COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
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TOM BURNS, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: **Dee Murray, for Richard & Bronwyn Whyrsch**

APPLICATION NO.: **07-0341**

APN: **102-011-08**

The Environmental Coordinator has reviewed the Initial Study for your application and made the following preliminary determination:

__XX__ Negative Declaration
(Your project will not have a significant impact on the environment.)

__XX__ Mitigations will be attached to the Negative Declaration.

_____ No mitigations will be attached.

_____ Environmental Impact Report
(Your project may have a significant effect on the environment. An EIR must be prepared to address the potential impacts.)

As part of the environmental review process required by the California Environmental Quality Act (CEQA), this is your opportunity to respond to the preliminary determination before it is finalized. Please contact Matt Johnston, Environmental Coordinator at (831) 454-3201, if you wish to comment on the preliminary determination. Written comments will be received until 5:00 p.m. on the last day of the review period.

Review Period Ends: **May 19, 2008**

Antonella Gentile
Staff Planner

Phone: **454-3164**

Date: **April 22, 2008**

NAME: Wyrsch on N Rodeo
APPLICATION: 07-0341
A.P.N: 102-011-08

NEGATIVE DECLARATION MITIGATIONS

A. In order to ensure that the mitigation measures B - H (below) are communicated to the various parties responsible for constructing the project, prior to any disturbance on the property the applicant shall convene a pre-construction meeting on the site. The following parties shall attend: the applicant, grading contractor supervisor, the project arborist, and Santa Cruz County Environmental Planning staff. The temporary construction fencing demarcating the disturbance envelope, tree protection fencing, and silt fencing will be inspected at that time.

B. The development shall comply with all recommendations of the geologic report (Nielsen and Associates, 10/06), the geotechnical report (Haro, Kasunich, and Associates, 1/16/07), and the Geologic and Geotechnical Investigations review letter prepared by Joe Hanna, County Geologist, dated 4/4/07. Prior to approval of building permits, applicant shall submit review letters from both the geologist and geotechnical engineer indicating that all recommendations, including building envelope, foundation, drainage plan, grading, and septic location have been met and are reflected on the project plans.

C. In order to prevent erosion, off site sedimentation, and pollution of creeks, prior to start of site work the applicant shall submit a detailed erosion control plan for review and approval by Environmental Planning staff. The plan shall include a clearing and grading schedule, clearly marked disturbance envelope that includes the area cleared for the septic tank, leach line, and leach field, revegetation specifications, temporary road surfacing and construction entry stabilization and details of temporary drainage control. The plan shall include details on protective measures for the installation of the leach line down the slope, and revegetation and permanent erosion control of the 3-foot wide swath to be cleared on the steep slope.

D. In order to prevent impacts to mature trees that are to be retained, the applicant shall submit a letter from the project arborist verifying that the plans reflect the recommendations cited in the arborist report, prepared by Christine-Sara Bosinger of Quality Arbor Care on January 18, 2008. The project arborist shall be included in the preconstruction meeting to verify that all tree protection measures have been installed prior to clearing or grading activities. Prior to final inspection on the building permit, the project arborist shall provide the County Environmental Planning Staff with a letter indicating the recommendations of the arborist report have been implemented.

E. In order to mitigate for the removal of mature oak woodland, trees shall be replaced with native trees at at least a one to one ratio. Prior to the issuance of final permits the applicant shall submit for approval by County Environmental Planning a planting plan and five-year monitoring and maintenance program (MMP) to ensure the success of the replacement trees.

The planting area shall include the slope to the west of the building pad where the leach line traverses the slope. The applicant shall include proof of funding set aside for the MMP.

F. To minimize noise impacts on surrounding properties to insignificant levels during construction, the owner/applicant shall have the project contractor comply with the following measures during all construction work:

1. Limit all construction to the time between 8:00 A.M. and 5:00 P.M. weekdays, unless a temporary exception to this time restriction is approved in advance by the County Planning to address an emergency situation;
2. Erect and maintain a sign that is clearly visible to North Rodeo Gulch that identifies the name, telephone number, and purpose of the project disturbance coordinator. This person shall respond to citizen inquiries and complaints regarding project construction activities and rectify any verified problems within 24 hours of receiving the complaint

G. In order to mitigate impacts from lighting on a ridge top, prior to approval of building permits, applicant shall submit details showing shields on all exterior lighting directing light toward the ground and structure and away from the view shed.

H. In order to prevent impacts of development on the existing visual character or quality of the site and its surroundings, prior to issuance of the building permit the applicant shall submit a color and material scheme proposed for the retaining wall visible from North Rodeo Gulch to the Project Planner for approval.

Environmental Review
Initial Study

Application Number: 07-0341

Date: 4/7/08
Staff Planner: Antonella Gentile

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Dee Murray **APN**: 102-011-08

OWNER: Richard and Bronwyn Wyrsch **SUPERVISORAL DISTRICT**: 1

LOCATION: No situs; on west side of North Rodeo Gulch Road approximately 1.8 miles north of Ponza Lane (see attachment 1).

SUMMARY PROJECT DESCRIPTION: Proposal for a Preliminary Grading Review to grade a vacant parcel (approximately 2110 cubic yards of cut, 170 cubic yards of fill, and 1,150 cubic yards of overexcavation and recompaction) for a proposed new single-family residence, accessory dwelling unit, detached garage and access driveway. A 12-foot high retaining wall in the front yard setback (requiring a Residential Development Permit to exceed the 3-foot height limit) is also proposed (see attachment 2).

ALL OF THE FOLLOWING POTENTIAL ENVIRONMENTAL IMPACTS ARE EVALUATED IN THIS INITIAL STUDY. CATEGORIES THAT ARE MARKED HAVE BEEN ANALYZED IN GREATER DETAIL BASED ON PROJECT SPECIFIC INFORMATION.

X	Geology/Soils	X	Noise
	Hydrology/Water Supply/Water Quality		Air Quality
X	Biological Resources		Public Services & Utilities
	Energy & Natural Resources		Land Use, Population & Housing
X	Visual Resources & Aesthetics		Cumulative Impacts
	Cultural Resources		Growth Inducement
	Hazards & Hazardous Materials		Mandatory Findings of Significance
	Transportation/Traffic		

DISCRETIONARY APPROVAL(S) BEING CONSIDERED

____	General Plan Amendment	__X__	Grading Permit
____	Land Division	____	Riparian Exception
____	Rezoning	____	Other:
__X__	Development Permit	____	
____	Coastal Development Permit	____	

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations: not applicable

ENVIRONMENTAL REVIEW ACTION

On the basis of this Initial Study and supporting documents:

___ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

___ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the attached mitigation measures have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

___ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Matt Johnston

April 16, 2008
Date

For: Claudia Slater
Environmental Coordinator

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size: 5.326 acres
Existing Land Use: Vacant
Vegetation: Oak woodland
Slope in area affected by project: __X__ 0 - 30% __X__ 31 – 100%
Nearby Watercourse: Not applicable
Distance To:

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Groundwater Supply: No
Water Supply Watershed: No
Groundwater Recharge: No
Timber or Mineral: Timber
Agricultural Resource: No
Biologically Sensitive Habitat: Yes
Fire Hazard: Yes
Floodplain: No
Erosion: Yes
Landslide: Yes
Liquefaction: No
Fault Zone: No
Scenic Corridor: No
Historic: No
Archaeology: No
Noise Constraint: No
Electric Power Lines: Yes
Solar Access: Adequate
Solar Orientation: Adequate
Hazardous Materials: No

SERVICES

Fire Protection: Central Fire District
School District: SCHSD & SQESD
Sewage Disposal: private septic
Drainage District: Not applicable
Project Access: from North Rodeo Gulch Road (County-maintained road)
Water Supply: private well

PLANNING POLICIES

Zone District: RA (Residential Agriculture)
General Plan: Rural Residential
Special Designation: Carbonera Planning Area

Urban Services Line: ___ Inside __X__ Outside
Coastal Zone: ___ Inside __X__ Outside

PROJECT SETTING AND BACKGROUND:

The subject parcel was created on 11/30/59, and the zoning designation became RA-5 in 1972. The 5-acre parcel is located on the west side of North Rodeo Gulch Road, on a ridgetop with downhill slopes in all directions. The parcel is vegetated with grasses, coast live oak, madrone, coyote bush and scattered small brush. The proposed building sites are located on a ridge above North Rodeo Gulch Road at an elevation of approximately 1000 feet. There are slopes of 60% to 80% to the north, west, and east of the building sites. Access to the building site will be via a newly constructed driveway that climbs up the hillside from North Rodeo Gulch Road.

DETAILED PROJECT DESCRIPTION:

This project includes the construction of an approximately 350-foot long driveway and fire truck turnaround to reach a new single-family dwelling, accessory dwelling unit and detached garage. The single-family dwelling and accessory dwelling unit will be located on up to 6 feet of engineered fill due to the potential for ridgetop shattering. A retaining wall will be constructed to the east of the accessory dwelling unit to confine the reinforced building pad. Another retaining wall will be constructed along the north wall of the garage to protect against future landsliding of the northern slope. Drainage from the new home and garage building sites will be carried to two level spreaders. Drainage from the accessory dwelling unit building site will be tied in to one of the driveway detention systems, described below.

Construction of the 12' wide AC paved driveway will begin at entrance to the property off of North Rodeo Gulch Road. The driveway continues north, uphill over 15-25% slopes. A retaining wall up to 12 feet in height will be constructed along the western edge of the driveway to minimize grading. Cuts of approximately 8 feet will be graded to the slopes approved by the geotechnical engineer. Drainage from the road will be carried to two detention systems, which will release runoff toward Rodeo Gulch Road at pre-development rates.

The septic tank will be located adjacent to the house. A pipe will carry the treated effluent down the western slope to an area with less than 30% slopes where it will be dispersed. There will be no trenching on the slope and no trees will be affected by the proposed septic system (see attachment 3).

Grading totals for the project include 2,110 cubic feet of cut, 170 cubic feet of fill, and 1,150 cubic yards of overexcavation and recompaction for the two dwellings.

III. ENVIRONMENTAL REVIEW CHECKLIST

A. Geology and Soils

Does the project have the potential to:

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
1. Expose people or structures to potential adverse effects, including the risk of material loss, injury, or death involving:				
A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or as identified by other substantial evidence?	_____	X	_____	_____
B. Seismic ground shaking?	_____	X	_____	_____
C. Seismic-related ground failure, including liquefaction?	_____	X	_____	_____
D. Landslides?	_____	X	_____	_____

A geologic investigation for the project was prepared by Nielsen and Associates, dated October 2006 (attachment 4), and a geotechnical investigation was prepared by Haro, Kasunich and Associates, dated January 2007 (attachment 5). These reports have been reviewed and accepted by the Environmental Planning Section of the Planning Department (attachment 6). The reports conclude that fault rupture will not be a potential threat to the proposed development, and that seismic shaking can be managed by constructing with conventional spread footings or pier and grade beam foundation systems and by following the recommendations in the geologic and geotechnical reports referenced above. The geotechnical engineer and engineering geologist have reviewed and approved the project plans as stated in their review letters (attachments 7 and 8).

Implementation of the additional recommendations included in the review letter prepared by Environmental Planning staff (attachment 6) will serve to further reduce the potential risk of seismic shaking.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
2. Subject people or improvements to damage from soil instability as a result of on- or off-site landslide, lateral spreading, to subsidence, liquefaction, or structural collapse?		X		

The reports cited above concluded that there are potential risks from ridgetop shattering, shallow landslides of the steep slope on the west side of the ridge below the proposed detached garage, deeper seated rock slides east of the approximate boundary of highly fractured bedrock which includes a portion of the existing access driveway, and failure of steep cut slopes for the proposed access driveway as a result of strong seismic shaking. The recommendations contained in the geotechnical report, including selection of an appropriate foundation system, maintaining a minimum setback from steep slopes and regions of highly fractured bedrock, and relocation of the of the inboard edge of the existing driveway 10 feet to the west, will be implemented to mitigate for this potential hazard.

3. Develop land with a slope exceeding 30%?			X	

The proposed access road crosses slopes greater than 30%. There is no alternate access to the building site. An engineered grading, drainage, and erosion control plan has been submitted and approved to address and mitigate for any potential impacts.

4. Result in soil erosion or the substantial loss of topsoil?		X		

Some potential for erosion exists during the construction phase of the project, however, this potential is minimal because drainage will be controlled and standard erosion controls will be implemented. An erosion control plan has been submitted and approved for this project that specifies detailed erosion and sedimentation control measures. The plan includes provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion.

A three-foot wide path will be cleared for installation of the pipe to the leachfield. Erosion control will be required on the path to mitigate for potential erosion in this area.

5. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code(1994), creating substantial risks to property?		X		

According to the geotechnical report for the project there are indications of expansive soils in the top two to three feet of the project area. The soils and geology reports recommend overexcavation of the site below the proposed habitable structures to

	Significant Or Potentially *Significant* Impact	Less than Significant with *Mitigation* Incorporation	Less than Significant *Or* No Impact	Not Applicable

remove the fractured rock below the expansive soil layer. Additionally, the expansive soils will not be used for recompaction. These recommendations shall be conditions of the grading permit in order to adequately address this potential hazard.

6.	Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative wastewater disposal systems?	____	____	X	____

The proposed project will use an onsite sewage disposal system, and County Environmental Health Services has determined that site conditions are appropriate to support such a system.

7.	Result in coastal cliff erosion?	____	____	____	X

B. Hydrology, Water Supply and Water Quality

Does the project have the potential to:

1.	Place development within a 100-year flood hazard area?	____	____	____	X

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area.

2.	Place development within the floodway resulting in impedance or redirection of flood flows?	____	____	____	X

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area.

3.	Be inundated by a seiche or tsunami?	____	____	____	X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
4. Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit, or a significant contribution to an existing net deficit in available supply, or a significant lowering of the local groundwater table?			X	

The project will rely on a private well for water supply. A well permit application was approved by Environmental Health Services on November 5, 2007 (attachment 9). The project is not located in a mapped groundwater recharge area.

5. Degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).			X	

Runoff from this project may contain small amounts of chemicals and other household contaminants. No commercial or industrial activities are proposed that would contribute a significant amount of contaminants to a public or private water supply. Potential siltation from the proposed project will be minimized through implementation of erosion control measures.

6. Degrade septic system functioning?			X	

The design and location for the septic system have been approved by Santa Cruz County Environmental Health Services (attachment 10). No impacts to existing septic systems (at least 200 feet away) are expected.

7. Alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that could result in flooding, erosion, or siltation on or off-site?			X	

The proposed project will not alter the existing overall drainage pattern of the site. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
8. Create or contribute runoff that would exceed the capacity of existing or planned storm water drainage systems, or create additional source(s) of polluted runoff?			X	

Drainage Calculations prepared by Richard Irish Engineering, dated July 3, 2007 (attachment 11), have been reviewed for potential drainage impacts and accepted by the Department of Public Works (DPW) Drainage Section staff. The calculations show that the proposed drainage system has been designed to convey runoff resulting from a 10-year design storm in accordance with the County Design Criteria, that increased peak runoff will be detained, and that runoff will be released at pre-development rates. The runoff rate from the property will be controlled by two detention systems and two level spreaders. DPW staff has determined that existing storm water facilities are adequate to handle the drainage associated with the project. Refer to response B-5 for discussion of urban contaminants and/or other polluting runoff.

9. Contribute to flood levels or erosion in natural watercourses by discharges of newly collected runoff?			X	

Discharges will be released as explained in B.8. above. There are no natural watercourses on this site.

10. Otherwise substantially degrade water supply or quality?			X	

The proposed project has been approved by Environmental Health Services staff (attachments 9 and 10). All potential impacts have been addressed.

C. Biological Resources

Does the project have the potential to:

1. Have an adverse effect on any species identified as a candidate, sensitive, or special status species, in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?			X	

According to the California Natural Diversity Data Base (CNDDB), maintained by the California Department of Fish and Game, there are no known special status plant or animal species in the site vicinity, and there were no special status species observed in the project area.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
2. Have an adverse effect on a sensitive biotic community (riparian corridor), wetland, native grassland, special forests, intertidal zone, etc.)?	____	X	____	____

This site is characterized as oak woodland, which is considered sensitive habitat according to the Sensitive Habitat ordinance. An arborist's report was prepared by Christine-Sara Bosinger of Quality Arbor Care on January 18, 2008 (Attachment 12). A total of 32 trees are proposed for removal: 4 healthy trees are proposed for removal for construction purposes, 13 unhealthy trees are proposed for removal for construction purposes, and 15 additional trees are recommended for removal by the arborist due to poor health. A total of 16 replacement oak trees (10 24-inch box size and 6 15-gallon size) will be planted and maintained per the recommendations of the mitigation and monitoring plan, which will be required as a condition of approval.

3. Interfere with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?	____	____	X	____

The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site.

4. Produce nighttime lighting that will illuminate animal habitats?	____	____	X	____

Lighting will be required to be shielded and low to minimize impacts to animal habitats.

5. Make a significant contribution to the reduction of the number of species of plants or animals?	____	X	____	____

Refer to C-1 and C-2 above.

6. Conflict with any local policies or ordinances protecting biological resources (such as the Significant Tree Protection Ordinance, Sensitive Habitat Ordinance, provisions of the Design Review ordinance protecting trees with trunk sizes of 6 inch diameters or greater)?	____	X	____	____

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

Several oaks over six inches in diameter are proposed for removal. Many of these trees are diseased or decaying. The overall health of the oak woodland (defined as sensitive habitat) will be improved by implementing the mitigations explained in C.2. above.

7.	Conflict with the provisions of an adopted Habitat Conservation Plan, Biotic Conservation Easement, or other approved local, regional, or state habitat conservation plan?	____	____	____	X

D. Energy and Natural Resources

Does the project have the potential to:

1.	Affect or be affected by land designated as "Timber Resources" by the General Plan?	____	____	X	____

The project is adjacent to land designated as Timber Resource. However, the project will not affect the resource or access to harvest the resource in the future. The timber resource may only be harvested in accordance with California Department of Forestry timber harvest rules and regulations.

2.	Affect or be affected by lands currently utilized for agriculture, or designated in the General Plan for agricultural use?	____	____	____	X

The project site is not currently being used for agriculture and no agricultural uses are proposed for the site or surrounding vicinity.

3.	Encourage activities that result in the use of large amounts of fuel, water, or energy, or use of these in a wasteful manner?	____	____	____	X
4.	Have a substantial effect on the potential use, extraction, or depletion of a natural resource (i.e., minerals or energy resources)?	____	____	____	X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

E. Visual Resources and Aesthetics

Does the project have the potential to:

1. Have an adverse effect on a scenic resource, including visual obstruction of that resource?			X	

The project will not directly impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources.

2. Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings?				X

The project site is not located along a County designated scenic road or within a designated scenic resource area.

3. Degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, and/or development on a ridge line?		X		

The majority of the access road will be graded so that it cannot be seen from North Rodeo Gulch Road (see attachment 2 sheet C-1). In addition, the finish color of the retaining wall shall be selected to blend in with the natural setting. The proposed homesite is located on a ridge, however, there is no geologically feasible alternative to the proposed locations (see attachment 5).

4. Create a new source of light or glare which would adversely affect day or nighttime views in the area?		X		

The project will create an incremental increase in night lighting. Shielded lights will be required to mitigate this impact to less than significant.

5. Destroy, cover, or modify any unique geologic or physical feature?			X	

There are no unique geological or physical features on or adjacent to the site that would be destroyed, covered, or modified by the project.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

F. Cultural Resources

Does the project have the potential to:

1. Cause an adverse change in the significance of a historical resource as defined in CEQA Guidelines 15064.5?				X

There are no existing structures on the property.

2. Cause an adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines 15064.5?			X	

No archeological resources have been identified in the project area. Pursuant to County Code Section 16.40.040, if at any time in the preparation for or process of excavating or otherwise disturbing the ground, any human remains of any age, or any artifact or other evidence of a Native American cultural site which reasonably appears to exceed 100 years of age are discovered, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

3. Disturb any human remains, including those interred outside of formal cemeteries?			X	

Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4. Directly or indirectly destroy a unique paleontological resource or site?				X

There are no paleontological resources identified on the site.

