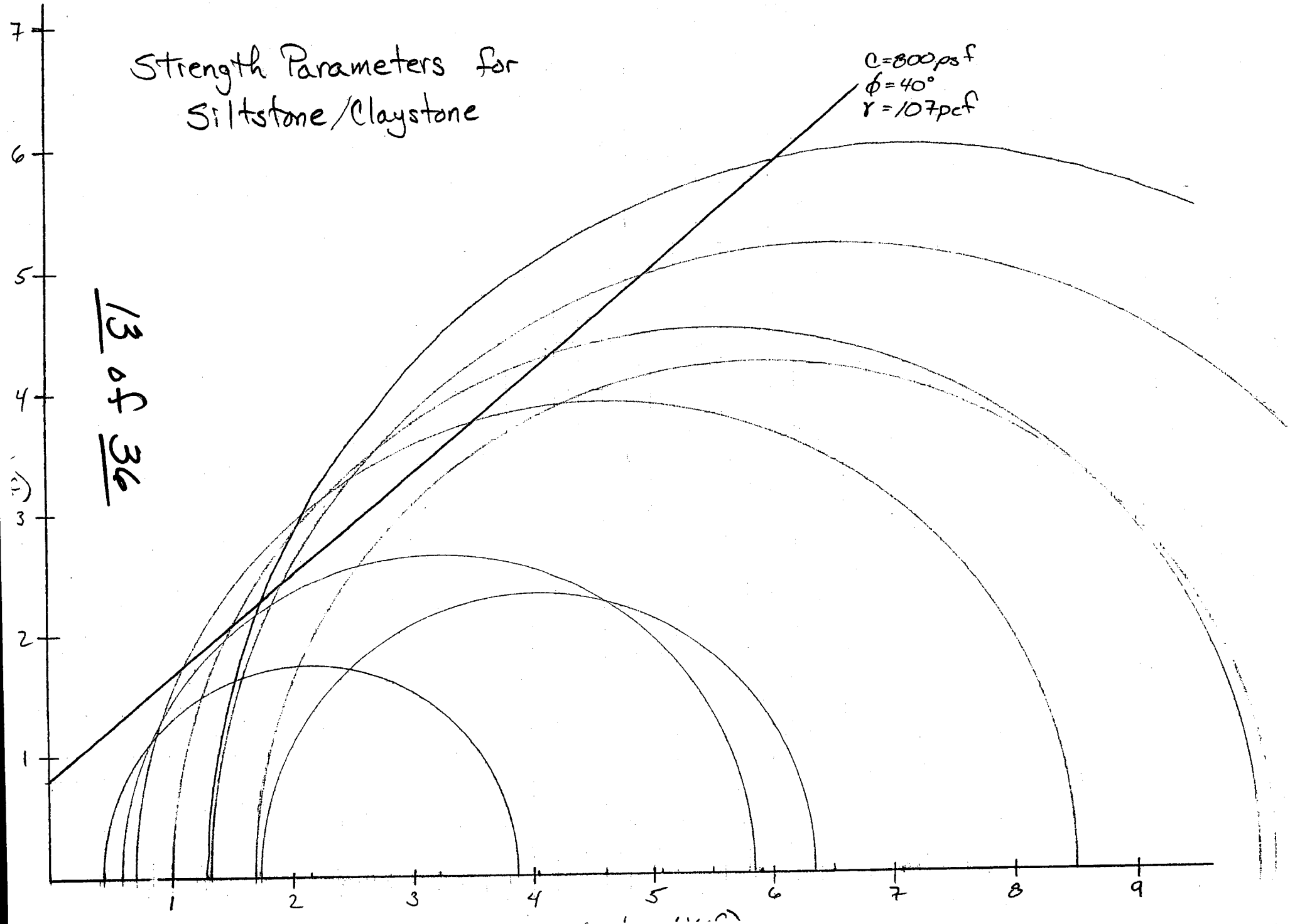
Job: Williams Residence Job No.: 11509.1 Date: 4/25/02 BY: KAC