G. Hazards and Hazardous Materials

Does the project have the potential to:

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
1. Create a significant hazard to the public or the environment as a result of the routine transport, storage, use, or disposal of hazardous materials, not including gasoline or other motor fuels?				X
2. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
3. Create a safety hazard for people residing or working in the project area as a result of dangers from aircraft using a public or private airport located within two miles of the project site?				X
4. Expose people to electro-magnetic fields associated with electrical transmission lines?				X
5. Create a potential fire hazard?			X	

The project design incorporates all applicable fire safety code requirements and will include fire protection devices as required by the local fire agency.

6. Release bio-engineered organisms or chemicals into the air outside of project buildings?				X

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

H. Transportation/Traffic

Does the project have the potential to:

1. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			X	

The project will create a small incremental increase in traffic on nearby roads and intersections. However, given the small number of new trips created by the project, this increase is less than significant. Further, the increase will not cause the Level of Service at any nearby intersection to drop below Level of Service D.

2. Cause an increase in parking demand which cannot be accommodated by existing parking facilities?			X	

The project meets the code requirements for the required number of parking spaces and therefore new parking demand will be accommodated on site.

3. Increase hazards to motorists, bicyclists, or pedestrians?			X	

The proposed project will comply with current road requirements to prevent potential hazards to motorists, bicyclists, and/or pedestrians.

4. Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the county congestion management agency for designated intersections, roads or highways?			X	

See response H-1 above.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

I. Noise

Does the project have the potential to:

1. Generate a permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	

The project will create an incremental increase in the existing noise environment. However, this increase will be small, and will be similar in character to noise generated by the surrounding existing uses.

2. Expose people to noise levels in excess of standards established in the General Plan, or applicable standards of other agencies?				X
3. Generate a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		

Noise generated during construction will increase the ambient noise levels for adjoining areas. Construction will be temporary and limited to 8:00 AM to 5:00 PM Monday-Friday as a condition of this project. Given the limited duration and time restrictions, this impact will be mitigated to less than significant.

J. Air Quality

Does the project have the potential to:
(Where available, the significance criteria established by the MBUAPCD may be relied upon to make the following determinations).

1. Violate any air quality standard or *contribute substantially to an existing* or projected air quality violation?			X	

The North Central Coast Air Basin does not meet state standards for ozone and inhalable particulate matter (PM_{10}) (MBUAPCD, 2006). The regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs] and nitrogen oxides [NOx]) and fugitive dust (PM_{10}). Ozone precursors and PM_{10} would be emitted by onsite construction equipment and haul trucks delivering and removing materials from the project sites. Construction projects using typical construction equipment such as dump trucks, scrappers, bulldozers,

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

compactors and front-end loaders which temporarily emit precursors of ozone [i.e.,volatile organic compounds (VOC) or oxides of nitrogen (NOx)], are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone standards. Given the modest amount of new traffic that will be generated by the project there is no indication that new emissions of ozone precursors will exceed Monterey Bay Unified Air Pollution Control District thresholds for these pollutants and therefore there will not be a significant contribution to an existing air quality violation. Project construction may result in a short-term, localized decrease in air quality due to generation of small amounts of dust. Standard dust control BMPs (e.g., periodic watering) are incorporated into the project, so air quality impacts associated with construction will be at a less than significant level.

2. Conflict with or obstruct implementation of an adopted air quality plan? ____ ____ X ____

The project will not conflict with or obstruct implementation of the regional air quality plan. See J-1 above.

3. Expose sensitive receptors to substantial pollutant concentrations? ____ ____ X ____

Construction may result in a short-term, localized decrease in air quality due to generation of dust. The nearest home is over 200 feet away from the project. Construction will occur between 8 AM and 5 PM, Monday through Friday when the residents are frequently absent (See I.3). Standard dust control BMPs are also incorporated into the project, so air quality impacts associated with construction will be at a less than significant level.

4. Create objectionable odors affecting a substantial number of people? ____ ____ X ____

The project would have less than significant impacts for the construction period, and would not create long-term objectionable odors.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

K. Public Services and Utilities

Does the project have the potential to:

1.	Result in the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	a. Fire protection?	____	____	X	____
	b. Police protection?	____	____	X	____
	c. Schools?	____	____	X	____
	d. Parks or other recreational activities?	____	____	X	____
	e. Other public facilities; including the maintenance of roads?	____	____	X	____

While the project represents an incremental contribution to the need for services, the increase will be minimal. Moreover, the project meets all of the standards and requirements identified by the local fire agency or California Department of Forestry, as applicable, and school, park, and transportation fees to be paid by the applicant will be used to offset the incremental increase in demand for school and recreational facilities and public roads.

2.	Result in the need for construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	____	____	X	____

Drainage analysis of the project by Richard Irish Engineering dated July 3, 2007 (Attachment 11) concluded that the project runoff will be released at pre-development rates and that adverse downstream impacts are not anticipated. Department of Public Works Drainage staff have reviewed the drainage information and have determined

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable

that downstream storm facilities are adequate to handle the increase in drainage associated with the project.

3.	Result in the need for construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	____	____	X	____

The project will rely on an individual well for water supply. Public water delivery facilities will not have to be expanded.

The project will be served by an on-site sewage disposal system, which will be adequate to accommodate the relatively light demands of the project.

4.	Cause a violation of wastewater treatment standards of the Regional Water Quality Control Board?	____	____	X	____

The project's wastewater flows will not violate any wastewater treatment standards.

5.	Create a situation in which water supplies are inadequate to serve the project or provide fire protection?	____	____	X	____

Central Fire District has reviewed and approved the project plans, assuring conformity with fire protection standards that include minimum requirements for water supply for fire protection.

6.	Result in inadequate access for fire protection?	____	____	X	____

The project's road access meets County standards and has been approved by the local fire agency or California Department of Forestry, as appropriate.

7.	Make a significant contribution to a cumulative reduction of landfill capacity or ability to properly dispose of refuse?	____	____	X	____

The project will make an incremental contribution to the reduced capacity of regional landfills. However, this contribution will be relatively small and will be of similar magnitude to that created by existing land uses around the project.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
8. Result in a breach of federal, state, and local statutes and regulations related to solid waste management?			X	

L. Land Use, Population, and Housing

Does the project have the potential to:

1. Conflict with any policy of the County adopted for the purpose of avoiding or mitigating an environmental effect?			X	

The proposed project does not conflict with any policies adopted for the purpose of avoiding or mitigating an environmental effect.

2. Conflict with any County Code regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

The proposed project does not conflict with any regulations adopted for the purpose of avoiding or mitigating an environmental effect.

3. Physically divide an established community?				X

The project will not include any element that will physically divide an established community.

4. Have a potentially significant growth inducing effect, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	

The proposed project is designed at the density and intensity of development allowed by the General Plan and zoning designations for the parcel. Additionally, the project does not involve extensions of utilities (e.g., water, sewer, or new road systems) into areas previously not served. Consequently, it is not expected to have a significant growth-inducing effect.

	Significant Or Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Or No Impact	Not Applicable
5. Displace substantial numbers of people, or amount of existing housing, necessitating the construction of replacement housing elsewhere?				X

The proposed project will entail a net gain in housing units.

M. Non-Local Approvals

Does the project require approval of federal, state, or regional agencies? Yes ____ No X

N. Mandatory Findings of Significance

1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant, animal, or natural community, or eliminate important examples of the major periods of California history or prehistory? Yes ____ No X

2. Does the project have the potential to achieve short term, to the disadvantage of long term environmental goals? (A short term impact on the environment is one which occurs in a relatively brief, definitive period of time while long term impacts endure well into the future) Yes ____ No X

3. Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, and the effects of reasonably foreseeable future projects which have entered the Environmental Review stage)? Yes ____ No X

4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? Yes ____ No X

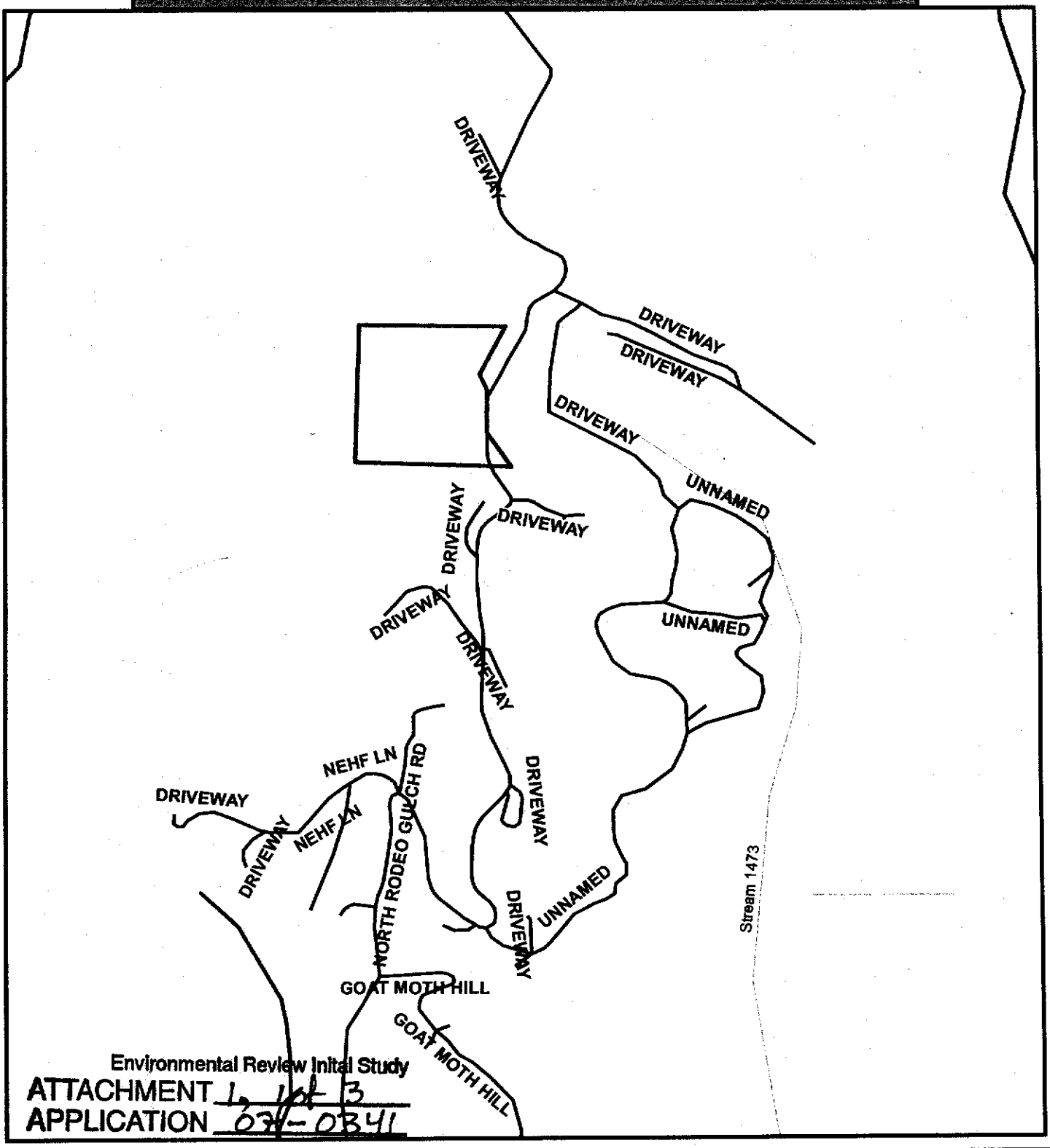
TECHNICAL REVIEW CHECKLIST

	REQUIRED	COMPLETED*	N/A
Agricultural Policy Advisory Commission (APAC) Review			X
Archaeological Review			X
Biotic Report/Assessment			X
Geologic Hazards Assessment (GHA)			X
Geologic Report		X	
Geotechnical (Soils) Report		X	
Riparian Pre-Site			X
Septic Lot Check		X	
Other: Arborist's Report		X	

Attachments:

1. Vicinity Maps
2. Project Plans prepared by Richard Irish Engineering, dated September 2007, and Biosphere Consulting, dated 7/31/07
3. Letter from Richard Irish regarding proposed septic system, dated 4/14/08
4. Geotechnical Investigation (Discussion, Conclusions and Recommendations, pages 16-41) prepared by Haro, Kasunich, and Associates, dated 1/16/07
5. Geologic Investigation (Conclusions and Recommendations, pages 17-19) prepared by Nielsen and Associates, dated 10/06
6. Geologic and Geotechnical Investigations review letter prepared by Joe Hanna, County Geologist, dated 4/4/07
7. Geotechnical Review Letter prepared by Haro, Kasunich and Associates, dated 10/2/07
8. Geologic Review Letter, prepared by Nielsen and Associates, dated 10/1/07
9. Well permit from Environmental Health Service, approved 11/5/07
10. Contingent septic approval letter prepared by Environmental Health Service, dated 9/24/07
11. Drainage calculations prepared by Richard Irish Engineering, dated 9/7/07
12. Arborists Report prepared by Christine-Sara Bosinger, dated 1/18/08

Proposed Homesite
North Rodeo Gulch Road



Environmental Review Inital Study
ATTACHMENT 1, 1 of 3
APPLICATION 07-0341

Legend

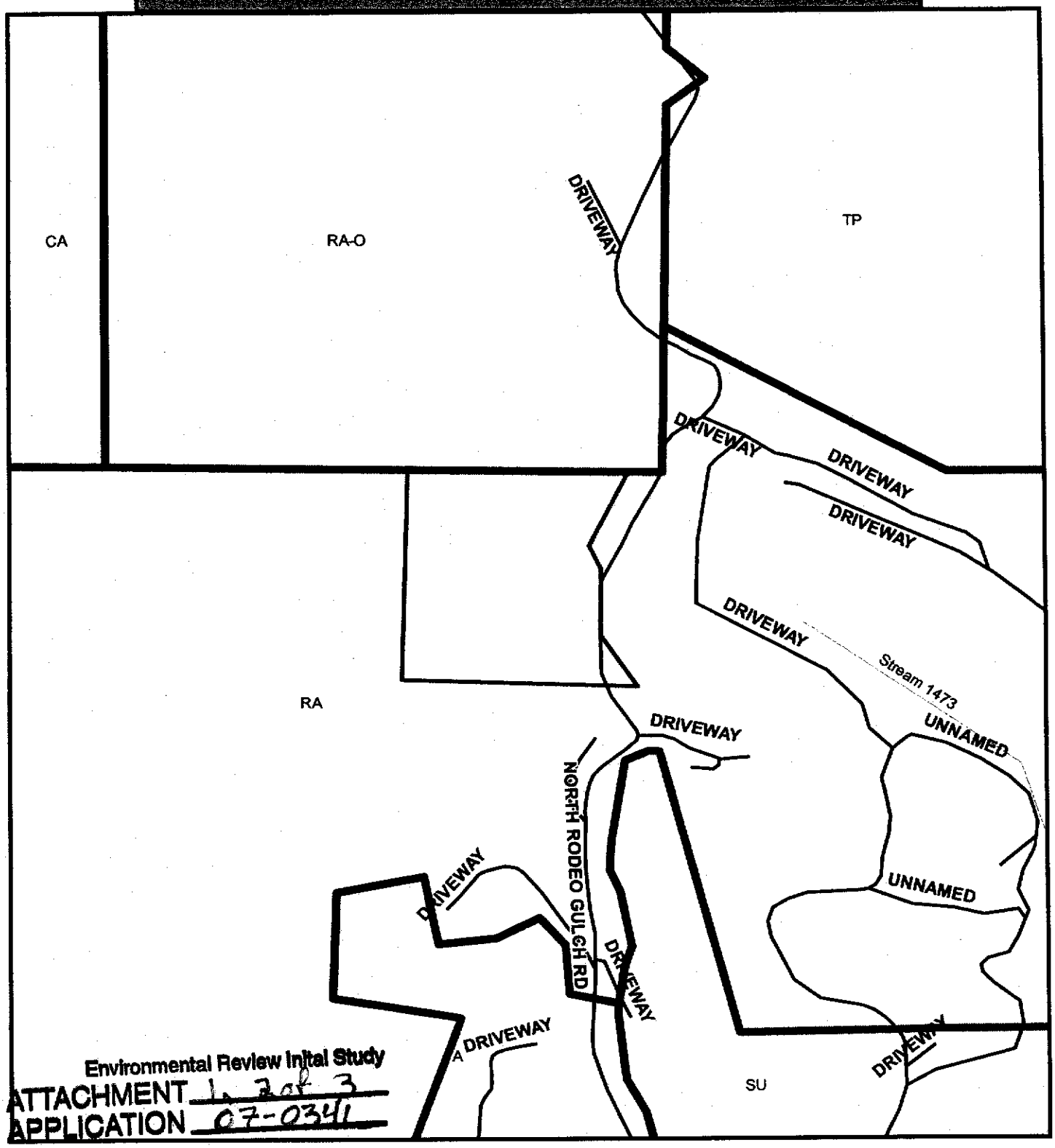
Parcel 102-011-08

Streets

0 125 250 500 750 1,000 Feet

Map created by AG
March 2008

Proposed Homesite
North Rodeo Gulch Road



Environmental Review Initial Study
ATTACHMENT 1, 3 of 3
APPLICATION 07-0341

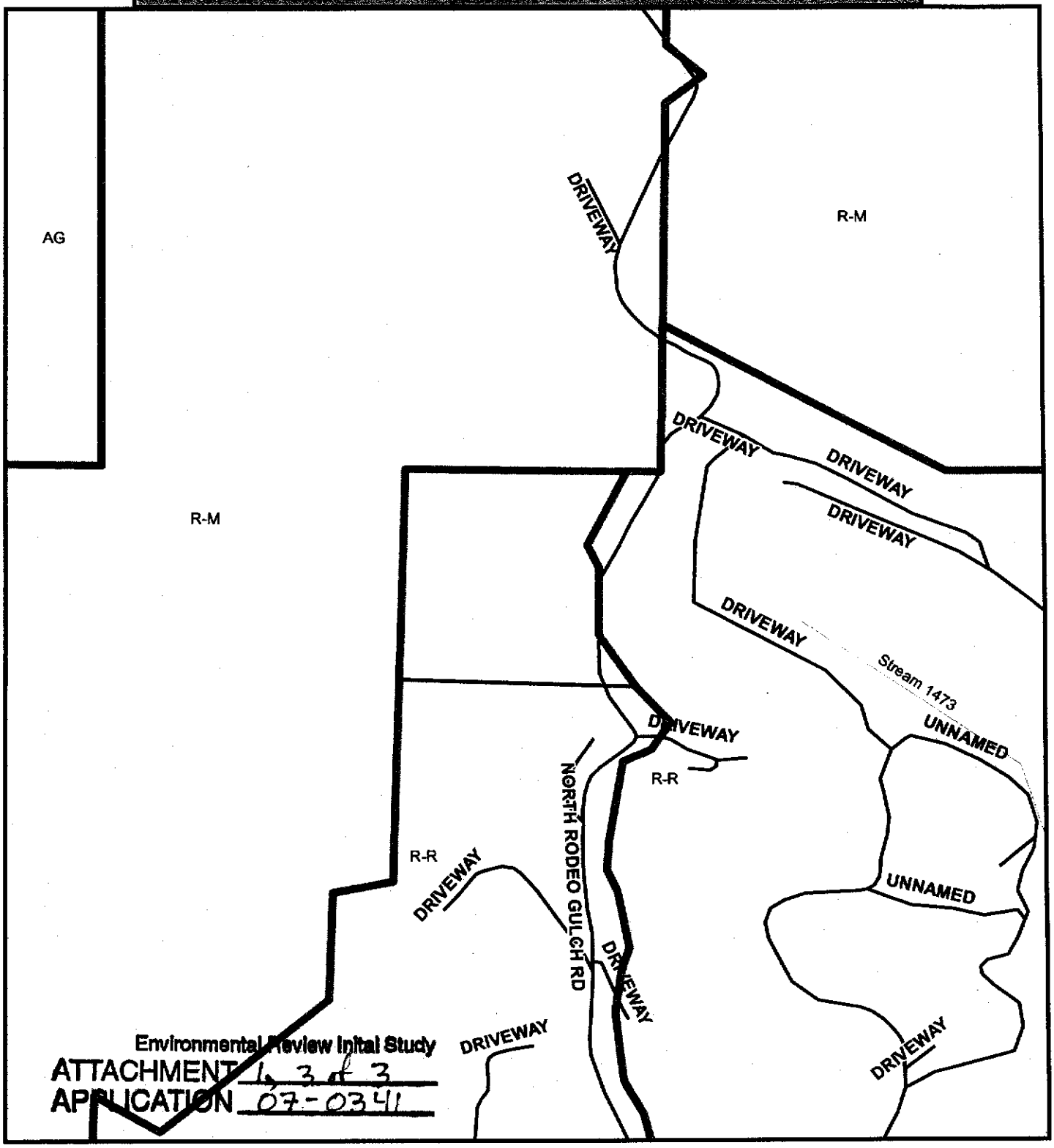
Legend

- Parcel 102-011-08
- Zoning Designation Boundary
- Streets

0 50 100 200 300 400 Feet

Map created by AG
March 2008

Proposed Homesite
North Rodeo Gulch Road



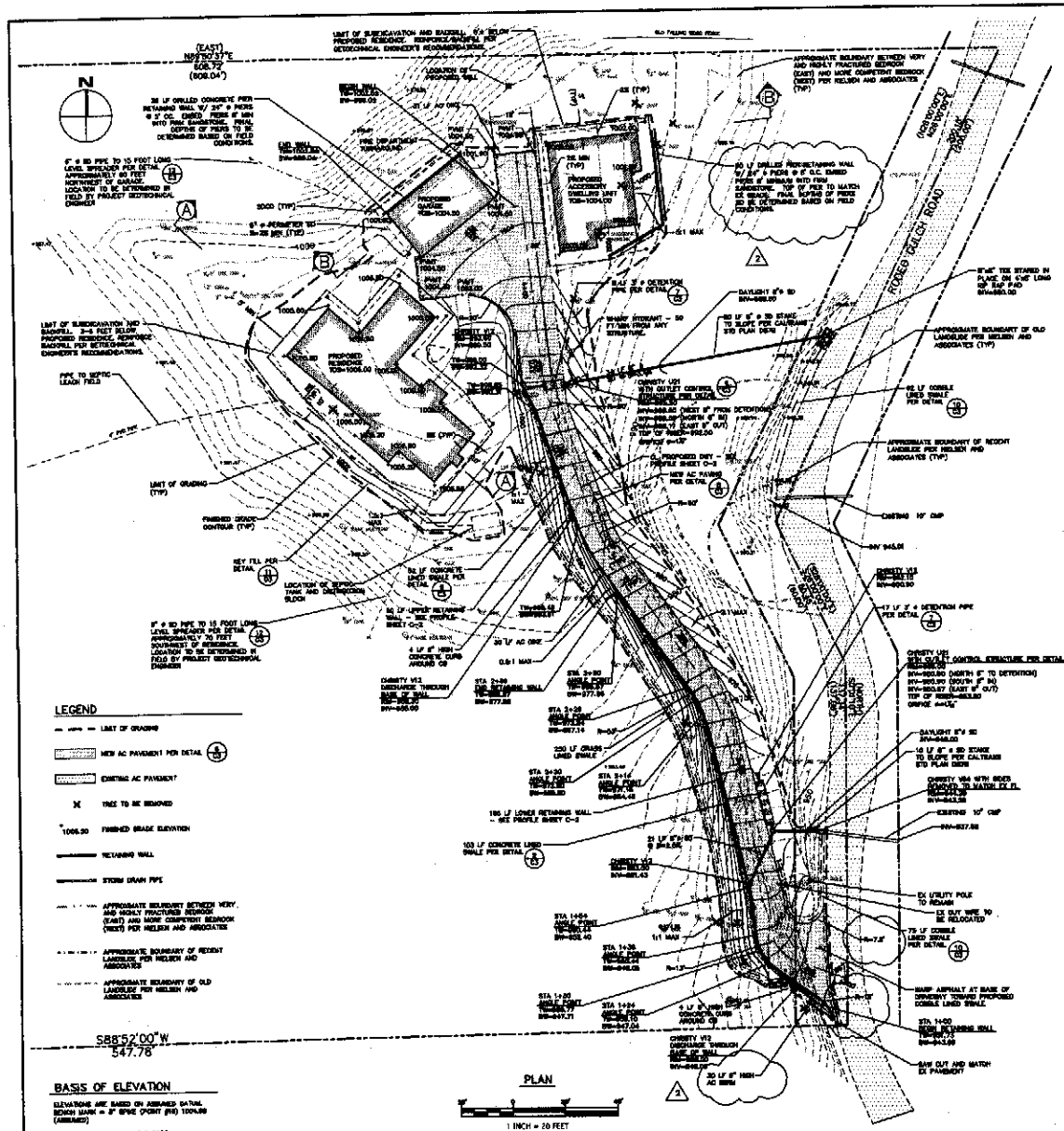
Environmental Review Inital Study
ATTACHMENT 1, 3 of 3
APPLICATION 07-0341

Legend

- Parcel 102-011-08
- General Plan Designation Boundary
- Streets

0 50100 200 300 400 Feet

Map created by AG
March 2008



EARTHWORK AND GRADING

1. WORK SHALL CONSIST OF ALL CLEARING, GRUBBING, STRIPPING, PREPARATION OF LAND TO BE FILLED, EXCAVATION, SPREADING, COMPACTION AND CONTROL OF FILL, AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE GRADING AS SHOWN ON THE LINES, GRADES, AND SLOPES, AS SHOWN ON THE APPROVED PLANS.

2. ALL GRADING OPERATIONS SHALL CONFORM TO SECTION 19 OF THE CALTRANS STANDARD SPECIFICATIONS, AND SHALL ALSO BE DONE IN CONFORMANCE WITH THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ. THE MOST STRINGENT GUIDELINE SHALL PREVAIL.

3. REFERENCE IS MADE TO THE GEOTECHNICAL INVESTIGATIONS BY HARO, KASUNICH AND ASSOCIATES, INC. ENTITLED "GEOTECHNICAL INVESTIGATION FOR PROPOSED TWO SINGLE FAMILY HOMES, DETACHED GARAGE AND ACCESS DRIVEWAY OFF RODEO GULCH ROAD," DATED JANUARY 2007. THE CONTRACTOR SHALL MAKE A THOROUGH REVIEW OF THIS REPORT AND SHALL FOLLOW ALL RECOMMENDATIONS THEREIN. THE CONTRACTOR SHALL CONTACT HARO, KASUNICH AND ASSOCIATES, INC. FOR ANY CLARIFICATIONS NECESSARY PRIOR TO PROCEEDING WITH THE WORK.

4. THE CONTRACTOR SHALL GRADE TO THE LINE AND ELEVATIONS SHOWN ON THE PLAN AND SHALL BEAR THE SLOPE RATIOS OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER TO PROVIDE STAKES FOR LINE AND GRADE.

5. THE GEOTECHNICAL ENGINEER SHALL BE NOTIFIED AT LEAST FOUR (4) DAYS PRIOR TO ANY SITE CLEARING AND GRADING OPERATIONS.

6. FOLLOWING CLEARING AND STRIPPING, EXISTING FILL SHOULD BE COMPLETELY REMOVED UNTIL FIRM NATIVE SOIL IS ENCOUNTERED.

7. THE UPPER 8 INCHES OF EXPOSED NATIVE SUBGRADE SHOULD BE SCARIFIED, MOISTURE CONDITIONED TO PROVIDE A MOISTURE CONTENT 3 TO 4 PERCENT ABOVE THE APPLICABLE OPTIMUM MOISTURE, AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION BASED ON ASTM TEST D1557.

8. ENGINEERED FILL SHOULD BE PLACED IN THIN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS, MOISTURE CONDITIONED, AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION. THE UPPER 8 INCHES OF SUBGRADE AND ABOVE SHOULD BE COMPACTED TO AT LEAST 95% RELATIVE COMPACTION.

9. MATERIAL USED FOR ENGINEERED FILL SHALL MEET THE REQUIREMENTS OF THE GEOTECHNICAL REPORTS BY HARO, KASUNICH AND ASSOCIATES, INC.

10. IMPORTED MATERIAL USED AS ENGINEERED FILL FOR THE PROJECT SHALL BE FREE OF ORGANIC AND DELETERIOUS MATERIAL, CONTAIN NO ROCKS OR CLODS GREATER THAN 4 INCHES IN DIAMETER, WITH NO MORE THAN 15 PERCENT BY WEIGHT OF ROCKS LARGER THAN 2½ INCHES. FILL SHOULD ALSO BE GRANULAR AND HAVE A PLASTICITY INDEX OF LESS THAN 15 AND SHOULD HAVE SUFFICIENT FINES TO ALLOW EXCAVATIONS TO STAND WITHOUT CAVING.

11. ALL FILL MATERIAL SHALL BE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO DELIVERY AND PLACEMENT. NO FILL SHALL BE PLACED, SPREAD, COMPACTED OR PROTECTED WHILE UNSUITABLE WEATHER CONDITIONS EXIST. UNLESS OTHERWISE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER, WORK SHALL BE HALTED DURING PERIODS OF RAIN. PRIOR TO RESUMPTION OF GRADING, ALL FILL PLACED SINCE THE LAST TEST SHALL BE REMOVED OR RECOMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. AFTER GRADING IS COMPLETED AND ALL TESTING AND OBSERVATIONS HAVE BEEN COMPLETED, NO FILL SHALL BE PLACED BY THE CONTRACTOR EXCEPT BEFORE THE NEXT RAINY SEASON AND WITH APPROVAL OF THE GEOTECHNICAL ENGINEER.

12. ALL EXPOSED SURFACES SHALL BE PROTECTED FROM EROSION AND SILTATION BY PLANTING, MULCHING, OR OTHER METHODS OUTLINED IN THE APPROVED EROSION CONTROL PLAN. SUCH PROTECTION SHALL BE APPLIED AS SOON AS POSSIBLE AND PRIOR TO THE FIRST FALL RAINS.

13. ALL CUT AND FILL SLOPES SHALL BE PROTECTED AGAINST EROSION AND SLOUGHING. ALL DISTURBED AREAS INVOLVING PLANTING MUST BE PLANTED PRIOR TO OCTOBER 15. ALL PLANTINGS SHALL BE ADEQUATELY MAINTAINED AND REPLACED IF UNSUCCESSFUL.

14. ALL GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATIONS AND THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ.

15. THE CONTRACTOR SHALL NOTIFY THE COUNTY GRADING INSPECTOR, GEOTECHNICAL ENGINEER, AND THE COUNTY CONSTRUCTION ENGINEER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

16. WORK SHALL BE LIMITED TO 8:00 A.M. TO 5:00 P.M WEEKDAYS. NON-NOISE PRODUCING ACTIVITIES, SUCH AS INTERIOR PAINTING, SHALL NOT BE SUBJECT TO THIS RESTRICTION.

17. ALL FIGURE (FIG.) REFERENCES, UNLESS OTHERWISE SPECIFIED, REFER TO STANDARD DRAWINGS IN THE CURRENT EDITION OF THE "COUNTY OF SANTA CRUZ DESIGN CRITERIA."

18. NO LAND CLEARING, GRADING OR EXCAVATING SHALL TAKE PLACE BETWEEN OCTOBER 15 AND APRIL 15 UNLESS THE PLANNING DIRECTOR APPROVES A SEPARATE WINTER EROSION CONTROL PLAN.

19. BETWEEN OCTOBER 15 AND APRIL 15, EXPOSED AREAS SHALL BE PROTECTED FROM EROSION. AT ALL TIMES, PROPER CONSTRUCTION AND MAINTENANCE MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, ANY EXPOSED SOIL ON DISTURBED SLOPES SHALL BE PERMANENTLY PROTECTED FROM EROSION.

20. THE CONTRACTOR SHALL APPLY WATER TO ALL EXPOSED EARTH SURFACES AT INTERVALS SUFFICIENT TO PREVENT AIRBORNE DUST FROM LEAVING THE PROJECT SITE. ALL EXPOSED EARTH SURFACES SHALL BE WATERED DOWN AT THE END OF THE WORK DAY.

21. WHILE IN TRANSIT TO AND FROM THE PROJECT SITE, ALL TRUCKS TRANSPORTING FILL SHALL BE EQUIPPED WITH TARPS.

22. PURSUANT TO SECTIONS 16.40.040 AND 16.42.100 OF THE COUNTY CODE, IF ANY HUMAN REMAINS ARE DISCOVERED DURING EXCAVATION, OR OTHER GROUND DISTURBANCE ASSOCIATED WITH THIS DEVELOPMENT, ANY ARTIFACT OR OTHER EVIDENCE OF AN HISTORIC ARCHAEOLOGICAL RESOURCE OR A NATIVE AMERICAN CULTURAL SITE IS DISCOVERED, THE RESPONSIBLE PERSONS SHALL IMMEDIATELY CEASE AND DESIST FROM ALL FURTHER SITE EXCAVATION AND NOTIFY THE SHERIFF-CORONER OF THE DISCOVERY. IF THE DISCOVERY CONTAINS HUMAN REMAINS, OR THE PLANNING DIRECTOR KNOWS OR HAS REASON TO KNOW THAT THE DISCOVERY CONTAINS HUMAN REMAINS, THE PROCEDURES ESTABLISHED IN SECTIONS 16.40.040.D AND 16.42.100.A SHALL BE OBSERVED.

23. ALL CONSTRUCTION STAKING FOR CURB, GUTTER, SIDEWALK, SANITARY SEWER, STORM DRAINS AND SEWER LINES SHALL BE DONE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER.

24. THE DIRECTOR OF PUBLIC WORKS, OR HIS AUTHORIZED REPRESENTATIVE, SHALL HAVE THE AUTHORITY TO "STOP WORK" IF THE WORK IS NOT BEING DONE IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS.

25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF CONSTRUCTION DIMENSIONS PRIOR TO BEGINNING ON ANY TOIL QUANTITY REFERENCES SHOWN ON THESE PLANS, OR ENGINEER'S ESTIMATES ARE FOR ESTIMATING PURPOSES ONLY AND SHALL NOT BE CONSIDERED AS A BASIS FOR CONTRACT. THE ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR ANY FLUCTUATIONS IN SUCH QUANTITIES AND DISCREPANCIES.

26. THE ENGINEER PREPARING THESE PLANS SHALL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO, OR USES OF, THESE PLANS. ALL CHANGES MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

27. ON-SITE LATERAL PIPING SERVING ALL ENCLOSED BUILDINGS SHALL BE INSPECTED. ALL UNUSED LATERALS SHALL BE ABANDONED AT THE PROPERTY LINE AND INSPECTED BY A SANITATION DISTRICT REPRESENTATIVE. BUILDINGS SHALL NOT BE DEMOLISHED OR RELOCATED WITHOUT PIPE REMOVAL AND LATERAL ABANDONMENT.

28. UNDERGROUND UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY UTILITY AGENCIES, AND ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATION OF AFFECTED UTILITY LINES PRIOR TO ANY TRENCHING OR EXCAVATION AND POTHOLE THOSE LINES WHERE POTENTIAL CONFLICTS EXIST OR WHERE DATA IS OTHERWISE INCOMPLETE. FOR LOCATION, CALL USA 1-800-642-2444.

29. ANY EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED AS A PART OF THIS CONSTRUCTION SHALL BE RELOCATED AT THE DEVELOPER'S EXPENSE.

APPROXIMATE EARTHWORK QUANTITIES

	DRIVEWAY	HOUSE	GARAGE	ADU	TOTAL	REMOVAL & RECOMPACTION
CUT	1,200	700	400	400	3,100	1,100
FILL	200	100	100	0	400	1,100
NET	1,000(CUT)	600 (CUT)	300 (CUT)	400 (CUT)	2,700 (CUT)	0

NOTES:
1. EARTHWORK QUANTITIES ARE APPROXIMATE AND SHALL BE INDEPENDENTLY VERIFIED BY THE CONTRACTOR FOR BIDDING PURPOSES.
2. CAPTIONING VOLUMES INCLUDE EXCAVATION TO ROUGH GRADE FOR CONSTRUCTION OF THE PROPOSED RESIDENCE. EARTHWORK VOLUMES RELATING TO CONSTRUCT THE FOUNDATIONS HAVE NOT BEEN INCLUDED.
3. EXCESS SOIL SHALL BE HAULED OR PLACED IN A COUNTY APPROVED LOCATION.

ABBREVIATIONS

ø	DIAMETER
BOW	BOTTOM OF WALL
CB	CATCH BASIN
DW	DRIVEWAY
E	EXISTING
EL	ELEVATION
FF	FINISHED FLOOR
FL	FLOW LINE
FG	FINISHED GRADE ELEVATION
HP	HIGH POINT
INV	INVERT ELEVATION
LF	LINEAR FEET
MAX	MAXIMUM
NTS	NOT TO SCALE
PVMT	PAVEMENT ELEVATION
RIM	RIM ELEVATION
S	SLOPE
SCDD	COUNTY OF SANTA CRUZ DESIGN CRITERIA
SSCO	SANITARY SEWER CLEANOUT
SDCO	STORM DRAIN CLEANOUT
TOS	TOP OF SLAB ELEVATION
TW	TOP OF WALL
TYP	TYPICAL

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE A DETAILED AND THOROUGH STUDY OF THESE PLANS IN THEIR ENTIRETY PRIOR TO ANY WORK ON THE JOBSITE. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS, CONSTRUCTION CONDITIONS AND IS TO CORRELATE THESE DRAWINGS WITH ALL OTHER TRADE DISCIPLINES FOR THE COMPLETED WORK. THE CONTRACTOR IS ALSO TO UNDERSTAND THAT ANY OMISSION OR FAILURE OF CONSTRUCTION NOT CLEARLY SHOWN OR DETAILED SHALL BE OF THE SAME TYPE AS SHOWN FOR SIMILAR CONDITIONS.

2. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY DISCREPANCY OCCURRING ON THE DRAWINGS OR FOUND IN THE CONSTRUCTION WORK. NO CHANGES IN APPROVED PLANS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE PROJECT ENGINEER AND THE COUNTY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS.

3. ANY REQUEST FOR ALTERATIONS OR SUBSTITUTIONS MUST BE PRESENTED DIRECTLY TO THE PROJECT ENGINEER, ACCOMPANIED BY A DETAILED SKETCH, FOR REVIEW, BEFORE ANY APPROVAL WILL BE GIVEN AND BEFORE PROCEEDING WITH THE WORK. ABSOLUTELY NO ALTERATIONS OF THESE DOCUMENTS OF ANY KIND WILL BE APPROVED ON ANY SHOP DRAWINGS.

4. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS (CALTRANS), LATEST EDITION, THE COUNTY OF SANTA CRUZ DESIGN CRITERIA AND ALL APPLICABLE CODES AND ORDINANCES.

5. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE PLANS WERE OBTAINED FROM RECORD DRAWINGS AND MAY NOT REPRESENT TRUE LOCATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH OF THESE UTILITIES PRIOR TO CONSTRUCTION AND TO NOTIFY THE PROJECT ENGINEER IN CASE OF CONFLICT.

6. THE CONTRACTOR SHALL SECURE ALL REQUIRED CONSTRUCTION PERMITS FROM THE COUNTY OF SANTA CRUZ PRIOR TO THE START OF WORK.

7. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR SHALL BE RESPONSIBLE TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD PROJECT OWNER AND PROJECT ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF PROJECT ENGINEER.

8. GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATIONS AND THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ.

9. THE CONTRACTOR SHALL NOTIFY THE COUNTY GRADING INSPECTOR, GEOTECHNICAL ENGINEER, AND THE COUNTY CONSTRUCTION ENGINEER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

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23. ANY EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED AS A PART OF THIS CONSTRUCTION SHALL BE RELOCATED AT THE DEVELOPER'S EXPENSE.