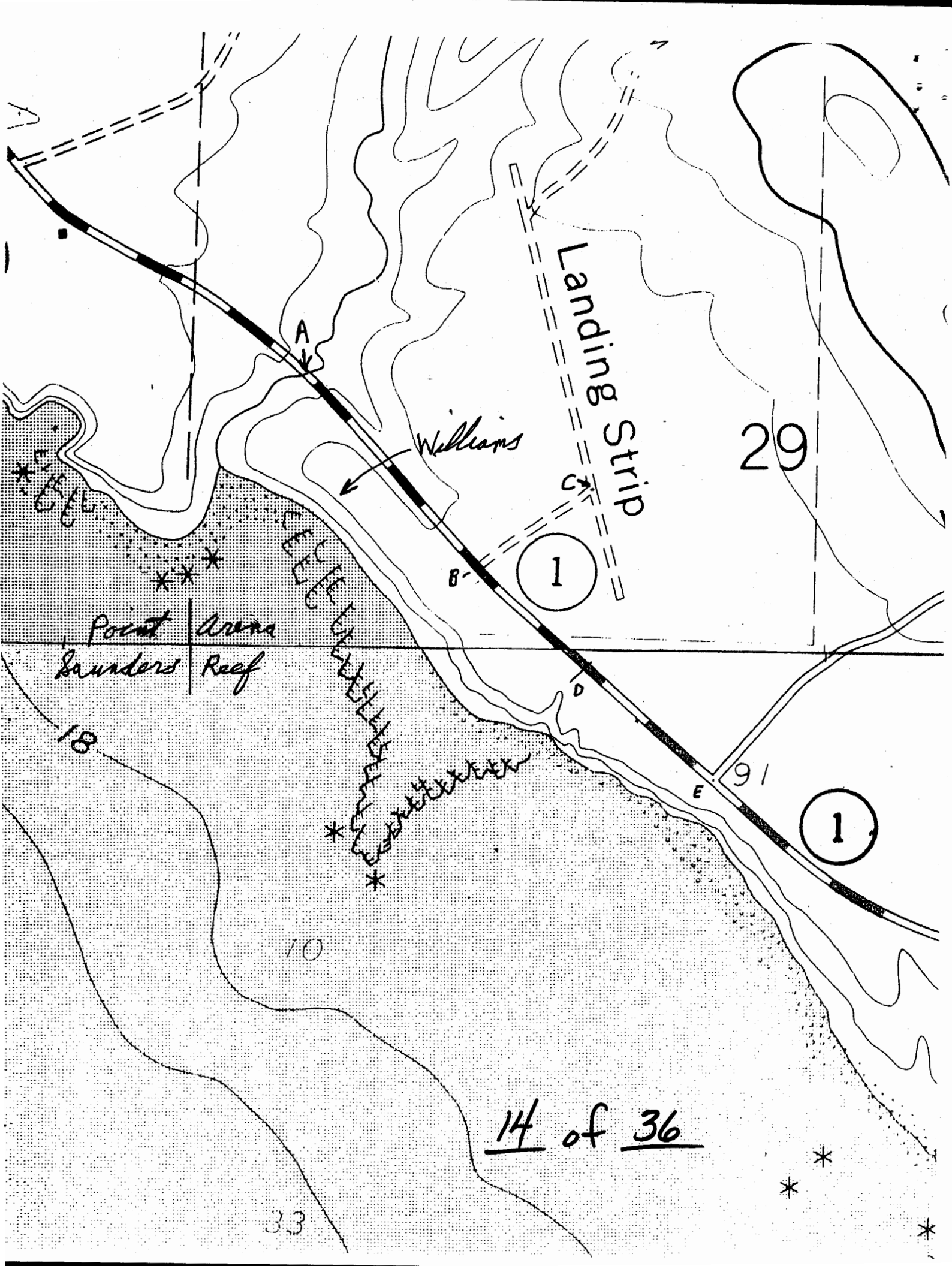
Strength Parameters for Terrace Deposits