STORM DRAINAGE NOTES

1. CULVERTS SHALL BE REINFORCED CONCRETE PIPE (RCP), POLYVINYL CHLORIDE (PVC), OR IRON DENSITY DUCTILE/CLOSE (DEPE) AND SHALL HAVE A BARREL DIVERSION COMPATIBLE TO SECTION C - STORM DRAINAGE FACILITIES OF COUNTY OF SANTA CRUZ DESIGN CRITERIA.

2. INLETS SHALL BE CHRISTY CONCRETE PRODUCTS OR APPROVED EQUAL AND SHALL HAVE SOLID BOTTOMS.

3. ROOF DOWNSPOUTS SHALL BE CONNECTED TO PERIMETER STORM DRAIN SYSTEM.

TOPOGRAPHIC SURVEY

THE TOPOGRAPHIC SURVEY AND BOUNDARY INFORMATION PROVIDED HEREON WAS COMPLETED BY CARY EBBAUGH AND ASSOCIATES LAND SURVEYING. IN CONNECTING THIS SHEET NO GUARANTEE AS TO THE ACCURACY OF THIS THE CONTRACTOR SHALL VERIFY THE BOUNDARY LOCATION AND TOPOGRAPHIC INFORMATION PRIOR TO COMMENCING WORK.

Environmental Review Initial Study
ATTACHMENT 2, 1 of 5
APPLICATION 07-0341

1	REVISED PER COUNTY COMMENTS, SEPTEMBER 2007
2	REVISED PER COUNTY COMMENTS, FEBRUARY 2008

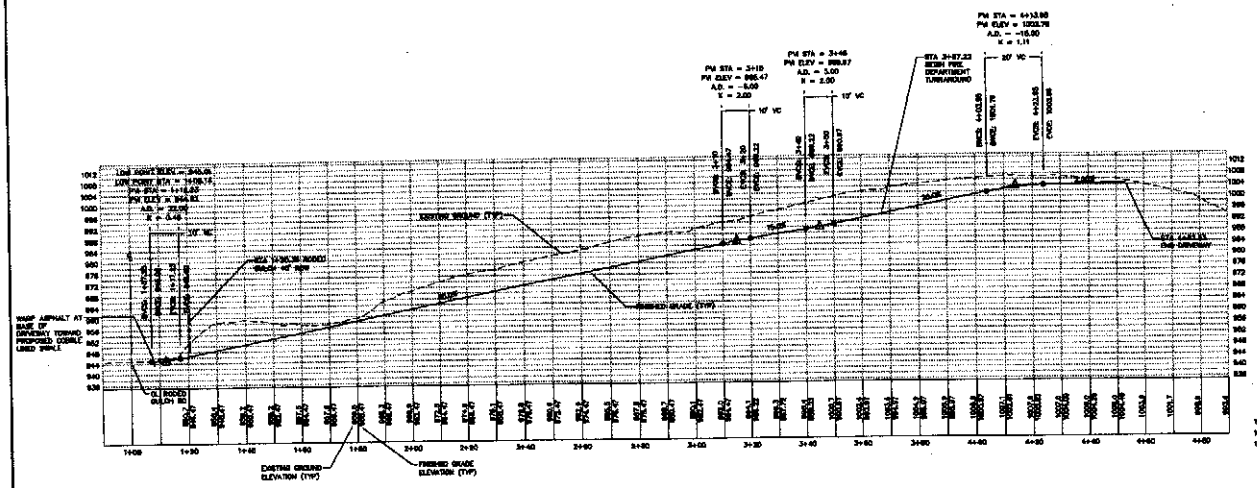
RESIDENCE AND DRIVEWAY
FOR
RICHARD BRUCE
RODEO GULCH ROAD
SANTA CRUZ COUNTY, CALIFORNIA
APN 102-011-08

GRADING AND DRAINAGE PLAN

R.I Engineering, Inc.
303 Potrero St., Suite 42-202 Santa Cruz, CA 95060
831-425-3901 www.riengineering.com

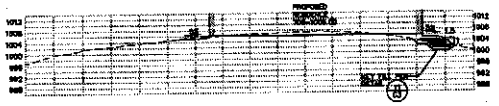
project no.
06-058-1
date
SEPTEMBER 2007
scale
AS SHOWN
dwg name
grdgcomit.dwg

C-1



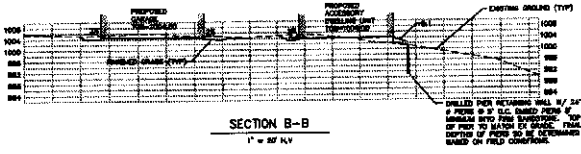
DRIVEWAY CENTERLINE PROFILE

1" = 20' H,V



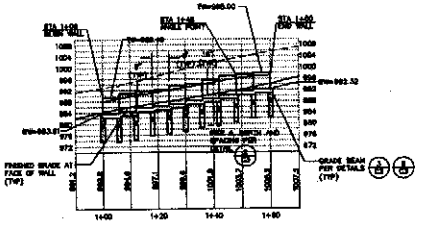
SECTION A-A

1" = 20' H,V



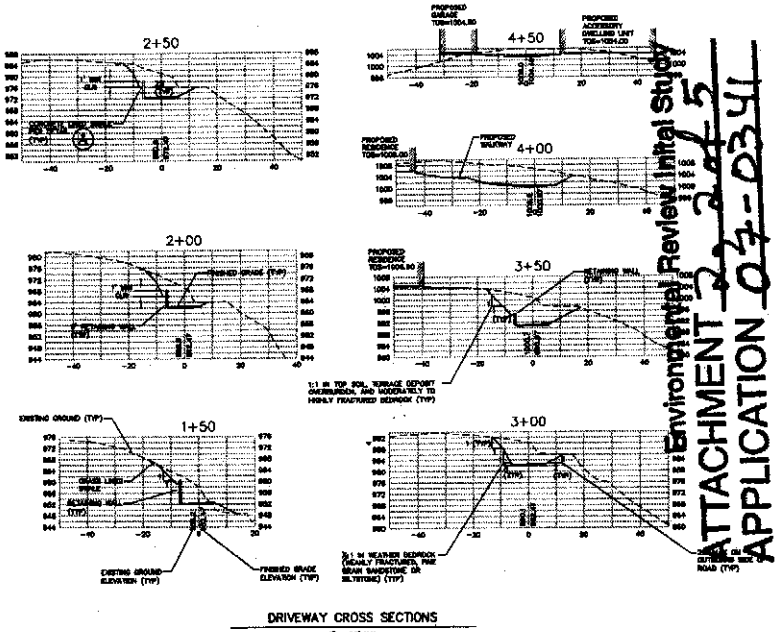
SECTION B-B

1" = 20' H,V



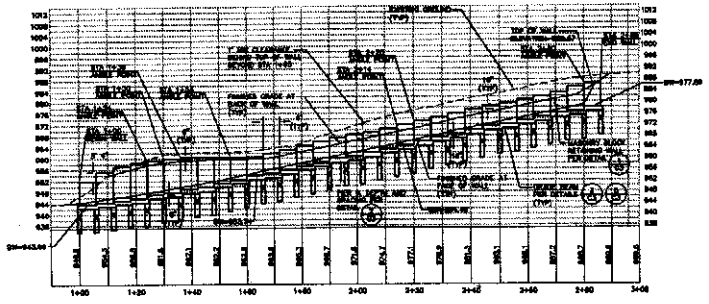
UPPER RETAINING WALL PROFILE

1" = 20' H,V



DRIVEWAY CROSS SECTIONS

1" = 20' H,V



LOWER RETAINING WALL PROFILE

1" = 20' H,V

REVISED PER COUNTY COMMENTS, SEPTEMBER 2007

R.I Engineering, Inc.

393 Potrero St., Suite 42-202 Santa Cruz, CA 95060
831-425-3961 www.rengineering.com

RESIDENCE AND DRIVEWAY
FOR
RICHARD BRUCE
4545 ROBIS GULCH ROAD
SANTA CRUZ COUNTY, CALIFORNIA
APN 102-011-06

PROFILES AND SECTIONS

project no: 06-058-1
date: SEPTEMBER 2007
scale: AS SHOWN
dwg name: gradpermit.dwg

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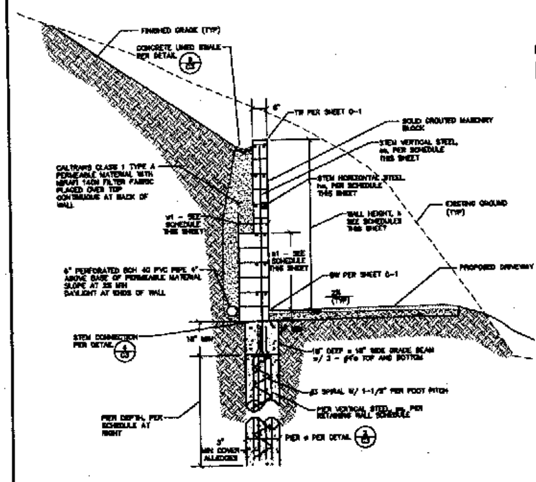
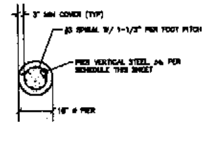
ATTACHMENT 5
APPLICATION 07-0341
Environmental Review Initial Study



RETAINING WALL DETAIL
NTS

RETAINING WALL STEM REINFORCEMENT SCHEDULE

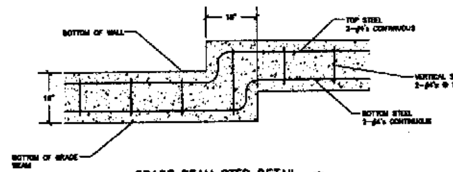
WALL HEIGHT h (FT)	h1 (FT)	w1 (IN)	STEM VERTICAL STEEL (FROM BASE TO 1/2h)	STEM VERTICAL STEEL (FROM 1/2h TO TOP)	STEM HORIZONTAL STEEL
0–4	-	-	#4 @ 8"	#5 @ 8"	2-#4's @ 18"
4–6	-	-	#5 @ 6"	#5 @ 8"	2-#4's @ 16"
6–8	4'	12"	#5 @ 6"	#5 @ 6"	2-#4's @ 16"
8–10	4'	16"	#5 @ 4"	#5 @ 6"	2-#4's @ 16"
10–12	6'	18"	#5 @ 4"	#5 @ 8"	2-#4's @ 16"



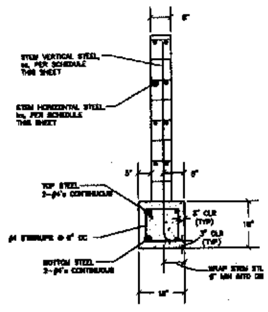
PIER DETAIL
NTS

RETAINING WALL PIER SCHEDULE

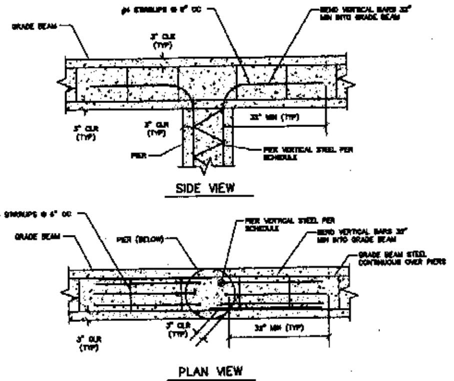
WALL HEIGHT h (FT)	PIER SPACING (FT)	PIER DEPTH (FT)	PIER VERTICAL STEEL
0–4	8	4	5-#5's
4–6	8	5	6-#5's
6–8	6	6	6-#5's
8–10	6	7	7-#5's
10–12	6	8	7-#5's



GRADE BEAM STEP DETAIL
NTS



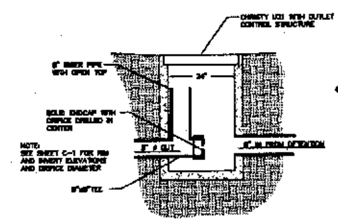
STEM AND GRADE BEAM CONNECTION DETAIL
NTS



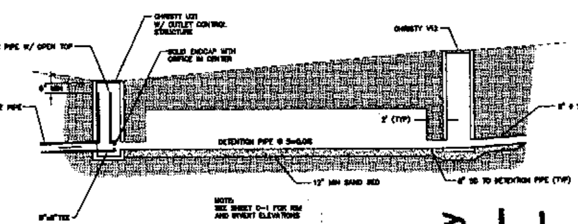
SIDE VIEW

PLAN VIEW

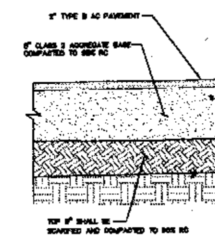
PIER AND GRADE BEAM CONNECTION DETAIL
NTS



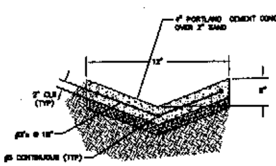
OUTLET CONTROL STRUCTURE DETAIL
NTS



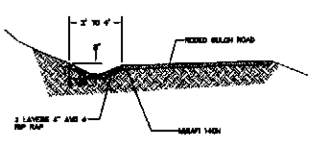
DETENTION SYSTEM DETAIL
NTS



PAVEMENT DETAIL
NTS



CONCRETE SWALE DETAIL
NTS



COBBLE LINED SWALE DETAIL
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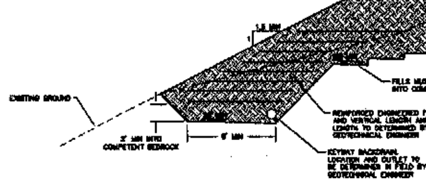
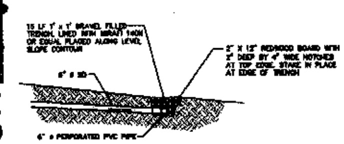


FILL KEY DETAIL
NTS



LEVEL SPREADER DETAIL
NTS

SPECIFICATIONS

1. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH CBC SECTION 1905 AND ACI 301.

2. CONCRETE SHALL BE TYPE HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 2500 PSI. CONCRETE SHALL HAVE A MAXIMUM WATER TO CEMENT RATIO OF 0.50.

3. STEEL REINFORCING SHALL CONFORM TO ASTM DESIGNATION A614, GRADE 60.

4. PLACEMENT AND HANDLING OF STEEL REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 52, "REINFORCEMENT" OF THE CALTRANS STANDARD SPECIFICATIONS.

5. ANCHOR BOLTS SHALL CONFORM TO ASTM DESIGNATION A 307 OR ASTM DESIGNATION A36. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN CONFORMANCE WITH SECTION 75-1.05 "GALVANIZING" OF THE CALTRANS STANDARD SPECIFICATIONS.

6. TIMBER CONNECTORS, SHEAR WALL HOLD DOWNS AND OTHER METAL FASTENINGS SHALL BE SIMPSON STRONG TIE COMPANY CONNECTORS OR APPROVED EQUAL. NAILS SHALL BE COMMON WIRE NAILS.

7. PLYWOOD SHEATHING SHALL BE AMERICAN PLYWOOD ASSOCIATION (APA) RATED CDX OR EQUAL.

8. EXPOSED BEAMS AND POST SHALL BE NO.1 REDWOOD OR APPROVED EQUAL.

9. STRUCTURAL LUMBER SHALL BE DOUGLAS FIR–LARCH OR EQUAL. LUMBER AND TIMBER SHALL BE OF THE STRESS GRADE SHOWN ON THE PLANS IF NO DESIGNATION IS SHOWN ON THE PLANS ALL COLUMNS, BEAMS, GIRDERS, JOISTS AND PURLINS SHALL BE #2 GRADE OR BETTER. STRUCTURAL TIMBERS SHALL BE GRADED IN ACCORDANCE WITH THE CURRENT STANDARD GRADING PRACTICES ADOPTED BY THE WESTERN WOOD PRODUCTS ASSOCIATION. ALL SIZES SHOWN ON THE PLANS SHALL REFER TO NOMINAL SIZES UNLESS OTHERWISE NOTED.

10. PRESERVATIVE TREATMENT OF LUMBER SHALL CONFORM TO THE REQUIREMENTS OF SECTION 58 OF THE CALTRANS STANDARD SPECIFICATIONS.

11. STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A36 AND SHALL HAVE A MINIMUM ALLOWABLE BENDING STRESS OF 50,000 PSI. BOLTED AND WELDED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE 2001 CALIFORNIA BUILDING CODE AND THEIR SPECIFICATIONS.

12. WELDED CONNECTIONS SHALL MEET THE REQUIREMENTS OF FEMA 350 AND THE 2001 CALIFORNIA BUILDING CODE CHAPTER 22, "STEEL."

13. ALL NAILS AND ANCHOR BOLTS THAT WILL BE IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE HOT–DIPPED GALVANIZED PER ASTM A153. FASTENERS AND CONNECTORS EXPOSED TO WET WEATHER SHALL BE STAINLESS STEEL, TYPE A304 OR A316

1 REVISED PER COUNTY COMMENTS, SEPTEMBER 2007

RI Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.riengineering.com

RESIDENCE AND DRIVEWAY
FOR
RICHARD BRUCE
4545 RODEO GULCH ROAD
SANTA CRUZ COUNTY, CALIFORNIA
APN 102-011-08
DETAILS

project no. 06-058-1
date SEPTEMBER 2007
scale AS SHOWN
dwg name grdgpermit.dwg

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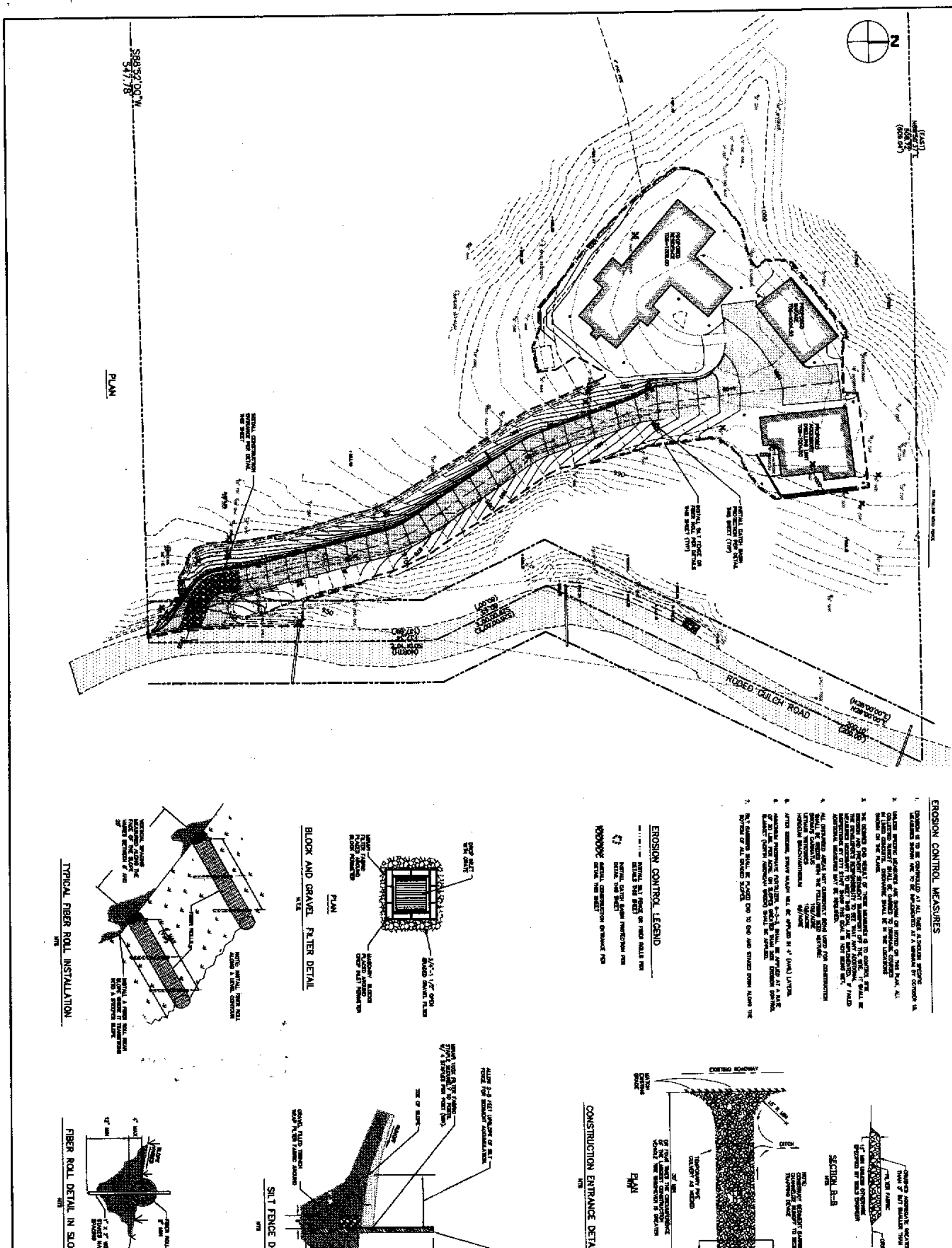
Environmental Review Inital Study
ATTACHMENT 2, 3 of 5
APPLICATION 07-0341



Environmental Review Inital Study
ATTACHMENT 2, 4 of 5
APPLICATION 07-0341

C-4

project no. 06-056-1
date SEPTEMBER 2007
scale AS SHOWN
dwg name

RESIDENCE AND DRIVEWAY
FOR
RICHARD BRUCE
4545 RODEO GULCH ROAD
SANTA CRUZ COUNTY, CALIFORNIA
APN 102-611-06

EROSION CONTROL PLAN

R.I Engineering, Inc.

303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.riengineering.com

1 REVISED PER COUNTY COMMENTS, SEPTEMBER 2007

PROJECT DESCRIPTION

An onsite wastewater system design, specifying enhanced treatment using alternative technology is proposed to serve two proposed dwellings, located near the top of North Rodeo Gulch Road, Soquel in Santa Cruz County, California. The proposed dwellings will have 3 bedrooms and 2 bedrooms. Two 1,500 gallon, watertight FRP processing tank and a twin pod AdvanTex™ AX20 Mode 1a treatment system is proposed. Enhanced treatment is specified to mitigate the fact that there is very limited area on the subject parcel with natural slopes with gradients less than 30% as required by the County ordinance. Shallow trenches with Infiltrator leaching chambers are proposed to disperse the treated filtrate. The design presented complies with County of Santa Cruz septic system requirements outlined in Chapter 7.38 of the County Code.

DESIGN CRITERIA

- The proposed system is designed to serve two residential dwellings with a combined total of up to 7 bedrooms. The AdvanTex™ wastewater treatment system is sized to handle and average of up to 900 gallon per day (gpd) and peak waste flows of up to 900gpd.
- The soils in the proposed dispersal area are comprised of loamy sand to sand and percolate in the 1-5 minutes per inch range (see site evaluation and percolation test data sheets).
- Seasonally high groundwater conditions are estimated to occur at greater than 14' below grade or lower for 90% of the year for design purposes based on the site evaluation.
- No bodies or water are situated within 500' from proposed dispersal area.

DISPERSAL TRENCH SIZE CALCULATIONS

Design Flow: 595 gpd (3 bedroom dwelling @ 325 gpd + 2 bedroom ADU @ 270 gpd per to county guidelines)
Percolation Rate: 1-5 Minutes Per Inch (MPI)
Number of Quick4 High Capacity Infiltrators Required: 16
(32 chambers divided by 2 for 50% reduction due to specification of enhanced treatment per county ordinance)
Lineal Feet of Trench Required: 63 lineal feet
(126' divided by 2 for 50% reduction due to specification of enhanced treatment per county ordinance)
Resulting Design: 2 trenches, each 35.5-long x 3.0'-wide x 2.5'-deep with a total of 18 Infiltrator chambers

SPECIFICATIONS

1. New Building Sewer Lines, & Proposed Processing Tanks

1.2. All gravity sewer piping must maintain a minimum 7% continuous gradient. ***All wastewater including graywater shall be discharged to the proposed processing tanks.*** Installer to verify that no water softener discharges into the processing tanks.

1.3. Locate a 2-way, 4" ABS cleanout fittings on the building sewers every 50' to facilitate snaking and for line location purposes.

1.4. Two 1,500 gallon, watertight, Fiberglass Reinforced Polyester (FRP) tank, from Orenco Systems®, Inc. (OSI), are specified for use as processing tanks with the proposed AdvanTex™ (Mode 1a) treatment system. The tanks shall have 24" diameter, OSI access risers. Riser heights will be 30". Call Pat Gill of Bonny Doon Environmental Systems, Inc. to order the tank, AdvanTex™ treatment system and other parts (831-423-8022).

1.5. The hole for the tanks shall be excavated so that ***the second tank (the one with the recirc pump and RSV) sits 3" lower than the first tank. Both tanks shall sit level.*** Connect the tanks and install the access risers with a watertight joint using the adhesives supplied by manufacturer.

1.6. Cap the first tanks inlet fitting with a watertight joint and fill the tank with clean water 2" above the joint between the risers and the top of the tanks to test for watertightness. Repair any leaks.

1.7. Obtain a watertight tank inspection by EHS and the designer or distributer with 24 hours notice.

1.8. Install the recirculating splitter valve (RSV) in the inlet side of the second tank.

1.9. ***Concrete shall be poured around the the tank flanges (to prevent floatation)*** as described in the manufacturer's installation manual.

2. AdvanTex™ Treatment System

2.1. The AdvanTex™ treatment system includes a Biotube® pump package for recirculation, RSV, split-flow tee, two AX20 packed-bed filter pods, and a telemetry-enabled VeriComm® control panel.

2.2. Install the AdvanTex™ system according to the installation instructions and in the location shown on the plan. The filter pods shall be installed using the supplied tank saddles with the lids partially above finished grade.

2.3. The pressurized transport pipe from the recirc. pump to the filter pod shall be 2.0" schedule 40 PVC.

2.4. The filtrate gravity return pipe from the filter pod to the RSV and on to the discharge pump basin shall also be 2.0" schedule 40 PVC. ***Assure continuous fall on the return piping as venting through this pipe is critical.***

2.5. Test the squirt height on the filter pod. An approximately 3'-4' high stream should squirt from each orifice.

2.6. The treated septic effluent (filtrate) shall gravity flow from the split-flow tee to the dispersal trenches. ***The filtrate transport pipe shall be 2.0" Schedule 80 PVC installed mostly above grade and staked in place according to STD plan D87B per project civil engineers recommendation.***

3. Dispersal System

3.1. Two 35.5'-long, 36"-wide dispersal trenches with a minimum depth of 24", shall be installed along contour in the general location shown on plan. The floor of each trench shall be installed level

3.2. Nine Quick4 High Capacity Infiltrator leaching chambers shall be installed in each trench for a total of Eighteen.

3.3. An inspection riser shall be installed at both ends of each trench with a cap.

3.4. A Zabel Flow divider shall be used to distribute flow evenly between the two trenches.

3.5. Installer shall assure that surface drainage is directed away from the proposed dispersal trenches.

4. Installer Qualifications and Responsibilities

4.1. The system installer shall be licensed by the State of California, Department of Consumer Affairs, to install septic systems. Installer certification is required by the local AdvanTex™ dealer. The installer is required to fully read and understand the AdvanTex™ installation manual prior to the commencement of work.

4.2. All piping shall conform to the current edition of the International Plumbing Code.

4.3. The installer shall be responsible for locating any property lines, underground utilities or piping. Any damage to these facilities shall be the responsibility of the installer.

4.4. A pre-construction conference with designer shall be arranged prior to the commencement of work. Construction inspections, watertight tank test inspection, AdvanTex™ installation inspection, and final operation of system shall be made by designer (BioSphere Consulting: 430-9116) and/or Bonny Doon Environmental Systems, Inc. (423-8022) and the County of Santa Cruz Environmental Health Service (EHS: 454-2022). The installer shall give at least 24 hours notice to each party for all inspections requested.

5. Electrical Work

5.1. The VeriComm® control panel shall be installed on a 4X6 pressure-treated post set in concrete near the processing tanks. Do not install control panel on the building frame.

5.2. Two 20 amp 230V electrical circuits shall be extended to the VeriComm® panel in underground electrical conduits. Underground circuits in conduit shall also be installed from panel to the recirculation pump and discharge pump. A separate underground conduit containing live phone line shall be installed to the VeriComm® panel

5.3. All work shall conform to the National Electrical Code and the contractor shall obtain an electrical permit and inspection from the County of Santa Cruz Building Department (454-2260).

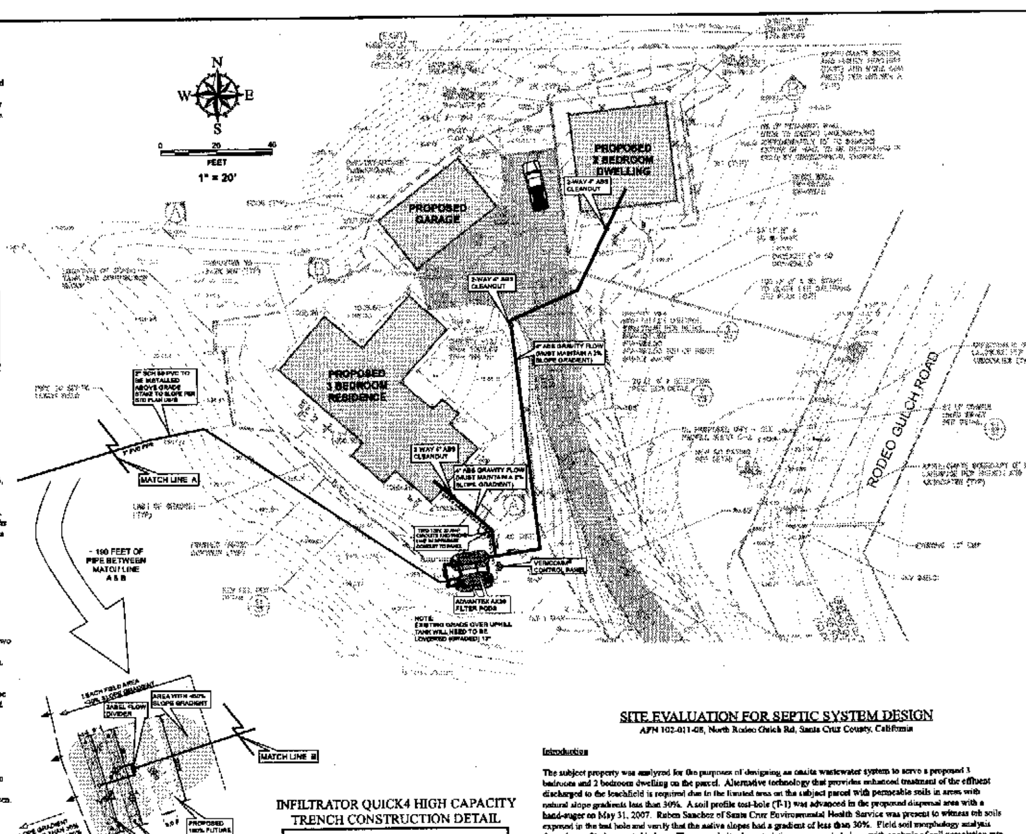
6. Erosion control

6.1. Minimize the amount of site disturbance.

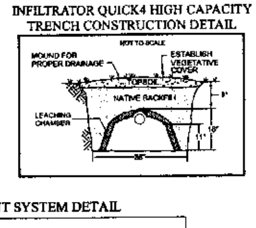
6.2. Any bare soil or fill that results from the installation of a septic system shall be seeded and mulched or otherwise treated to prevent erosion.

SYSTEM OPERATION AND MAINTENANCE

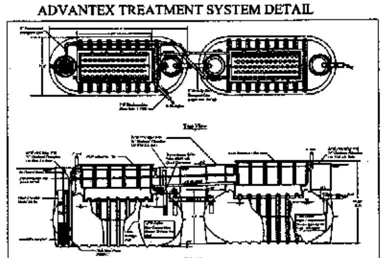
- The owner should read and operate the system according to the AdvanTex™ operation and maintenance literature.
- Orenco requires biannual maintenance servicing of the AdvanTex™ and pressurized dispersal system by a qualified technician.
- The dispersal trenches should be flushed every 6 months manually.
- The treatment tank is alive with microorganisms performing oxidation and reduction of the contents. Do not add any materials (paint thinner, paint, motor oil, unused medicine, cat litter, etc.) that may disrupt this process. The tank should be pumped when the total of the scum/sludge thickness is greater than 1/3 of total liquid level depth.
- Repair all plumbing leaks (especially toilet leaks) promptly



INFILTRATOR QUICK4 HIGH CAPACITY TRENCH CONSTRUCTION DETAIL



ADVANTEX TREATMENT SYSTEM DETAIL



SITE EVALUATION FOR SEPTIC SYSTEM DESIGN

APN 102-011-08, North Rodeo Gulch Rd, Santa Cruz County, California

Introduction

The subject property was analyzed for the purposes of designing an onsite wastewater system to serve a proposed 3 bedroom and 2 bedroom dwelling on the parcel. Alternative technology that provides enhanced treatment of the effluent discharged to the leachfield is required due to the limited area on the subject parcel with permeable soils in areas with natural slope gradients less than 30%. A soil profile test-hole (T-1) was advanced in the proposed dispersal area with a hand-auger on May 31, 2007. Ruben Sanchez of Santa Cruz Environmental Health Service was present to witness the soils exposed in the test hole and verify that the native slopes had a gradient of less than 30%. Field soil morphology analysis from the profile is reported below. The general site characteristics are presented along with analysis of soil percolation rate and potential seasonal groundwater activity. Conclusions are drawn regarding wastewater treatment and dispersal design.

General Site Characteristics

The approximately 5.33-acre subject parcel is situated along the top of a distinct bedrock ridgetop. The proposed dispersal area is situated on a small bench on the relatively steep, southwest-facing ridge flank. The slopes gradients across the proposed dispersal trench and expansion area are slightly under 30%. The slope gradients in the immediate vicinity are typically between 40% and 60%. The Soil Survey of Santa Cruz County shows the parcel as mapped entirely as county soil survey soil type 153 - Maymen which is described as being deep and well drained and having a moderately rapid permeability. The local geologic map of the area shows the site underlain by sandstone and siltstone of the Purisima Formation (Tp). Where this unit is found to be comprised of relatively loose, uncemented sand as in the area proposed for dispersal it provides extremely high hydraulic conductivity as evidenced by rapid percolation rates obtained. The proposed dispersal area is primarily vegetated with Manzanita brush surrounded by a few small oak trees.

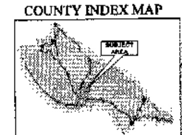
Discussion of Site Evaluation and Wastewater System Design

Our test hole revealed, very loose, medium-grained loamy sand sand to a depth of about 7.5'. No evidence supporting shallow groundwater was observed in our test hole. Groundwater is estimated to occur greater than 14' below the ground surface for 90% of the year. Dispersal trenches up to 6'-deep are adequate for dispersal on the site.

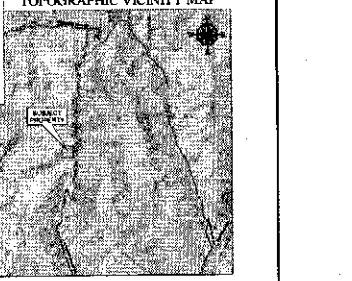
Soil Sample Depth:	15"	40"	60"
Moist Munsell Color:	2.5 Y 6/3 light yellowish brown	2.5 Y 6/4 light yellowish brown	2.5 Y 7/2 - 7/3 light gray - pale yellow
Texture:	loamy sand	sand	sand
Structure Type:	massive	massive	massive
Grade:	granular	granular	granular
Dry Consistence:	loose	loose	loose
Moist Consistence:	loose	loose	loose
Wet Consistence:	nonsticky	nonsticky	nonsticky
Plasticity:	nonplastic	nonplastic	nonplastic
Pores:	loose	loose	loose
Roots:	none	none	none
Mottles:	none	none	none
Notes:	fine to medium-grained sand	fine to medium-grained sand	loose parent material

PROFESSIONAL GEOLOGIST
ANDREW BROWNSTONE
No. 7453
Exp. 12/31/07
STATE OF CALIFORNIA

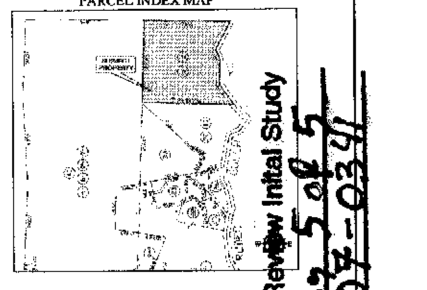
COUNTY INDEX MAP



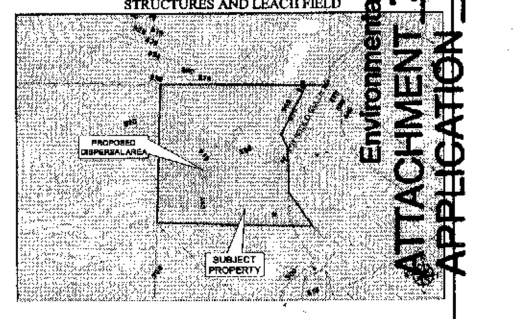
TOPOGRAPHIC VICINITY MAP



PARCEL INDEX MAP



TOPOGRAPHIC INDEX MAP WITH LOCATIONS OF PROPOSED STRUCTURES AND LEACH FIELD



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ALTERNATIVE ONSITE WASTEWATER SYSTEM DESIGN
FOR NEW DEVELOPMENT OF TWO SINGLE FAMILY DWELLINGS
PROPOSED ENHANCED TREATMENT SYSTEM SPECIFYING PRESSURIZED DISPERSAL TO SHALLOW INFILTRATOR TRENCHES

Project Location:	North Rodeo Gulch Rd, Soquel, California [Santa Cruz County]
Property Owner:	Richard & Bronwyn Wyrsch (buyer/developer: Richard Bruce)
Mailing Address:	1956 Alford Ave., Los Altos, CA 94024
Phone #:	650-255-1912
Directions to Site:	Follow North Rodeo Gulch Rd to top of mountain, look for very clearly marked address of 4600 Park and walk up unpaved driveway
Date: 7/31/07	By: Andrew Brownstone · Job No.: 07016 · APN: 102-011-08

Environmental Review Inital Study
ATTACHMENT 2, 5 of 5
APPLICATION 07-0341

April 14, 2008

Ms. Alice Daly
Planning Department
701 Ocean St. 4th Floor
Santa Cruz, CA 95060

Subject: Sewer Pipe Line for the Bruce Project, Application # 07-0341, APN 102-011-08

Dear Ms. Daly

This letter addresses the transport of treated septic effluent for the proposed construction on the above noted parcel number near Rodeo Gulch Road that is currently under your consideration. Note that only treated effluent will be transported.

The leach field is located about 200' to the west of the dwelling. The field is located on a very dry part of the parcel where the vegetation is almost exclusively chaparral. While there is a grove of oak trees several hundred feet to the south of the fields in an area where the runoff is concentrated, there are only 6 trees over the 200' distance between the dwelling and the leach field. There are no trees below the leachfield. The only trees within 100'of the leach field are approximately 80' uphill from the field.

The treated septic effluent will be transported from the AdvanTex Treatment system to leachfield the through 2" schedule 80 PVC pipe. The pipe will initially be placed underground and will transverse the slope below the main residence as shown in the Septic System Design. The trench will be approximately 3-1/2 feet deep. There are no trees along the underground section so the installation will not pose risk to trees.