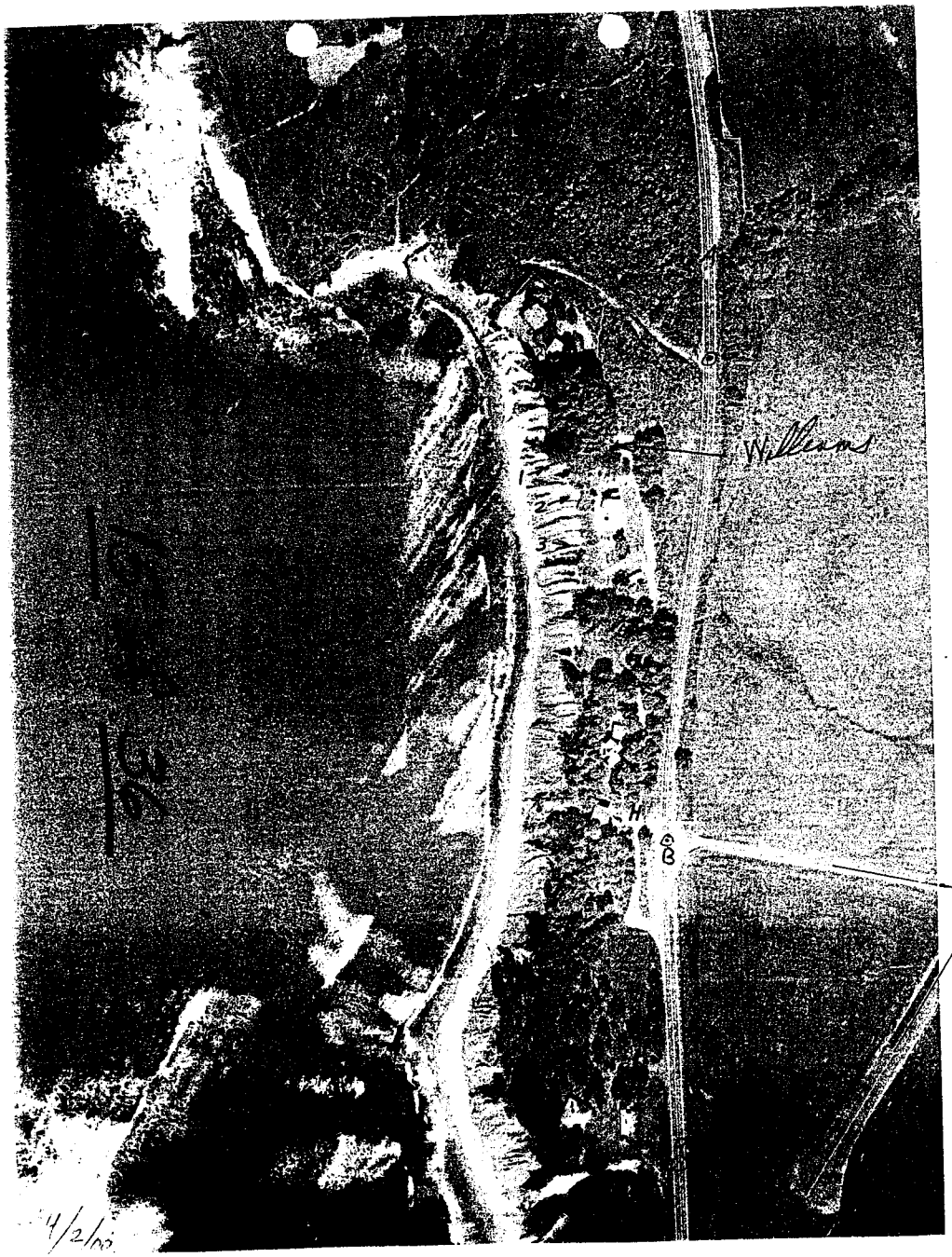


Job: Williams Residence Job No.: 11509.1 Date: 4/25/02 BY: KAL

Strength Parameters for Siltstone/Claystone




Landing Strip
Williams
A
B
C
D
E
29
1
1
91
18
10
33
Point Saunders
Arena Reef



April 2, 2000 Photograph

Distance 1
Projecting point to Hwy CL = 1.35" x 212'/inch = 286.2'

Distance 2
indented point to Hwy CL = 1.05" x 212'/inch = 222.6'

Distance 3
indented point to Hwy CL = 0.96" x 212'/inch = 203.5'

Distance B-C = 2.81"
map distance = 595'
photo scale: 1" = 212'
Distance G-B = 4.27" use 1" = 212'
1981 photo distance = 908'
photo scale: 1" = 212.6'
H - NE house corner to Hwy CL
.48" x 212'/inch = 101.8'

June 23, 1981 Photograph

Distance 1
Projecting point to Hwy ℄ = 1.27" X 231.5'/inch = 294.0'

Distance 2
indented point to Hwy ℄ = 0.97" X 231.5'/inch = 224.6'

Distance 3
indented point to Hwy ℄ = 0.88" X 231.5'/inch = 203.7'