Approximately 100' feet from the residence, the pipe will surface and be installed on the face of the slope (approximately 1:1) for approximately 200 feet. At the base of the slope the pile will be constructed underground to the leachfield. The portion of the pipe that will be above ground will be constructed with ultraviolet light resistant PVC and will be secured to the slope with periodic staking. Clamps will be placed on the pipe at 20 foot intervals. These clamps will be staked into the slope with (2) 1-1/2 inch diameter metal stakes. The stakes will extend a minimum of 5 feet into the ground. This design was chosen to minimize disturbance of the slope. There will be no trenching on the slope, and construction of the pipe will be done by hand. The stakes may need to be placed with hand held pneumatic tools. Clearing for the pipeline will be approximately 3 feet wide. The alignment of the pipe can be varied to avoid large trees and other obstructions.

Please feel free to call me if you have any questions regarding any of the above.
Thank you.

Very Truly Yours,
RI Engineering Inc.

Environmental Review Inital Study
ATTACHMENT 3
APPLICATION 07-0341

Richard Irish
RCE #45820

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our investigation, the proposed residential structures and the improved access driveway at the referenced site will be subject to "ordinary risks", as defined in the "Scale of Acceptable Risks From Geologic Hazards" in Appendix C of this report provided the design criteria and recommendations presented in this report are incorporated into the design and construction of the proposed project and maintained for the life of the development.

The primary geotechnical considerations at the site include ridgetop shattering associated with strong seismic shaking, unsupported steep slope gradients of the access driveway, adequate bearing and lateral support for foundation elements, and site drainage.

Access Driveway

The existing access road to the proposed home sites is underlain by highly to moderately fractured bedrock. Slope failures resulting in a slip out of the existing access road are likely to happen during the design life of this project. It is recommended that the improved access driveway be relocated a minimum of 10 feet west of the inboard edge of the existing driveway.

Based on discussions with our client and the project civil engineer the first 50 feet of the proposed access driveway will be widened by cutting 15 linear feet into the existing slope. The cut will be supported by an 8 foot high retaining wall with a 1½:1 back slope gradient. Soil properties given in Table 3 of this report should be used in design of anchors for the retaining wall. The remainder of the access road will be constructed by means of a railroad type cut with unsupported cut slopes up to 25 feet in height on the inboard edge and unsupported cut slopes up to 6 feet in height on the outboard edge.

The inboard cut slopes are anticipated to be excavated into weakly fractured sandstone bedrock with a cut slope gradient of ½:1 (horizontal to vertical). Moderately fractured bedrock, elastic silts, and top soil are anticipated to be in the upper 2 feet for the first 130 linear feet of the driveway cut. From 130 to 250 linear feet these less competent soils are expected to increase in height from the upper 2 feet to the upper 6 feet of driveway cut. The rate of increase can be estimated to be 1 foot in height for every 30 linear feet of access driveway. The final 100 feet of the inboard driveway cut is anticipated to be 12 feet in height. The lower 6 feet will likely be weakly fractured bedrock and the upper half of the cut slope will be less competent soils.

Provide some typical dashed

The less competent soils encountered on the inboard cut slope should have maximum slope gradient of 1½ :1 (horizontal to vertical) for heights up to 6 feet and 2:1 for heights greater than 6 feet. The proposed cut slope on the outboard edge of the access road may be any of the soils described above. However the cut slope gradient should not exceed 2:1 (horizontal to vertical) at any point along the outboard edge of the proposed access driveway. Design professional should refer to the section titled Cut and Fill Slopes in our recommendations.

Proposed Homes

The proposed homes are located at the top of the property along the ridgetop. Evidence of ridgetop shattering was noted and evaluated by the project geologist in a number of test trenches located across the ridgetop. Horizontal and vertical shear zones were determined to exist below both of the proposed homes. The proposed residential construction for these sites will consist of a reinforced building pad that will span potential future ground shearing. The reinforced building pad should extend 5 feet beyond the building footprint in all directions unless specified differently. Both homes should be founded on a structural concrete mat designed to accommodate up to 2 inches of vertical and horizontal displacement anywhere within the foundation zone. Design criteria for construction of this reinforced building pad and for the structural reinforced concrete mat is presented in the recommendations of this report.

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Main Home

The depth of ridgetop shattering below the main home is anticipated to be between 3 to 6 feet. In order to mitigate for this deep ground cracking, we have recommended subexcavation of the ridgetop under the proposed main home to a depth between 3 to 6 feet. The exposed excavation should be keyed and benched into competent siltstone bedrock and reconstructed with compacted, reinforced engineered fill.

Second Home

The depth of ridgetop shattering below the second home is anticipated to be 6 feet. In order to mitigate for this deep ground cracking, we have recommended subexcavation of the ridgetop under the proposed second home to a depth of up to 6 feet. The excavated material will then be replaced with a reinforced building pad comprised of compacted, reinforced engineered fill. The reinforced building pad should extend a minimum 5 feet beyond the building footprint on the north, south, and west side. A soldier pile retaining wall whose base is embedded into competent sandstone bedrock should confine the reinforced building pad on the east side of the proposed second home.

Detached Garage

In the area of the detached garage the anticipated depth of ridgetop shattering is expected to be 3 feet. Since the detached garage is a non habitable structure constructing a reinforced building pad below the structure is not necessary. The detached garage can be founded on spread footings embedded a minimum of 24 inches into moderately fractured siltstone. The perimeter foundation grade beams should be capable of spanning 8 feet. The northern side of the detached garage should be supported by a row of closely spaced piers to support the earth materials within the foundation zone against potential shallow landslides. The garage floor should be supported by a structural concrete mat slab. The structural concrete mat slab should be structurally independent of the grade beams and foundation system by separation with a 30 pound felt strip. The structural concrete mat slab should be designed to accommodate 2 inches of displacement either vertically or horizontally.

Septic Leach Field

It is our understanding that the septic leachfield will be located down in the valley west of the homesites. It is our opinion that the site of the proposed leach field will not create any instability to the proposed homes or access driveway. We are aware of previous work at the property that indicate the earth materials on the ridge top were not

permeable enough to allow a septic leach field. We do not recommend septic leach fields on the ridge top or any of the adjacent steep slopes.

Drainage

An engineered drainage plan to handle surface and subsurface runoff should be prepared for this development. Surface and subsurface site drainage should be adequately controlled during and after construction.

The following recommendations should be used as guidelines for preparing project plans and specifications, and assume that **Haro, Kasunich & Associates** will be commissioned to review project grading and foundation plans before construction and to observe, test and advise during earthwork and foundation construction. This additional opportunity to examine the site will allow us to compare subsurface conditions exposed during construction with those inferred from this investigation. Unusual or unforeseen soil conditions may require supplemental evaluation by the geotechnical engineer.

General Site Grading

1. The geotechnical engineer should be notified **at least four (4) working days prior to any grading or foundation excavating** so the work in the field can be coordinated with the grading contractor, and arrangements for testing and observation

can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

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

3. Areas to be graded or to receive proposed improvements should be cleared of all obstructions and fill materials, including trees not designated to remain and other unsuitable material. Existing depressions or voids created during site clearing should be backfilled with engineered fill. Any surface or subsurface obstructions, or questionable material encountered during grading, should be brought immediately to our attention for proper exposure, removal and processing as directed.

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

5. Following clearing and stripping of the building area, existing fill underlying any of the sites should be completely removed until firm, native soil is encountered. Following subexcavation of fill, the base of the excavations should be scarified, moisture conditioned (or allowed to dry as necessary) to produce a moisture content about 2 to 4 percent above the laboratory optimum value and uniformly compacted to at least 90 percent relative compaction. The sites may then be brought to design grades with engineered fill.

6. Engineered fill should be placed in thin lifts not exceeding 8 inches in loose thickness, water conditioned to a moisture content about 2 to 4 percent above optimum, and compacted to at least 90 percent relative compaction. The upper 8 inches of subgrade should be compacted to at least 95 percent relative compaction. Aggregate base below pavements should likewise be compacted to at least 95 percent relative compaction.

7. If grading is performed during or shortly after the rainy season, the grading contractor may encounter compaction difficulty with the wet soils. If compaction cannot be achieved after adjusting the soil moisture content, it may be necessary to use imported fill or gravel and stabilize the bottom of the excavation with stabilization fabric.

8. Provided they can be adequately moisture conditioned (or dried back) prior to use, the on-site soils appear generally suitable for use as engineered fill, however clay soils with intermediate or high plasticity may be unsuitable. Materials used for engineered fill which must be imported should be free of organic and deleterious material, contain no rocks or clods over 4 inches in dimension, and should contain no more than 15 percent by weight of rocks larger than 2½ inches. Imported fill should also be granular, have a Plasticity Index of less than 18, and should have sufficient binder to allow excavations to stand without caving. Prior to delivery to the site, a representative sample of proposed import should be sent to our laboratory for evaluation.

9. We estimate shrinkage factors of about 15 percent for the on-site materials when used in engineered fills.

Cut and Fill Slopes

10. Temporary excavations should be properly shored and braced during construction to prevent sloughing and caving at sidewalls. The contractor should be aware of all CAL OSHA and local safety requirements and codes dealing with excavations and trenches.

11. Permanent cut slopes in elastic silts, top soils, and highly fractured bedrock should be inclined no steeper than 1½:1(horizontal to vertical) up to 6 feet in height and 2:1 for heights greater than 6 feet. In competent sandstone cut slopes can have a slope gradient of ½:1 to a height of 25 feet and ¾:1 to a height of 35 feet. Cut slopes with a height greater than 35 feet must be reviewed by the soils engineer. The top of all cut slopes should be rounded off to remove topsoil and reduce soil sloughing. If seepage is observed, the geotechnical engineer should provide additional recommendations. Cut slopes with these recommended gradients may require periodic maintenance to remove minor soil sloughing.

12. Compacted fill slopes should be constructed at a slope inclination not steeper than 2:1 (horizontal to vertical) at 90 percent relative compaction. 1.5:1 slope gradient can be constructed with reinforced engineered fill compacted to 90 percent relative compaction. Fill slopes with these recommended gradients may require periodic maintenance to remove minor soil sloughing. All fills must be adequately benched into competent sandstone, and keys for stability will be required at the toe of the fill embankment. The toe key should be at least 8 feet wide and should extend at least 2 feet into competent bedrock. The bottom of the toe key should be sloped downward at about 2 percent toward the back of the key.

13. There should be a minimum of 10 feet horizontal separation between the bottom of all footing elements and the top of a fill slope or the base of a cut slope.

14. In order to maintain stable slopes at the recommended gradients, it is important that seepage forces and accompanying hydrostatic pressure be relieved by adequate drainage. Adequate backdrains in keyways and benches should be provided. The locations of backdrains and outlets will be determined by the geotechnical engineer in the field during grading.

15. Following grading, exposed soil should be planted as soon as possible with erosion-resistant vegetation.

16. After the earthwork operations have been completed and the geotechnical engineer has finished his observation of the work, no further earthwork operations shall be performed without the direct observation and approval of the geotechnical engineer.

Utility Trenches

17. Trenches must be properly shored and braced during construction or laid back at an appropriate angle to prevent sloughing and caving at sidewalls. The project plans

and specifications should direct the attention of the contractor to all CAL OSHA and local safety requirements and codes dealing with excavations and trenches.

18. Utility trenches that are parallel to the sides of buildings should be placed so that they do not extend below an imaginary line sloping down and away at a 2:1 (horizontal to vertical) slope from the bottom outside edge of all footings. The structural design professional should coordinate this requirement with the utility layout plans for the project

19. Trenches should be backfilled with granular-type material and uniformly compacted by mechanical means to the relative compaction as required by county specifications, but not less than 95 percent under paved areas and 90 percent elsewhere. The relative compaction will be based on the maximum dry density obtained from a laboratory compaction curve run in accordance with ASTM Procedure #D1557.

20. We strongly recommend placing a three-foot (3') concrete plug in each trench where it passes under the exterior foundations. Care should be taken not to damage utility lines.

21. Trenches should be capped with 1.5 feet of relatively impermeable soil.

Conventional Footing Recommendations – Detached Garage and Retaining Walls

22. Provided the building area is located and prepared in accordance with the geology and geotechnical recommendations, the proposed residence may be supported by conventional spread footings bearing on moderately to weakly fractured bedrock.

? prepared residence?

23. The exterior perimeter spread footings should be capable of spanning a minimum of 8 feet.

24. A minimum footing embedment depth of 24 inches is recommended, as measured from lowest adjacent grade. The foundation trenches should be kept moist and be thoroughly cleaned of all slough or loose materials prior to pouring concrete. In addition, all footings located adjacent to other footings or utility trenches should have their bearing surfaces founded below an imaginary 2:1 plane projected upward from the bottom edge of the adjacent footings or utility trenches.

25. Foundations designed in accordance with the above may be designed for an allowable soil bearing pressure of 1,500 psf dead plus live loads for moderately fractured sandstone (detached garage) and 4,000 psf for weakly fractured sandstone. This value may be increased by one-third to include short-term seismic and wind loads.

26. Lateral load resistance for structures supported on spread footings may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.35 for moderately fractured bedrock (detached garage) and 0.38 for weakly fractured bedrock is considered applicable. A passive pressure of 250 pcf can be used in weakly fractured bedrock.

27. All footings and grade beams should be reinforced in accordance with applicable UBC and/or ACI standards, however, we recommend the continuous footings contain a minimum steel reinforcement of four (4) #4 bars; i.e., two near the top and two near the bottom of the footing.

28. All footing excavations should be thoroughly cleaned and observed by the geotechnical engineer prior to placing forms and steel. Observation of foundation excavations allows anticipated soil conditions to be correlated to those inferred from our investigation and to verify that the footings are in accordance with our recommendations

Pier Foundations – Detached Garage and Retaining Wall

29. Based on the soil characteristics and the topography of the building sites it is our opinion that a deep-seated pier system is feasible to support the northern side of the detached garage and the retaining wall confining the reinforced building pad under the proposed second home.

30. The drilled concrete pier foundations may be designed for end-bearing using an allowable bearing capacity of 8,000 psf for dead plus live loads. These values may be increased by one-third to include the effects of short-term wind and seismic forces. The drilled holes for the concrete piers should have a minimum shaft diameter of 24 inches. The piers should penetrate all fill or less competent bedrock and be embedded at least 8 feet into firm sandstone. This will require the total depth of the piers to be about 15 feet along the north side of the garage and 10 feet for the second home retaining wall. We recommend that the bottoms of all piers have a minimum horizontal distance of 15 feet to the exposed ground surface. The actual pier depth may be dependent on the minimum depths required for lateral stress resistance.

31. Reinforcing vertical steel for the concrete piers should extend the full depth of the excavation to a point 3 inches above the bottom of the pier hole. Unless specified differently we further recommend that concrete beams be used to tie the structure to the piers, and that the vertical steel of the caisson be lapped and tied to the top horizontal steel of the concrete beams.

32. The piers should be designed to resist an active creep force equivalent to a fluid weighing 35 pcf and a resultant seismic surcharge load of $10D^2$ located at 0.6D from the top of the pier where D is the embedment depth. Both the seismic surcharge and the active creep force can be assumed to act against 2 ½ pier diameters. The zone of active creep force should be taken as the upper 5 feet for both garage piers and retaining wall piers.

33. For all piers neglect passive pressure in the zone of active creep. Starting at the bottom of the zone of active creep force to a depth of 8 feet from the top of the pier a passive resistance of 325 pcf can be assumed to act over 2 pier diameters. From a depth of 8 feet from the top of the pier to the bottom of the pier a passive resistance of 425 pcf can be assumed to act over 2 pier diameters.

34. Piers should have a maximum spacing of 5 feet on center.

Structural Slab for Detached Garage

35. The structural concrete mat slab should be structurally independent of the grade beam foundation system by separation with a 30 pound felt strip.

36. The structural concrete mat slab should be designed to accommodate 2 inches of displacement either vertically of horizontally. In addition the structures should be designed to withstand a void 8 feet in diameter anywhere underneath the foundation.

37. The foundation mat may be designed for an allowable bearing capacity of 1,500 psf.

38. Lateral load resistance for the structure supported on the structural slab-on-grade may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.35 may be used.

39. Where floor wetness is undesirable, a blanket of 4 inches of free-draining gravel should be placed beneath the floor slab to act as a capillary break. In order to minimize vapor transmission, an impermeable membrane with sealed joints should be placed over the gravel. The membrane should be covered with 2 inches of sand or rounded gravel to protect it during construction. The sand or gravel should be lightly moistened

just prior to placing the concrete to aid in curing the concrete. If moisture sensitive floor coverings are expected a surface treatment or moisture retardant should be added to the concrete and the floor covering manufacturers should be consulted for any special provisions that need to be implemented as part of installation of the respective floor coverings.

Foundations – Structural Slab-on-Grade Mats – Main and Second Home

40. A reinforced concrete mat (structural slab-on-grade) foundation is recommended to support both of the proposed homes. The concrete mat should be founded on a minimum of 6 feet of reinforced engineered fill as outlined in the grading section of the report. The graded building pads should extend a minimum of 5 feet beyond the edge of the planned structures in all directions.

41. The foundation mat may be designed for an allowable bearing capacity of 1,500 psf.

42. The foundation mat should be designed to withstand 2 inches of vertical offset and 2 inches of horizontal offset during a seismic event that causes ridge top shatter. In addition the structures should be designed to withstand a void 8 feet in diameter anywhere underneath the foundation.

43. Lateral load resistance for the structure supported on the structural slab-on-grade may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.35 may be used.

44. Where floor wetness is undesirable, a blanket of 4 inches of free-draining gravel should be placed beneath the floor slab to act as a capillary break. In order to minimize vapor transmission, an impermeable membrane with sealed joints should be placed over the gravel. The membrane should be covered with 2 inches of sand or rounded gravel to protect it during construction. The sand or gravel should be lightly moistened just prior to placing the concrete to aid in curing the concrete. If moisture sensitive floor coverings are expected a surface treatment or moisture retardant should be added to the concrete and the floor covering manufacturers should be consulted for any special provisions that need to be implemented as part of installation of the respective floor coverings.

Retaining Wall Lateral Pressures – General

45. Retaining walls should be designed to resist both lateral earth pressures and any additional surcharge loads. For design of retaining walls up to 12 feet high, the following design criteria may be used:

Reinforced Engineered Fill

A. Active earth pressure on fully drained walls allowed to yield, is that exerted by an equivalent fluid weighing 35 pcf for a level backslope gradient; 50 pcf for a 2:1 (horizontal to vertical) backslope gradient and 65 pcf for a 1 ½:1 backslope gradient. **This assumes a fully drained condition.**

Native Soils or Highly to Moderately Fractured Bedrock

B. Active earth pressure on fully drained walls allowed to yield, is that exerted by an equivalent fluid weighing 40 pcf for a level backslope gradient; 55 pcf for a 2:1 (horizontal to vertical) backslope gradient and 70 pcf for a 1 ½:1 backslope gradient. **This assumes a fully drained condition.**

For Both Backfill Conditions

C. Where walls are restrained from moving at the top, as in the case for basement walls, design for a uniform rectangular distribution equivalent to 28H psf per foot of wall height for a level backslope, and 38H psf per foot of wall height for a 2:1 backslope (where H is the height of the wall).

D. In addition, the walls should be designed for any adjacent live or dead loads which will exert a force on the wall (garage and/or traffic loads).

E. Retaining walls used as interior living space should be thoroughly waterproofed.

46. For seismic design of critical retaining walls, a dynamic surcharge load equal to 10H psf per foot of wall, where H is the height of the wall, should be added to the above active lateral earth pressures.

47. Fully drained walls should be backfilled with drainage materials consisting of Class 1, Type A permeable material complying with Section 68-1.025 of Caltrans Standard Specifications, latest edition.

48. The drainage material should be at least 12 inches thick. The drains should extend from the base of the walls to within 12 inches of the top of the backfill. A perforated, rigid pipe should be placed (holes down) about 4 inches above the bottom of the wall and be tied to a suitable drain outlet. Wall backdrains should be capped at the surface with clayey material to prevent infiltration of surface runoff into the backdrains. A layer of filter fabric (Mirafi 140N or equivalent) should separate the subdrain material from the overlying soil cap. For non-critical retaining walls where soldier pier steel beams and pressure treated wood lagging is used the lagging may be spaced to

accommodate seepage. The bottom wood lagging should be increased in section due to long term saturated conditions.