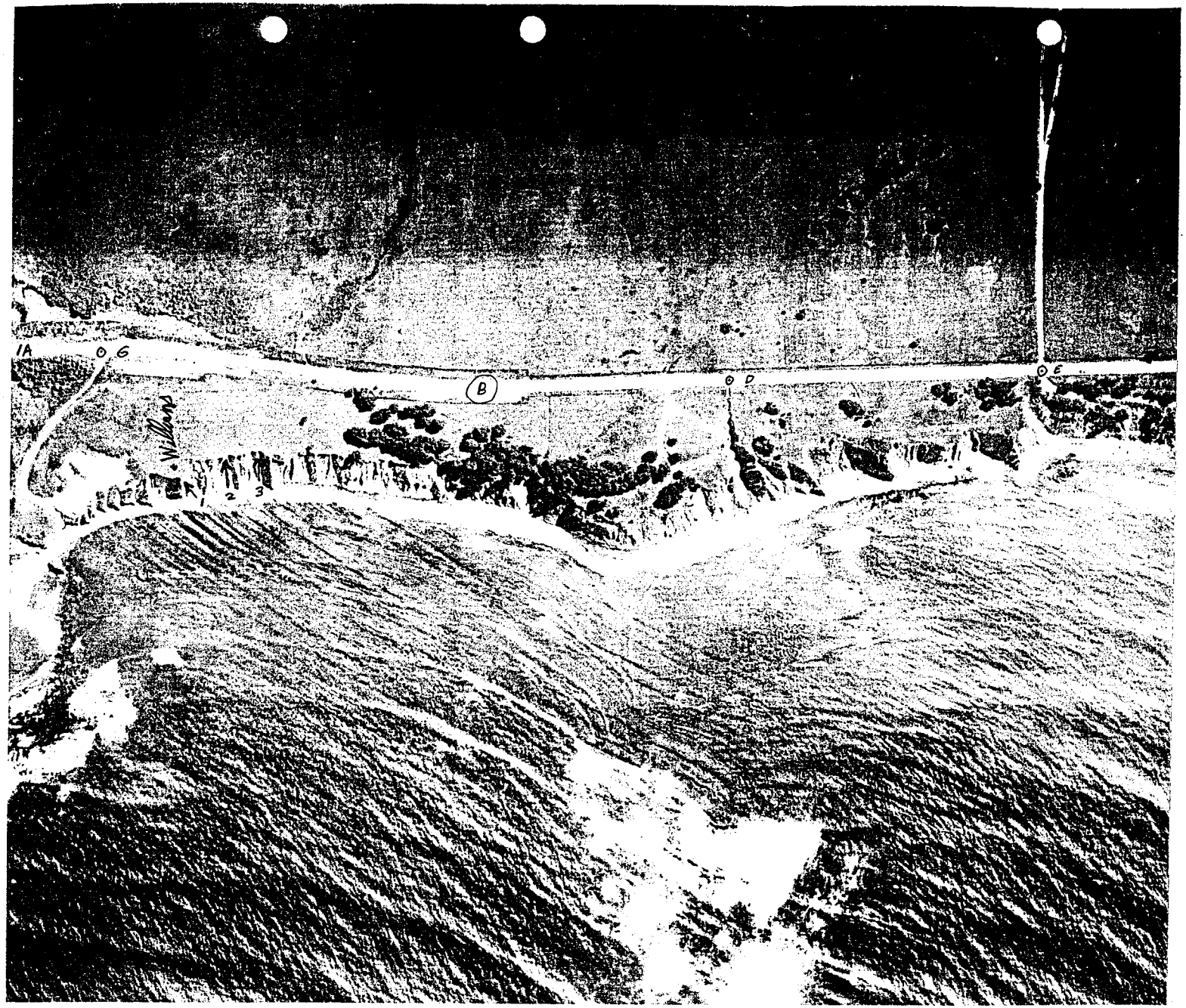
Distance A-B = 4.84"
map distance = 1120'
photo scale: 1" = 231.4'

Distance B-C = 2.57" use 1" = 231.5'
map distance = 595'
photo scale: 1" = 231.5'

Distance GB = 3.92" X 231.5'/inch = 907.5'

H - NE house corner
to Hwy ℄ - .44" X 231.5'/inch = 101.9'

Distance G-D = 6.60" X 231.5'/inch = 1527.9'



July 7, 1964 Photogr.

Distance 1
Projecting point to Hwy CL
1.31" X 226'/inch = 296.

Distance 2
indented point to Hwy CL
1.02" X 226'/inch = 230.5'

Distance 3
indented point to Hwy CL
0.93" X 226'/inch = 210.2'

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Distance A-E = 11.0"
map distance = 2485'
photo scale: 1" = 226' use 1"=22

Distance G-D = 6.76"
6.76" X 226'/inch = 1527.8'

BACE Geotechnical
A Division of Brunsing Associates, Inc.

January 23, 2003

11509.2

Dr. Mark Johnsson
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Addendum to Supplemental Bluff Stability Analysis, Planned Williams Residence, 27560 South Highway One, Bowling Ball Beach, Mendocino County, California

Dear Dr. Johnsson:

BACE Geotechnical (BACE) previously provided the pseudo static portion of our bluff stability analysis for the Williams property, 27560 South Highway One, Mendocino County, California, in our letter dated April 18, 2002. In this addendum, we are now providing the static portion of the stability analysis of the bluff, per your request.

The attached static slope stability analysis was performed with the same strength parameters used previously. The strength parameters were determined from the strength test results from our 2001 geotechnical investigation, supplemented with test data and our experience from similar, nearby projects. Copies of the strength parameter plots are attached. As shown, static stability analysis indicates a factor of safety equal to 1.5 (1.490).

We trust the attached provides the information that you require at this time. Please contact us if we can be of further service to you on this project.

Respectfully submitted,

REGISTERED GEOLOGIST
ERIK E. OLSBORG
No. 1072
Certified
Engineering
Geologist
STATE OF CALIFORNIA

Erik E. Olsborg
Engineering Geologist - 1072

REGISTERED PROFESSIONAL ENGINEER
PETER R. DODSWORTH
GE 000278
Exp. 12/31/04
GEOTECHNICAL
STATE OF CALIFORNIA

Peter R. Dodsworth
Geotechnical Engineer - 278

EEO/PRD/mjh

Attachments: Stability Analysis
Strength Parameters

Cc: Gale & Dorothy Williams; Rosenthal Construction; Ed Mckinley; Randy Stemler; California Coastal Commission