Conventional Concrete Slabs-on-Grade

49. Exterior slabs should be constructed on properly water conditioned and compacted soil subgrades. Soil subgrades should be prepared and compacted as recommended in the section entitled "General Site Grading". Soil moisture should be consistently maintained at 4 to 5 percent over optimum until the slab is poured. If the subgrade is allowed to dry out, it should be adequately pre-moistened for at least 48 hours prior to pouring concrete.

50. Slab reinforcing should be provided in accordance with the anticipated use and loading of the slab, however we recommend a minimum reinforcement of #4 bars spaced 16 inches on-center in both directions. The steel reinforcement should be held firmly in the vertical center of the slab during placement and finishing of the concrete with pre-cast concrete dobies.

51. Where floor dampness must be minimized or where floor coverings will be installed, concrete slabs-on-grade should be constructed on a capillary break layer at least 4 inches thick, covered with a membrane vapor retarder. Capillary break material

should be free-draining, clean gravel or rock, such as 3/4-inch gravel. The gravel should be washed to remove fines and dust prior to placement on the slab subgrade. The vapor retarder should be a high quality membrane at least 10 mil in thickness. A layer of sand about 2 inches thick should be placed between the vapor retarder and the floor slab to protect the membrane and to aid in curing concrete. The sand should be lightly moistened prior to placing concrete.

52. Exterior concrete slabs-on-grade should be founded on firm, well-compacted ground as delineated above. Reinforcing should be provided in accordance with the anticipated use and loading of the slab. The reinforcement should not be tied to the building foundations. These exterior slabs can be expected to suffer some cracking and movement. However, thickened exterior edges, a well-prepared subgrade including pre-moistening prior to pouring concrete, adequately spaced expansion joints, and good workmanship should minimize cracking and movement.

Surface Drainage

53. An engineered drainage plan to handle surface runoff should be developed for this site. Site drainage should be adequately controlled both during and after construction.

54. Runoff should not be discharged into the ground surface on the ridge top due to evidence that the bedrock is of very low permeability.

55. Runoff should not be discharged into the subsurface of the steep slopes that surround the ridge top.

56. All exposed soil should be landscaped and permanently protected against erosion as soon as possible after grading.

57. We recommend that full gutters be used along all roof down eaves to collect storm runoff water and channel it through closed rigid conduits to a suitable discharge point away from all structural improvements.

58. Surface runoff should **not** be allowed to flow onto graded or natural slopes. Consideration should be given to catch basins, berms, concrete v-ditches, or drainage swales at the top of all slopes to intercept runoff and direct it to a suitable discharge point.

59. Surface drainage should include provisions for positive gradients so that surface runoff is not permitted to pond adjacent to foundations and on pavements. Surface

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APPLICATION 07-0341

drainage should be directed away from the building foundations, at a minimum gradient of 2 percent for a distance of at least 3 feet to an adequate discharge point. Concentrations of surface water runoff should be handled by providing necessary structures, such as paved ditches, catch basins, etc.

60. Irrigation activities at the site should be done in a controlled and reasonable manner. Planter areas should not be sited adjacent to walls; otherwise, measures should be implemented to contain irrigation water and prevent it from seeping into walls and under foundations.

61. The migration of water or spread of extensive root systems below foundations, slabs, or pavements may cause undesirable differential movements and subsequent damage to these structures. Landscaping should be planned accordingly.

62. Drainage patterns approved at the time of fine grading should be maintained throughout the life of proposed structures.

Pavement Design

63. R-Value tests have not been performed.

64. To have the selected pavement sections perform to their greatest efficiency, it is very important that the following items be considered:

a. Scarify and moisture condition the top eight inches (8") of subgrade and compact to a minimum relative compaction of 95 percent, at a moisture content which is about 4 percent above laboratory optimum value.

b. Provide sufficient gradient to prevent ponding of water.

c. Use only quality materials of the type and thickness (minimum) specified. All baserock (R=78 minimum) must meet CALTRANS Standard Specifications for Class 2 Untreated Aggregate Base (Section 26). All subbase (R=50 minimum) must meet CALTRANS Standard Specifications for Class 2 Untreated Aggregate Subbase, (Section 25).

d. Compact the baserock and subbase uniformly to a minimum relative compaction of 95 percent.

e. Place the asphaltic concrete only during periods of fair weather when the free air temperature is within prescribed limits.

f. Maintenance should be undertaken on a routine basis.

We recommend dispersing runoff from impermeable surfaces around the three proposed structures on the ridge top. There is ample distance downslope of the ridge top such that most runoff will infiltrate during overland flow. In regards to the driveway, we cannot envision a means of collecting the runoff since the driveway terminates at Rodeo Gulch Road. The driveway runoff has flowed to Rodeo Gulch Road for many years since the driveway was constructed with no apparent adverse affects to the hillsides where the water is directed by culverts.

CONCLUSIONS

1. The proposed homesites are located on a ridge top on relatively gently sloping ground. Steep slopes of 60% to 80% drop off to the north, west and east. The homes are setback at least 25 feet from greater than 50% slopes. A detached garage is situated between the two homes and at the top of 80% slopes.

2. Access to the homesite is via an unsurfaced driveway that climbs steeply from Rodeo Gulch Road to the ridge top. The driveway was constructed primarily as a full-cut bench. The gradient of the driveway currently ranges between 22% and 25%, so it will have to be cut down to achieve an acceptable gradient of 20% or less.

3. The homesites are immediately underlain by sandstone and siltstone of the Purisima Formation. The bedrock is nearly flat lying. It is very highly fractured off the east side of the ridge. However, it is only moderately fractured to a depth of about six feet below ground surface on the ridge top in the vicinity of the proposed structures. Below this depth, it is very weakly fractured, competent and hard.

4. There is a recent, dormant landslide off the east side of the ridge. The slide occurred this past winter. It moved about seven feet. The slide occurred in the very highly fractured bedrock. Adjacent to this is an older landslide scar, a hillside hollow no more than five feet deep. These slides indicate a potential instability in the highly fractured bedrock on the east side of the property.

5. We understand that the septic leachfield will be located quite a ways downslope of the homesites in the valley west of the ridge top. The earth materials in this vicinity consist predominantly of sandstone. Preliminary percolation tests indicate that the sandstone is very permeable within seven feet of the ground surface. We inspected this site and found no reason to be concerned with slope instability.

6. Drainage at the property is primarily sheet wash. There was no concentrated runoff on the property at the time of our study excepting runoff flowing down the approximate 300-foot long driveway. This runoff has flowed to Rodeo Gulch Road for many years with no apparent adverse affects; the runoff flows to existing culverts that drain the road.

7. The property is located in a highly seismically active area and will probably experience strong to severe ground shaking during its lifetime. The proposed homesite is situated about 6 miles southwest of the active San Andreas fault, about 2.6 miles southwest of the potentially active Zayante fault, about 15 miles northeast of the offshore active San Gregorio fault and about 30 miles south of the active Hayward fault. The San Andreas fault is the most likely fault to generate ground shaking at the property from a large magnitude earthquake during the lifetime of the home.

RECOMMENDATIONS

1. This study was conducted in conjunction with a geotechnical investigation by Haro Kasunich and Associates . Their report shall be considered an integral part of the evaluation of the property and shall accompany this geologic report in all future phases of the project including but not limited to review, design, and construction.

2. The proposed main home, second home, and detached garage should be wholly confined to the Building Envelopes shown on Plate 1 of this report unless approved otherwise by our firm or another engineering geologist.

3. A geotechnical engineer shall investigate the earth materials beneath the homesite and provide criteria for foundation design. We recommend that the earth materials within six feet of the ground surface beneath each home be removed and replaced as a reinforced engineered fill to assist in mitigating concerns with ridge top cracking and shattering. Additionally, the foundations should be designed to accommodate up to two inches of either vertical or horizontal displacement anywhere within the foundation zones. The foundation for the garage should include a row of close-spaced piers along its rear or northern side to support the earth materials within the foundation zone against potential shallow landsliding on the steep hillside north of the garage. For design purposes, the earth materials within five feet of the ground surface should be considered capable of generating a active force on the piers.

4. The driveway shall be moved a minimum of 10 feet to the west of its present location. This will shift the driveway away from the steep, potentially unstable slopes on the east side of the property.

5. We highly encourage the homeowner to carry earthquake insurance on the home. While this is not necessarily a geologic issue, the proximity of the property to several active faults suggests a value to such coverage.

6. We recommend that a drainage plan be developed for the property. The plan shall show how drainage will be collected and discharged from impermeable surfaces associated with development (e.g. roofs, surfaced driveways and roads, etc.). We recommend against discharging runoff into the ground surface on the ridge top due to evidence that the bedrock is of a very low permeability. We also do not recommend discharging runoff into the

subsurface on the steep slopes that surround the ridge top. It is our opinion that runoff should be dispersed as much as possible and allowed to flow overland where we believe most of it will infiltrate into the ground.

7. We or a California Certified Engineering geologist shall be afforded an opportunity to review the final design plans to ensure that our recommendations have been incorporated into the plans. If such an opportunity is not afforded, we will assume no responsibility for the misinterpretation of our plans.

8. If any unexpected variations in soil conditions, or if any unanticipated geologic conditions are encountered during construction, or if the proposed project will differ from that discussed or illustrated in this report, we require to be notified so supplemental recommendations can be given.

COUNTY OF SANTA CRUZ

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

April 4, 2007

Dee Murray
2272 Kinsley Lane
Santa Cruz, CA 95062

Subject: **Review of Geologic Investigation by Nielsen and Associates, Dated October 2006 and January 30, 2007, Project No. SCr-1184-G; and Review of Geotechnical Investigation by Haro, Kasunich & Associates, Dated January 2007 and February 21, 2007, Project No. SC 9287; APN: 102-011-08, Application No: 07-0027**

Dear Ms. Murray:

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

1. All construction shall comply with the recommendations of the reports.

2. Final plans shall reference the reports and include a statement that the project shall conform to the reports' recommendations.

3. Before final inspection, the geotechnical engineer must confirm in writing that all of the construction complies with the recommendations of the geotechnical engineer.

4. Before building permit issuance a *plan review letter* shall be submitted to Environmental Planning. The author of the report shall write the *plan review letter*. The letter shall state that the project plans conform to the report's recommendations.

5. The engineering geologist must establish a program of grading inspections that will: 1) determine the boundaries between geologic materials with different properties, 2) identify the structural features within each separate zone, and 3)

Environmental Review Initial Study
ATTACHMENT 6, Lot 3
APPLICATION 07-0341

map the orientation of each feature/fracture and determine their influence on slope stability. If analysis of the fractures indicates potential failure, the engineering geologist and/or the geotechnical engineer must determine the strength of the discontinuities and conduct a slope stability analysis.

A slope stability analysis is not necessary unless the site conditions reveal fractures or other features that could adversely affect the slope stability. The engineering geologist's analyses and the stability analysis (if completed) must be submitted to the County for review.

6. All drainage must be directed away from the more highly fractured rock on the outer edge of the driveway.

7. During construction, the geotechnical engineer must supervise the excavation of the highly fractured material along the outer edge of the driveway to assure that the minimum amount of vibration and disturbance occurs within this material.

8. The accessory dwelling unit must be relocated such that a setback of at least 15 feet exists between the structure and the retaining wall or the limits of the highly fractured material.

9. The retaining wall along the access roadway must have a minimum life span of 50 years. Before the rough grading is done, the project civil engineer must state in writing that the wall will perform for 50 years without the replacement of elements of the wall.

10. The project geotechnical engineer, or a similar qualified testing laboratory, must be employed to inspect and test all fill material placed on the site. The relative compaction tests and their location must be noted on a copy of the approved grading plans, and all related test data must be included in a table with a reference number that correlates the table data to the test location indicated on the grading plan. Both a copy of the map and a summary report with the table must be submitted to the County Environmental Planning section at the time of rough grading clearance.

11. The project civil engineer must submit a letter prior to the final inspection indicating that the improvements have been completed in compliance with the plans.

12. The attached Declaration of Geologic Hazards must be executed and recorded at the County Recorder's Office prior to issuance of the building permit.

All of the above shall become Conditions of Approval for the project. After building permit issuance, the soils engineer and engineering geologist *must remain involved with the project* during construction. Please review the *Notice to Permits Holders* (attached).

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

Please call the undersigned at (831) 454-3175 if we can be of any further assistance.

Sincerely,

Joe Hanna
County Geologist

Cc: Richard Bruce
Haro, Kasunich, and Associates
Nielsen and Associates
Owners: Richard and Bronwyn Wyrsch
File

Environmental Review Inital Study
ATTACHMENT 6, 3 of 3
APPLICATION 07-0341

HARO, KASUNICH AND ASSOCIATES, INC.

CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SC9287
2 October 2007

MR. RICHARD BRUCE
1956 Alford
Los Altos, California 94024

Subject: Review of Revised Grading and Drainage Plan

Reference: 4610 Rodeo Gulch Drive
APN 102-011-08
Santa Cruz County, California

Dear Mr. Bruce:

As requested Haro Kasunich and Associates has reviewed the revised grading and drainage plans for the referenced project. The plan set developed by R.I. Engineering has a revision date of September 2007. The intent of our review was to determine if the recommendations from our geotechnical investigation dated 16 January 2007 and addendum letter dated 7 September 2007 were interpreted correctly. Specifically we reviewed:

1. Sheet C1 Grading and Drainage Plan September 2007;
2. Sheet C2 Profiles and Sections dated September 2007;
3. Sheet C3 Details 1 and 2 dated September 2007;

As outlined in our addendum letter back cut-slopes behind walls in elastic silts, or highly fractured bedrock will be inclined no steeper than 1:1 (horizontal to vertical). In areas of weakly fractured bedrock the cut slope gradients are ½:1 (horizontal to vertical) or flatter. Surface runoff will be collected in concrete lined swales at the toe of the back cut slope and carried to a Christy box that discharges through the base of the wall near the bottom of the driveway. The driveway will be sloped a minimum of 2 percent toward the inboard side (west side) where either an asphalt dike or the base of the wall will direct surface runoff to one of several Christy boxes along the inboard side of the road. The Christy boxes will discharge the runoff into either a rip-rap pad or into an existing storm drain both on the east side of Rodeo Gulch.

Roof runoff from the proposed garage and residence will be collected in down spouts and carried through solid pipe to lateral spreaders located 80 feet northwest of the garage and 70 feet southwest of the residence. Each lateral spreader will consist of a 15 foot long by 1 foot wide by 1 foot deep trench lined with Mirafi 140N fabric and filled with gravels. Roof runoff for the accessory dwelling unit will be collected in down spouts and carried through solid pipe to a 4 foot by 8 foot rip rap pad adjacent to the west side of Rodeo Gulch.

Environmental Review Inital Study
ATTACHMENT 7a, Lot 2
APPLICATION 07-0341

It is our opinion the geotechnical aspects of the proposed plans have been well prepared and are in general conformance with our recommendations. Haro Kasunich and Associates should observe the earthwork operations during construction. This will allow us to see that our recommendations have been met and the soil conditions are consistent with those inferred from our 16 January 2007 investigation and 7 September 2007 addendum letter.

Haro Kasunich & Associates has reviewed only the geotechnical aspects of these plans. We are not the Civil or Structural Engineers of Record for this project. We provide no warranties, either expressed or implied, concerning the dimensions or accuracy of the plans and analysis.

We appreciate the opportunity to be of service. If you have any questions, please call our office.

Very truly yours,

Reviewed By:

HARO, KASUNICH AND ASSOCIATES, INC.

John E. Kasunich
G.E. 455

Moses Cuprill
Staff Engineer

MC/sq

Copies: 2 to Addressee
1 to RI Engineering
1 to Hans Nielson, CEG
2 to Dee Murray
1 pdf to richard.bruce@gmail.com

Environmental Review Inital Study
ATTACHMENT 7a 2 of 2
APPLICATION 07-0341

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

October 1, 2007

Job No. SCr-1184-G

Richard Bruce
1956 Alford
Los Altos, CA 94024

SUBJECT: Review of revised grading and drainage plan for a new single family home.

REFERENCE: APN 102-011-08, Rodeo Gulch Road, Santa Cruz County, California.

Dear Mr. Bruce:

We reviewed a revised grading and drainage plan for your new single family home and driveway. Development of the property will consist of a main home, a detached 3-car garage, and a detached auxiliary dwelling unit. We previously reviewed plans in May 2007. As we understand changes to the plans, the only changes pertinent to our work involved the shifting of the auxiliary dwelling unit about 10 feet south of the previous location, so this is the only issue addressed in this letter. Please refer to our May 2007 letter for additional comments on the plans. The plan was prepared by R.I. Engineering, Inc. and dated September 2007. We reviewed only Sheet C1 since this is the only sheet containing information pertinent to our geologic report which we completed in October 2006.

The plan shows a revised configuration and location for the auxiliary dwelling unit. The house has been shifted so that it is 30 feet from the northern property line. The location of the home is acceptable from a geologic standpoint. Our only comment regards the subterranean retaining wall downslope of the home that is intended to retain engineered fill on which the home's foundation will rest. It is our opinion that a wing to the retaining wall will be necessary along the south side of the home. The wing can be oriented at about 45 degrees to the shown wall so that the wing roughly parallels the boundary between fractured and highly fractured rock shown on our site plan and on these plans. We estimate the wing wall will have to be about 22 feet long in order to adequately retain the engineered fill that is to be placed beneath the home. This change can be made when the plans are finalized.

In our opinion, the plan has been well developed. It adheres to the recommendations in our geologic report . The two homes and garage are located in the general areas that we intended and are indicated in our report.

Sincerely,

Hans Nielsen
C.E.G. 1390

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

Environmental Review Initial Study
ATTACHMENT 9
APPLICATION 07-0341

1070 W. Antelope Creek Way•Oro Valley, Arizona 85737•(831) 295-2081

COUNTY HEALTH SERVICES AGENCY - ENVIRONMENTAL HEALTH SERVICE - 701 OCEAN ST, RM 312, SANTA CRUZ, CA 95060 (831) 454-2022

APPLICATION FOR WELL PERMIT

☒ NEW ☐ REPLACEMENT ☐ SUPPLEMENTAL ☐ DESTRUCTION ☐ OTHER _____ ☐ MONITORING WELL

102-011-08 (ASSESSOR'S PARCEL NUMBER) | 4.786 acres (PARCEL SIZE) | 07-216 (PERMIT #) | SR5987 (ENVISION #) | 4669 PROGRAM ELEMENT

SITE ADDRESS _____

OWNER Richard Wypych ADDRESS 417 McCormick Ave, Capitola CA 95010

DRILLING CONTRACTOR Earth Flow LICENSE # 800269 PHONE 423-3288

DIRECTIONS TO SITE Call Dawn for directions

CASH REGISTER VALIDATION

09/21/07 10:31AM 000B#1945 000
FL4669 $1024.00
CHECK $1024.00

DESIGN SPECIFICATIONS:

INTENDED USE
DOMESTIC: ✓
#Homes Served 1
WATER SYSTEM WELL: ___
Name of Water System _____
IRRIGATION ___
COMMERCIAL/INDUSTRIAL ___
MONITORING: ___
GRDWTR ___ VADOSE ___
OTHER: ___ (SPECIFY)

DISTANCE FROM WELL SITE TO:
SEPTIC SYSTEMS 100' +
SEWER —
NEAREST PROPERTY LINE 50'

CASING
SINGLE ✓ DOUBLE ___
MATERIAL PVC plastic
TYPE OF JOINT Coupling
GRAVEL PACK ✓

TYPE OF WELL CONSTRUCTION
ROTARY ✓
CABLE ___
DUG ___
OTHER ___

ESTIMATED WORK DATES: START Will Call COMPLETION _____

WITHIN WATER DISTRICT SERVICE AREA ✓ NO ___ YES NAME: _____ (FORM HSA-579-REQUIRED)

CONSTRUCTION DEPTH (FT.) ±600' DIAMETER (IN.) 5 inch DEPTH OF SEAL (FT.) 50 ft. WIDTH OF SEAL (IN.) 2 inches

EXISTING WELLS ON PROPERTY:
1. OTHER WELLS ON PROPERTY: NUMBER: 0 TYPES: DOMESTIC ___ IRRIGATION ___ COMMERCIAL USE ___ OTHER _____
2. CONDITION OF OTHER WELLS ON PROPERTY: IN USE _____ TO BE DESTROYED _____
3. IF NEW WELL REPLACES AN EXISTING WELL, INDICATE INTENTIONS FOR USE OF REPLACED WELL:
___ TO SUPPLEMENT NEW WELL ___ TO BE DESTROYED ___ OTHER _____

WELL DESTRUCTION: DEPTH OF WELL _____ DEPTH OF SEAL: _____ NUMBER OF WATER FORMATIONS PENETRATED _____
CLEANING OF WELL REQUIRED YES: ___ NO: ___ SEALING MATERIAL _____

PLOT PLAN: ATTACH 2 COPIES OF PLOT PLAN (SEE REVERSE FOR REQUIREMENTS)

I HEREBY AGREE TO COMPLY WITH ALL LAWS AND REGULATIONS OF THE COUNTY OF SANTA CRUZ AND STATE OF CALIFORNIA PERTAINING TO WELL CONSTRUCTION, AND DECLARE UNDER PENALTY OF PERJURY THE INFORMATION SUBMITTED ON THIS APPLICATION IS TRUE AND CORRECT. I WILL CONTACT THE ENVIRONMENTAL HEALTH SERVICE WHEN I COMMENCE THE WORK. WITHIN 15 DAYS AFTER COMPLETION OF WORK I WILL FURNISH THE ENVIRONMENTAL HEALTH SERVICE A REPORT OF THE WORK PERFORMED AND NOTIFY THEM BEFORE PUTTING THE WELL INTO USE. **I UNDERSTAND THAT THIS PERMIT EXPIRES ONE YEAR FROM DATE OF ISSUANCE.** I UNDERSTAND APPROVAL OF THE WELL PERMIT DOES NOT INDICATE WHETHER THIS PROPERTY IS SUITABLE FOR AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM OR THAT A PERMIT TO INSTALL SUCH SYSTEM WILL BE GRANTED.