P.O. Box 749, Windsor, CA 95492 Phone: (707) 838-0780 Fax: (707) 838-4420

XSTABL File: WILLIAM2 1-22-** 11:53

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*        Copyright (C) 1992 Ä 98        *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.202                96 Ä 1663  *
*****************************************
```

Problem Description : WILLIAMS RESIDENCE

SEGMENT BOUNDARY COORDINATES
---

4 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	5.0	20.5	5.0	2
2	20.5	5.0	53.5	69.5	2
3	53.5	69.5	57.5	77.0	1
4	57.5	77.0	125.0	81.0	1

1 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	53.5	69.5	115.0	76.0	2

ISOTROPIC Soil Parameters
---

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2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Water Surface Constant (psf)	Water No.
1	99.0	99.0	200.0	20.00	.000	.0	0
2	107.0	107.0	800.0	40.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

2500 trial surfaces will be generated and analyzed.

50 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 10.0 ft
and x = 55.0 ft

Each surface terminates between x = 50.0 ft
and x = 120.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero
---

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****
** Factor of safety calculation for surface # 1746 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was .0044 **
** This will be ignored for final summary of results **

****

Circular surface (FOS= .0044) is defined by: xcenter = -8.79
ycenter = 82.83 Init. Pt. = 41.22 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 1786 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was .0036 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= .0036) is defined by: xcenter = -4.25
ycenter = 83.81 Init. Pt. = 42.14 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 1864 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was .0015 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= .0015) is defined by: xcenter = 6.13
ycenter = 79.44 Init. Pt. = 43.98 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 1892 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was .0014 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= .0014) is defined by: xcenter = 3.91
ycenter = 80.97 Init. Pt. = 43.98 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 1895 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was .0044 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= .0044) is defined by: xcenter = -7.39
ycenter = 89.09 Init. Pt. = 43.98 Seg. Length = 8.00

```
**********************************************************
**     Factor of safety calculation for surface #  1901    **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was    .0037    **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS=   .0037) is defined by: xcenter =     25.64
ycenter =     71.83   Init. Pt. =     44.90   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  1983    **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was    .0036    **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS=   .0036) is defined by: xcenter =     33.44
ycenter =     69.10   Init. Pt. =     45.82   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2236    **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was    .0013    **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS=   .0013) is defined by: xcenter =     42.74
ycenter =     73.30   Init. Pt. =     50.41   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2353    **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  21.2374    **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 21.2374) is defined by: xcenter =     81.01
ycenter =     94.59   Init. Pt. =     53.16   Seg. Length =   8.00
----------------------------------------------------------------
```



```
**********************************************************
**     Factor of safety calculation for surface #  2355    **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  21.2144    **
**    This will be ignored for final summary of results     **
```

****

Circular surface (FOS= 21.2144) is defined by: xcenter = 82.98
ycenter = 95.97 Init. Pt. = 53.16 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2363 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.2394 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.2394) is defined by: xcenter = 83.22
ycenter = 93.59 Init. Pt. = 53.16 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2368 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.2513 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.2513) is defined by: xcenter = 82.68
ycenter = 93.28 Init. Pt. = 53.16 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2373 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.0412 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.0412) is defined by: xcenter = 65.26
ycenter = 76.00 Init. Pt. = 53.16 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2374 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 21.6266 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 21.6266) is defined by: xcenter = 82.16
ycenter = 94.56 Init. Pt. = 53.16 Seg. Length = 8.00

```
**********************************************************
**     Factor of safety calculation for surface #  2376  **
**     failed to converge within FIFTY iterations        **
**                                                       **
**    The last calculated value of the FOS was  22.4141  **
**    This will be ignored for final summary of results  **
**********************************************************

Circular surface (FOS= 22.4141) is defined by: xcenter =     82.10
ycenter =     92.82   Init. Pt. =     53.16   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2379  **
**     failed to converge within FIFTY iterations        **
**                                                       **
**    The last calculated value of the FOS was  22.0654  **
**    This will be ignored for final summary of results  **
**********************************************************

Circular surface (FOS= 22.0654) is defined by: xcenter =     83.32
ycenter =     94.05   Init. Pt. =     53.16   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2392  **
**     failed to converge within FIFTY iterations        **
**                                                       **
**    The last calculated value of the FOS was  21.8886  **
**    This will be ignored for final summary of results  **
**********************************************************

Circular surface (FOS= 21.8886) is defined by: xcenter =     81.45
ycenter =     93.57   Init. Pt. =     53.16   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2401  **
**     failed to converge within FIFTY iterations        **
**                                                       **
**    The last calculated value of the FOS was  21.0782  **
**    This will be ignored for final summary of results  **
**********************************************************

Circular surface (FOS= 21.0782) is defined by: xcenter =     79.56
ycenter =    103.64   Init. Pt. =     54.08   Seg. Length =   8.00
----------------------------------------------------------------
```



```
**********************************************************
**     Factor of safety calculation for surface #  2404  **
**     failed to converge within FIFTY iterations        **
**                                                       **
**    The last calculated value of the FOS was  23.0196  **
**    This will be ignored for final summary of results  **
```

****

Circular surface (FOS= 23.0196) is defined by: xcenter = 82.27
ycenter = 100.05 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2406 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 21.4060 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 21.4060) is defined by: xcenter = 69.98
ycenter = 85.20 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2408 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 28.4704 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 28.4704) is defined by: xcenter = 66.28
ycenter = 77.13 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2413 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 23.2132 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 23.2132) is defined by: xcenter = 66.62
ycenter = 79.69 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2417 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.2302 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.2302) is defined by: xcenter = 82.97
ycenter = 102.97 Init. Pt. = 54.08 Seg. Length = 8.00

```
**************************************************************
**     Factor of safety calculation for surface #  2418     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  23.8886     **
**    This will be ignored for final summary of results     **
**************************************************************

Circular surface (FOS= 23.8886) is defined by: xcenter =     69.22
ycenter =     81.69   Init. Pt. =     54.08   Seg. Length =   8.00
--------------------------------------------------------------------

**************************************************************
**     Factor of safety calculation for surface #  2419     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  25.1301     **
**    This will be ignored for final summary of results     **
**************************************************************

Circular surface (FOS= 25.1301) is defined by: xcenter =     83.62
ycenter =     94.95   Init. Pt. =     54.08   Seg. Length =   8.00
--------------------------------------------------------------------

**************************************************************
**     Factor of safety calculation for surface #  2420     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  25.5448     **
**    This will be ignored for final summary of results     **
**************************************************************

Circular surface (FOS= 25.5448) is defined by: xcenter =     79.48
ycenter =     90.75   Init. Pt. =     54.08   Seg. Length =   8.00
--------------------------------------------------------------------

**************************************************************
**     Factor of safety calculation for surface #  2423     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  25.3401     **
**    This will be ignored for final summary of results     **
**************************************************************

Circular surface (FOS= 25.3401) is defined by: xcenter =     83.66
ycenter =     94.51   Init. Pt. =     54.08   Seg. Length =   8.00
--------------------------------------------------------------------
```



```
**************************************************************
**     Factor of safety calculation for surface #  2431     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  24.9452     **
**    This will be ignored for final summary of results     **
**************************************************************
```

****

Circular surface (FOS= 24.9452) is defined by: xcenter = 83.71
ycenter = 95.37 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2432 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.4048 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.4048) is defined by: xcenter = 81.15
ycenter = 100.67 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2434 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 25.2279 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 25.2279) is defined by: xcenter = 80.80
ycenter = 92.56 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2438 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 22.4985 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 22.4985) is defined by: xcenter = 70.77
ycenter = 84.93 Init. Pt. = 54.08 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2453 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 21.5549 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 21.5549) is defined by: xcenter = 69.68
ycenter = 90.89 Init. Pt. = 55.00 Seg. Length = 8.00

```
**********************************************************
**     Factor of safety calculation for surface #  2457     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  38.3778     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 38.3778) is defined by: xcenter =     65.44
ycenter =     77.43   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2458     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  29.2244     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 29.2244) is defined by: xcenter =     79.66
ycenter =     91.35   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2459     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  21.7651     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 21.7651) is defined by: xcenter =     77.81
ycenter =    121.77   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2461     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  24.5390     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 24.5390) is defined by: xcenter =     76.44
ycenter =     97.63   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------
```



```
**********************************************************
**     Factor of safety calculation for surface #  2462     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  28.2989     **
```

****

Circular surface (FOS= 28.2989) is defined by: xcenter = 76.31
ycenter = 89.76 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2466 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 27.3683 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 27.3683) is defined by: xcenter = 82.92
ycenter = 97.79 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2467 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 27.4129 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 27.4129) is defined by: xcenter = 84.29
ycenter = 98.17 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2470 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 23.4656 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 23.4656) is defined by: xcenter = 68.38
ycenter = 85.64 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2473 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 28.5515 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 28.5515) is defined by: xcenter = 82.27
ycenter = 94.73 Init. Pt. = 55.00 Seg. Length = 8.00

```
**********************************************************
**     Factor of safety calculation for surface #  2474     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  29.7724     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 29.7724) is defined by: xcenter =     75.64
ycenter =     87.54   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2479     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  26.0018     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 26.0018) is defined by: xcenter =     73.16
ycenter =     89.42   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2480     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  26.0282     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 26.0282) is defined by: xcenter =     74.79
ycenter =     91.80   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------

**********************************************************
**     Factor of safety calculation for surface #  2483     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  27.2702     **
**    This will be ignored for final summary of results     **
**********************************************************

Circular surface (FOS= 27.2702) is defined by: xcenter =     73.10
ycenter =     87.68   Init. Pt. =     55.00   Seg. Length =   8.00
----------------------------------------------------------------
```