WORKER'S COMPENSATION CERTIFICATE

✓ A CURRENTLY EFFECTIVE CERTIFICATION OF WORKERS COMPENSATION INSURANCE IS ON FILE WITH THIS OFFICE.
INSURANCE CARRIER State Fund POLICY # On File

___ I CERTIFY THAT IN THE PERFORMANCE OF THE WORK FOR WHICH THIS PERMIT IS ISSUED I SHALL NOT EMPLOY ANY PERSON IN ANY MANNER SO AS TO BECOME SUBJECT TO THE WORKER'S COMPENSATION LAWS OF CALIFORNIA

PROPERTY OWNER (X) _____ DRILLING CONTRACTOR (X) _____ 9/21/07

FOR OFFICE USE ONLY:

ENVIRONMENTAL ASSESSMENT REQUIRED YES ___ NO ___

METER REQUIRED YES ___ NO ___ METER INSTALLED _____ DATE _____ READING _____

	DATE	EHS SPECIALIST
SITE INSPECTION	10/3/07 & 11/1/07	RST
APPLICATION APPROVAL	11/5/07	RST
PAD INSPECTION		
RECEIPT OF WELL LOG		
FINAL		

ANNULAR WELL SEAL WITNESSED:
___
___ YES DATE _____
___
___ NO DEPTH _____
SEAL MATERIAL _____
SACKS CEMENT/YARD _____

COMMENTS: _____

DISTRIBUTION: WHITE - EHS /YELLOW - WELL DRILLER /PINK - ~~ENVIRONMENTAL CONTROL~~ /GOLDENROD - RECEIPT

Well Permit Application - PHD-133.WPD (REV. 10/03)

Environmental Review Initial Study
ATTACHMENT 9
APPLICATION 07-034

County of Santa Cruz

HEALTH SERVICES AGENCY

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 95060-4073

(831) 454-2022 FAX: (831) 454-3128 TDD: (831) 454-4123

ENVIRONMENTAL HEALTH

September 24, 2007

Richard and Bronwyn
417 Mccormick Avenue
Capitola, CA 95010

RE: Assessor's Parcel Number 102-011-08

Dear Mr. and Mrs. Wyrsch:

The septic system design submitted by you for the development of the above parcel, can be approved under current septic regulations contingent upon development of an approved water supply.

An approved water supply must be developed within twelve (12) months from the date of your sewage disposal application or your application will expire. Your sewage disposal application will expire on August 3, 2008.

Please be advised that septic system regulations are subject to change and therefore, this letter does not constitute a guarantee of future approval.

Sincerely,

Rubén Sánchez T.

Rubén Sánchez T.
Registered Environmental Health Specialist III

RST:ls

EHS-108

Environmental Review Inital Study
ATTACHMENT 10
APPLICATION 07-0341

RI Engineering, Inc.

DRAINAGE CALCULATIONS

For
A Residence and Driveway
At
Rodeo Gulch Road
Santa Cruz County

APN 102-011-08

September 7, 2007

Prepared For:
Richard Bruce

Prepared By:
Richard Irish Engineering
Project Number 06-058-1

9/14/07

Environmental Review Inital Study
ATTACHMENT 11, 1 of 3
APPLICATION 07-0341

1. **Design Criteria**

Storm drainage improvements described in this document have been designed in accordance with the Santa Cruz County Design Criteria, June 2006 Edition (Design Criteria), Part 3, "Storm Drainage." Hydrologic calculations have been completed in conformance with Section C, "Hydrology." All drainage improvements have been designed to convey a 10-year design storm. Peak flows are for a 10-year design storm and were calculated using the Rational Method as described in the above noted Design Criteria.

2. **Project Description:**

The project consists of constructing a new residence, garage and accessory dwelling unit on an undeveloped parcel along Rodeo Gulch Road in Santa Cruz County, California. Associated improvements include driveway realignment and storm drain systems.

3. **Existing Conditions:**

The development area is situated on the top of a knoll and is currently covered with grass, and scattered trees. A dirt driveway has been constructed, but is in unsuitable soil and will be realigned. The majority of the development area slopes steeply to the east. Runoff is currently conveyed overland to a roadside swale along the west side of Rodeo Gulch Road. Two 10-inch corrugated metal culverts convey runoff beneath Rodeo Gulch Road and discharge to the hillside to the east of the project site. Runoff flows easterly overland for approximately 450 feet until discharging to Stream 1473 as named in the Santa Cruz County GIS system. Stream 1473 flows southeasterly for approximately 2 miles until discharging to Soquel Creek. Runoff from the western portions of the site is conveyed westerly overland for approximately 2,000 feet and discharges to Crystal Creek. Crystal Creek conveys runoff southwesterly approximately 1.5 miles and joins Branciforte Creek.

Because most of the runoff from the site is conveyed through two separate culverts, The site will be analyzed as two separate (north and south) drainage areas. The Runoff coefficient for the drainage areas is currently 0.35. The peak runoff conveyed by the north 10-inch corrugated metal culvert is approximately 0.42 cfs. The peak runoff conveyed by the south 10-inch corrugated metal culvert is approximately 0.17 cfs. Attached flow calculations demonstrate that the existing culverts are adequate in capacity to convey this runoff.

4. **Proposed Development:**

The proposed development will add approximately 10,100 square feet of impervious area to the parcel. In order to maintain pre-development peak flows, the excess storm water will be detained. Two detention systems are proposed. Approximately 3,500 square feet of impervious area will be added within the 4,900 square foot area which drains to the north detention system. Approximately 2,600 square feet of impervious area will be added within the 6,080 square foot area which drains to the south detention system.

Runoff from approximately 865 square feet of new impervious area at the bottom of the proposed driveway does not flow to the south detention system. This bypass was accounted for in the design, such that the peak runoff rates from the south detention system and this portion of driveway add up to the proper pre-development rate.

Runoff from new roofs will be collected by perimeter storm drains and hard piped away from structures as recommended by the geotechnical engineer (see attached). Runoff from the proposed main residence (2,345 square feet), and garage (790 square feet) will discharge through level spreaders and flow overland in natural drainage courses per the project geologist's recommendations (see attached).

Environmental Review Initial Study
ATTACHMENT 4 part 3
APPLICATION 07-0341

Runoff from the northern portion of the site will be collected by a catch basin. This runoff will be conveyed by an 8-inch diameter storm drain to the north detention system. The detention system will consist of 8 feet of 3-foot diameter pipe. Storm water will be metered to pre-development flow by a 1 1/4-inch diameter orifice. Runoff from the north detention system will be conveyed easterly by an 8-inch diameter storm drain and will discharge to the roadside swale along the west side of Rodeo Gulch Road.

Runoff from the southern portion of the site will be collected by a catch basin and conveyed by an 8-inch diameter storm drain to the south detention system. The south detention system will consist of 17 feet of 3-foot diameter pipe. Storm water will be metered to pre-development flow by a 1 1/16-inch diameter orifice. Runoff from the south detention system will be conveyed easterly by an 8-inch diameter storm drain and will discharge to the roadside swale along the west side of Rodeo Gulch Road

5. **Conclusions:**

The proposed drainage system has been designed to convey runoff resulting from a 10-year design storm in accordance with the Design Criteria. Increased peak runoff will be detained, and runoff will be released at pre-development rates. No adverse downstream impacts are anticipated.
See attached storm drainage calculations.

ARBORIST REPORT

Oak Woodland Analysis and
Construction Impact Assessment

LOCATION

4545 Rodeo Gulch
APN # 102-011-08
Application # 07-0341

PREPARED FOR

Richard Bruce

PREPARED BY

Christine-Sara Bosinger
Certified Arborist WE-4309
Quality Arbor Care
831-423-6441
PO Box 335
Capitola, CA 95010

This evaluation was prepared to the best of our ability at Quality Arbor Care, in accordance with currently accepted standards of the International Society of Arboriculture. No warranty as to the contents of this evaluation is intended and none shall be inferred from statement or opinions expressed. Trees can and do fail without warning.

SCOPE OF WORK

APN 102-011-08 is a multi-acre parcel located in Santa Cruz County; this parcel has significant oak canopy coverage and is classified as an Oak Woodland. Richard Bruce has submitted plans for proposed development on a partial piece of this land, application #07-0341, and this proposed construction will include construction of three buildings and grading for a driveway. I was hired to assess the site, locate and map oaks and provide tree preservation plans for the oaks within the construction zone. In order to complete this I have done the following:

- Visually mapped all oak trees that will be impacted by construction
- Inventoried all oaks, assessed their health based on over all vigor, structural integrity, and disease
- Create tree preservation specification for the duration of construction
- Offer mitigation recommendations for the oak woodland

SUMMARY

Disease and decay is present in most of these oak trees and their removal will only help the over all health of the oak woodland. I have recommended the removal of many oaks that would not be impacted by construction but their removal and then replanting of healthy oaks would only benefit the over all forest. In my inventory I have listed trees to be removed due to construction, trees that should be removed because they are diseased and dying and trees that are to be preserved.

I am suggesting that the removal of the diseases and dying trees and the replanting of new oaks be part of the oak woodland mitigation process.

BACKROUND

Some land clearing and grading has been done previously. In order to move forward with the permit process I have visited the site in November with the landowner and again in December with both Antonella Gentile and Matt Johnson, with the County of Santa Cruz Environmental Planning.

I have included my assessment of all the oak trees that are in the construction area and have also counted all stumps of previously removed oaks that have a diameter greater then 5".

The criteria I have used to assess the oak trees are based on visual examination. This includes assessments based on over all canopy vigor, amount of healthy leaf coverage, presence of wood and trunk decay, and amount of disease.

At the site I have labeled each oak tree with an inventory number, which corresponds with the map provided in this report. I have also marked all the trees with marking paint. All trees marked with a red dot are to be removed due to construction. Trees with a green dot are to be removed

because they are what is to be considered diseased and dying. Trees with both a red and green dot are to be removed because of construction but yet they should be removed anyway because of their over all poor health. Lastly, trees marked with a white dot are to be preserved. The color marking of trees is for easy visual inspection at the site location.

Site examination

This parcel is in a rural part of Santa Cruz County in a heavily oak wooded area on N. Rodeo Gulch Road.

At some point a driveway was cut in at N. Rodeo Gulch to the top of the northeast corner of the parcel. The driveway is approximately 240 feet long with a significant degree of incline. At the top of the drive it appears that there has been some land clearing and I counted a total of sixteen (16) oak stumps.

From looking at aerial photos of this parcel my rough estimate would be that 75% of this area is covered with tree canopy. Of this 75% I would asses that 65 - 70% of this coverage is oak canopy coverage. Please note that my inventory does not include all oaks on this parcel but only the ones in the general vicinity of the proposed construction.

On site inspection shows that the remaining coverage consists of mostly native *Heteromeles arbutifolia*, Toyon, *Baccharis*, *Arbutus menziesii*, Madrones and a some of *Pseudotsuga menziesii*, Douglas Firs.

DISCUSSION

The oaks in this area of the parcel for the most part are in poor health. Most of them have significant amounts of decay with relative poor canopy vigor. The structure of most of these trees are also what would be considered poor. While I am recommending that ten (10) of the forty-two (42) oaks that I inventoried remain I can not guarantee their future survival as even these are in only fair condition.

Seventeen (17) of the trees I am recommending for removal due to construction however, out of this 17 only three of them are in fair health with the remaining 13 trees being in very poor health. With another fifteen (15) trees to be removed because they are in such poor overall health.

The removal of these trees, a total of thirty-two (32), will give more canopy space for the remaining trees and room to re-plant trees of better health and structure. If these trees are left they will continue to die, acting as host of pests and disease that could spread to other healthier trees in the area. The trees that have very poor structure will lose large limbs damaging the other oaks near them. As large wounds occur, due to poor structure, this leaves an entre point for pest and disease.

Along with re-planting oaks as part of the mitigation of this project I would also recommend a tree maintenance plan for the remaining oaks to help lengthen their life span.

CONSTRUCTION SPECIFICATION

1. GENERAL

1.1. A 6' chain link fence with posts sunk into the ground shall be erected in what is known as the critical root zone. This is the area under the drip line of the canopy. Straw bails shall be placed against the fencing, secured with metal or wooden stakes through the bails and into the ground of a depth of about 10". This is to protect the fencing and further protect the tree and the critical root zone. Where appropriate trees may be fenced together.

1.2. A 4-6" layer of mulch shall be placed within the fence on the critical root zone but 12" from the trunk of the tree.

1.3. No construction debris or dirt shall be left under the canopy of these trees.

1.4. No equipment containing any type of toxic chemicals, paint, or cement shall be cleaned near these trees.

1.5. No storage of equipment of any type shall happen near these trees.

2. SPECIFICATIONS FOR ROOT PRUNING

2.1. The excavation contractor shall meet with the consulting arborist at the site prior to beginning work to review tree protection measures.

2.1.1. All roots needing to be pruned shall be cut cleanly with a sharp hand tool, with oversight by the consulting arborist. If roots that have not been pruned are encountered during digging, heavy equipment operation will cease. The area will be dug by hand and the roots will then be properly pruned.

2.2. Exposed roots are extremely sensitive to drying, frost, and disease. All exposed and pruned roots shall be covered with burlap and kept moist until the roots are covered back by soil.

3. SPECIFICATIONS FOR PRUNING

3.1. Pruning of the trees needs to be done under the supervision of the consulting arborist.

3.2. All pruning of tree shall be in accordance with the American National Standards A300 (Part1)-2001 Pruning.

3.3. All pruning of trees shall take place prior to construction and placement of construction fencing.

3.4. Canopy clean 10 oak trees, removing decayed, dead and disorientated branches.

3.5. Raise canopy of 10 oak trees for a 14½ foot clearance for fire trucks and construction work. No cuts larger than 2" in diameter should be made in raising the canopy.

4. SPECIFICATIONS FOR TREE AND STUMP REMOVAL

4.1 All tree removal shall be done before the start of construction and but after the placement of the tree protection fencing.

4.2 Where appropriate trees may be felled. If any protected trees are damaged during the removal of trees then the project arborist will be called immediately to asses the damage.

4.3 Where there is not enough room to fall trees then they will be climbed and brought down in pieces.

4.4 All work on the protected trees will be done under the supervision of the project arborist.

4.5 The removal of stumps needs to be done with a stump grinder. If any type of back hoe is

used to remove these stumps then damage to remaining plants will occur. No root chasing should occur and the stumps should be ground to a depth of 16 – 18" below soil grade.

5. TREE PLANTING

5.1. A total of six (6) 24" box *Quercus agrifolia* shall be planted in the area to the west of the driveway.

5.2. A total of (4) 24" box *Quercus agrifolia* shall be planted in the area neat trees #19 – 21.

5.3. Remaining plantings of trees for mitigation shall be 15 gallon *Quercus agrifolia* planted to the east side of the driveway and around the area of the proposed garage.

5.4. All trees shall be planted under the supervision of the project arborist.

5.5. Soil shall be amended for optimal health of the trees.

6. TREE MAINTENANCE

6.1. Upon completion of construction and removal of construction fencing all remaining trees shall be deep root fertilized.

6.2. Trees will be pruned again in two years and fertilized again at this time.

6.3. After the second year maintenance cycle the trees should be reassessed and a pruning/fertilization time schedule can be determined.

CONCLUSION

The proposed construction for 4545 N Rodeo Gulch Road really only requires the removal of 17 trees but I am recommending that a total of 32 trees be removed. The removal of these trees will help with the overall oak woodland not only on this parcel but the surrounding properties too.

I would suggest that the removal of the 15 trees that are being removed only to help the overall oak woodland be part of the mitigation consideration. Also, the planting of 10 24" box trees and an undetermined amount of 15 gallon trees help satisfy mitigation.

While I am not confident that the 10 trees that I am recommending to be preserved will thrive. I feel that they are worth the effort to try to help and save.

The on going care of the remaining and newly planted oak trees will help with the future health and vigor of the trees preserving the overall oak woodland.

REFERENCES

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ATTACHMENT 12 to Environmental Review Initial Study
APPLICATION 07-0341

4545 N RODEO GULCH RD.
TREE INVENTORY

Tree #	Specieses	D.B.H.	HEALTH OF TREE	DISCRIPTION OF ACTION
1	*Quercus agrifolia*	13"	diseased and dying	remove for construction and poor health
2	*Quercus agrifolia*	10,12"	diseased and dying	remove due to over all poor health
3	*Quercus agrifolia*	5"	diseased and dying	remove due to over all poor health
4	*Quercus agrifolia*	9"	diseased and dying	remove due to over all poor health
5	*Quercus agrifolia*	7"	diseased and dying	remove due to over all poor health
6	*Quercus agrifolia*	9"	fair to poor	preserve
7	*Quercus agrifolia*	12"	diseased and dying	remove for construction and poor health
8	*Quercus agrifolia*	24"	fair	remove for construction
9	*Quercus agrifolia*	10"	poor	preserve
10	*Quercus agrifolia*	13"	poor	preserve
11	*Quercus agrifolia*	20"	diseased and dying	remove for construction and poor health
12	*Quercus agrifolia*	10"	diseased and dying	remove due to over all poor health
13	*Quercus agrifolia*	8"	diseased and dying	remove due to over all poor health
14	*Quercus agrifolia*	8"	poor	preserve
15	*Quercus agrifolia*	6"	poor	preserve
16	*Quercus agrifolia*	26"	fair to poor	remove for construction
17	*Quercus agrifolia*	18"	fair	preserve
18	*Quercus agrifolia*	8"	diseased and dying	remove for construction and poor health
19	*Quercus agrifolia*	8,8"	fair	preserve
20	*Quercus agrifolia*	9,7"	fair	preserve
21	*Quercus agrifolia*	12,8"	fair	preserve
22	*Quercus agrifolia*	10,10, 12,12"	fair	remove for construction
23	*Quercus agrifolia*	28"	diseased and dying	remove for construction and poor health
24	*Quercus agrifolia*	16"	diseased and dying	remove for construction and poor health