```
**********************************************************
**     Factor of safety calculation for surface #  2487     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  25.5860     **
```

****

Circular surface (FOS= 25.5860) is defined by: xcenter = 83.77
ycenter = 103.59 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2490 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 23.9554 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 23.9554) is defined by: xcenter = 67.07
ycenter = 82.89 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2491 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 23.5852 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 23.5852) is defined by: xcenter = 81.91
ycenter = 114.21 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2492 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 23.9757 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 23.9757) is defined by: xcenter = 70.53
ycenter = 88.27 Init. Pt. = 55.00 Seg. Length = 8.00

****
** Factor of safety calculation for surface # 2500 **
** failed to converge within FIFTY iterations **
** **
** The last calculated value of the FOS was 26.9681 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 26.9681) is defined by: xcenter = 83.83
ycenter = 99.35 Init. Pt. = 55.00 Seg. Length = 8.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	21.02	6.02
2	28.42	9.05
3	35.49	12.79
4	42.16	17.21
5	48.36	22.27
6	54.04	27.91
7	59.13	34.08
8	63.59	40.72
9	67.38	47.76
10	70.46	55.15
11	72.80	62.80
12	74.37	70.64
13	75.11	78.04

**** Simplified BISHOP FOS = 1.490 ****

****
**
** Out of the 2500 surfaces generated and analyzed by XSTABL,
**
** 50 surfaces were found to have MISLEADING FOS values.
**
**
****

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The following is a summary of the TEN most critical surfaces

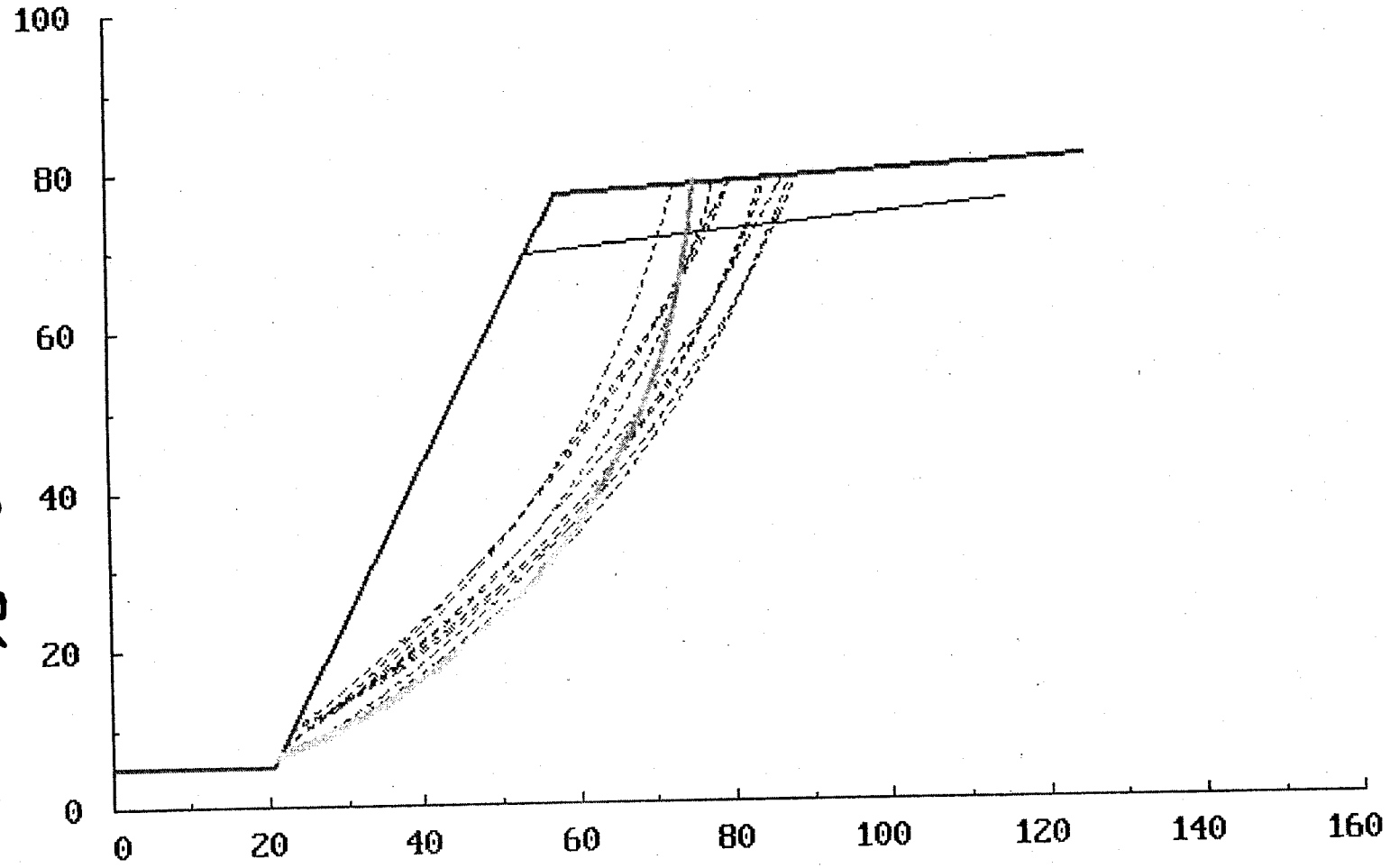
Problem Description : WILLIAMS RESIDENCE

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.490	-6.06	82.71	81.33	21.02	75.11	1.318E+07
2.	1.495	-52.78	142.29	154.98	21.02	88.56	2.787E+07

2.404E+07	3.	1.497	-34.05	123.27	129.55	21.02	87.55
1.529E+07	4.	1.497	-26.12	105.16	107.37	22.86	77.74
1.455E+07	5.	1.503	-42.46	107.91	119.03	21.94	72.70
2.926E+07	6.	1.509	-76.09	162.30	182.97	21.94	86.65
2.565E+07	7.	1.517	-95.33	162.89	194.43	21.94	79.69
2.056E+07	8.	1.518	-33.76	122.45	126.25	22.86	84.60
1.923E+07	9.	1.520	-26.35	115.05	116.36	22.86	84.11
2.325E+07	10.	1.524	-79.23	152.93	175.96	22.86	80.10

* * * END OF FILE * * *

WILLIAMS RESIDENCE
10 most critical surfaces, MINIMUM BISHOP FOS = 1.490



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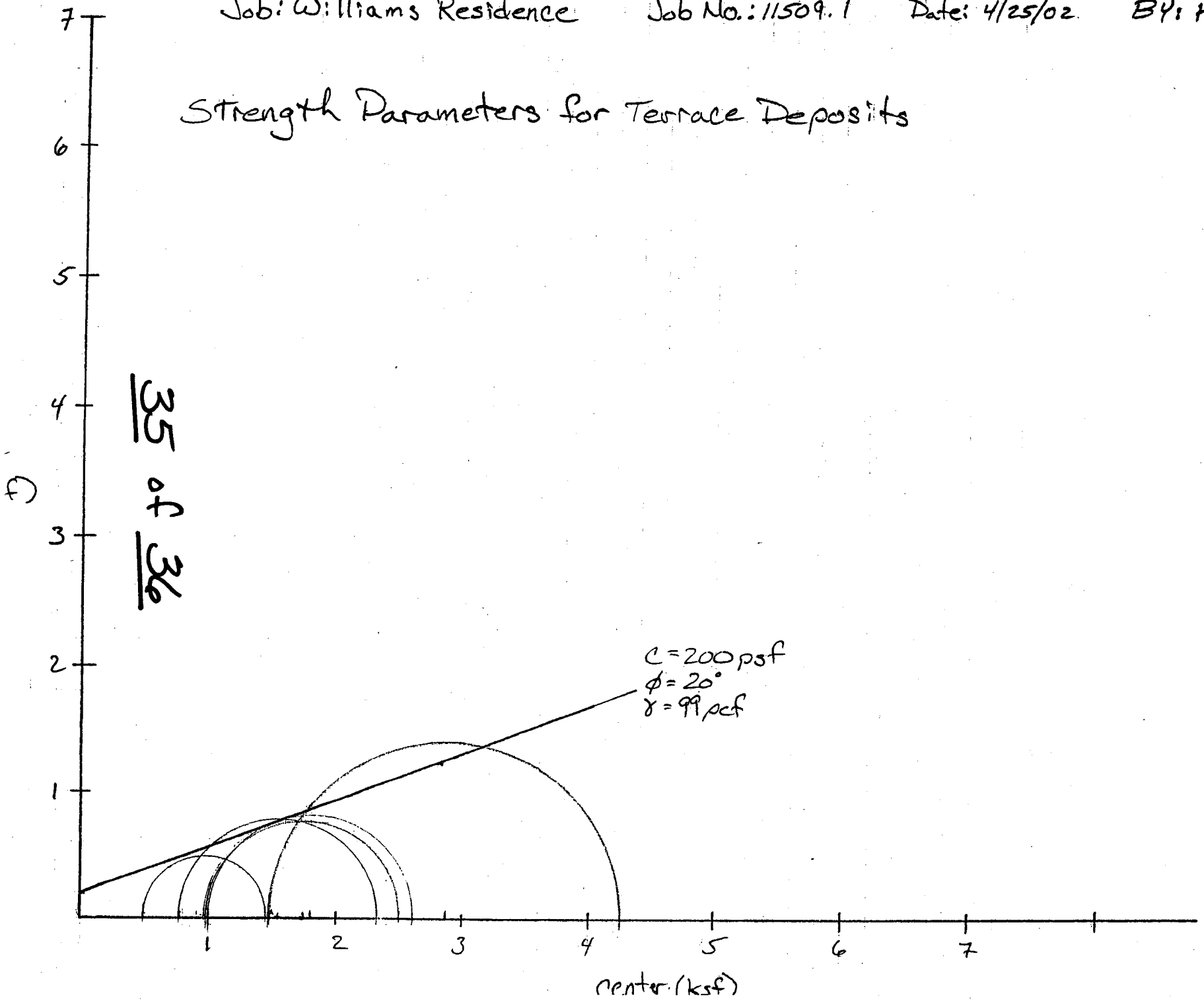
Job: Williams Residence Job No.: 11509.1 Date: 4/25/02 BY: KAC

Strength Parameters for Terrace Deposits



Job: Williams Residence Job No.: 11509.1 Date: 4/25/02 BY: KAL