Staff Report to the Agricultural Policy Advisory Commission

Application Number: 191185

Applicant: Jon Kiser
Owner: Kiser
APN: 105-041-02

Date: November 21, 2019
Agenda Item #: 7
Time: 1:30 p.m.

Project Description: Proposal to demolish an existing single-family dwelling and a detached garage, to construct a 1,750 square-foot single family dwelling within approximately 42 feet of Type 2B agricultural resource land, and to construct a garage of approximately 1,280 square feet. Requires an Agricultural Buffer Reduction Determination to reduce the required 200-foot setback.

Location: Property located on the west side Larson Road (1071 Larson Road), approximately one-mile northwest of the intersection with Trout Gulch Road, within the Aptos Hills Planning Area.

Permits Required: Agricultural Buffer Setback Reduction (APAC)

Staff Recommendation:

- Determine that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approve Application 191185, based on the attached findings and conditions.

Exhibits

A.	Project plans	F.	Preliminary Geologic Hazards Investigation (part) (REV191018)
B.	Findings	G.	Geologic Map
C.	Conditions	H.	Map of property uses on adjacent CA parcel (provided by applicant)
D.	Categorical Exemption (CEQA)		
E.	Assessor's, Location, Zoning, and General Plan maps		

Parcel Information

Parcel Size:	31.2 acres
Existing Land Use - Parcel:	One single-family dwelling, one detached garage, fruit orchard, family garden
Existing Land Use - Surrounding:	The CA-zoned parcel to the east has three dwelling units,

	orchards at 300+ feet, and scattered fruit and ornamental trees. The parcel to the NE is Nicene Marks State Park. Two residential parcels are located to the south.
Project Access:	Private road
Planning Area:	Aptos Hills
Land Use Designation:	Mountain Residential (non-designated soils)
Zone District:	A (Agriculture)
Supervisorial District:	2 (Friend)
Within Coastal Zone:	__ Inside _X_ Outside
Appealable to Coastal Comm.	__ Yes _X_ No

Services Information

Inside Urban/Rural Services Line:	__ Yes _X_ No
Water Supply:	Private well
Sewage Disposal:	Septic
Fire District:	Aptos-La Selva
Drainage District:	Outside

Analysis and Discussion

The proposed agricultural buffer reduction is to allow construction of a 1,750 square-foot single story replacement single-family dwelling on an approximately 31.2-acre parcel. The project is located near the end of Larsen Road, approximately one mile northwest of Trout Gulch Road. The proposed building site is within 200 feet of Commercial Agriculture-zoned land to the east. The applicant is requesting a reduction in the 200-foot agricultural buffer setback to approximately 42 feet from the adjacent agricultural parcel, APN 105-041-01. The house to be demolished is 56'2" from the property line, with decks 47'8" from the property line. The proposed replacement dwelling unit would thus effectively reduce the setback to intensive human use by approximately 6'2".

Other than its northwest side, which drops off steeply into a ravine, the subject property is characterized by moderately sloping topography (less than 30%) . The parcel is located outside the Urban Services Line in a rural neighborhood. The parcel is located within the R-M (Mountain Residential) General Plan designation and the implementing zone district is (A) Agriculture. The site does not have agricultural resource soils (Type 1-III). Commercial Agriculture zoned land is situated adjacent to the east property line on Assessor's Parcel Number 105-041-01.

Agricultural Buffer Reduction

The intent of the agricultural buffer ordinance is to provide a 200-foot setback between designated agricultural soils and non-agricultural activities, in order to minimize land-use conflicts between agricultural uses and nearby, non-agricultural uses.

The proposed house location, set back just 41'5" from the neighboring commercial agricultural lands, is driven by the subject parcel's geologic constraints. Most of the subject property is underlain by a large, very old (pre-Holocene) landslide deposit. A reduced agricultural buffer setback is required due to the fact that a geologic setback for the proposed dwelling unit is required from the

adjoining ravine (see Preliminary Geologic Hazards Investigation, REV191018, Exhibit F).

The location of the steep slope on the parcel is illustrated on the Geologic Map (Exhibit G). The exploratory trench excavated to evaluate slope stability is labeled T-1 on the map. Ground cracking was found towards the western end of this trench. A geologically suitable building envelope for the dwelling was designated at a location determined to be an appropriate distance from the slope and ground cracks. The building envelope is situated on the flattest area of the parcel, at about 4% slope. However, the site is within the 200-foot agricultural buffer setback.

The geologic investigation found that a location closer to the slope was acceptable for the proposed replacement garage, so the garage would be located more than 154 feet from the property line shared with the adjacent CA-zoned parcel, within the 200-foot agricultural buffer setback but further away than either the existing or proposed single-family dwelling. County Code 16.50.095 does not require a buffer reduction approval for accessory structures located a greater distance from a property line than an existing single-family dwelling.

Although there are no existing commercial agricultural activities on the adjoining agricultural resource lands (Type 2B, Limited Agricultural Land – Geographically Isolated) within 200 feet of the proposed dwelling unit, the applicant is proposing a buffer of fruit trees to reduce the potential impact of future agricultural activities on the proposed residential use. This buffer will protect the agricultural interests on the Commercial Agriculture-zoned parcels. No fence or hedge is proposed, in order to minimize shading of vegetable garden areas. The applicant will also be required to record a Statement of Acknowledgement regarding the issuance of a building permit in an area determined by the County of Santa Cruz to be subject to Agricultural-Residential use conflicts.

No public comments were received as of publication date.

Recommendation

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

- Staff recommends that your Commission **APPROVE** the Agricultural Buffer Reduction from 200 feet to about approximately 42 feet to the single-family dwelling from the adjacent CA zoned property known as APN 105-041-01, proposed under Application # 191185, based on the attached findings and recommended conditions.

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

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.sccoplanning.com

Report Prepared By: Jerry Busch
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
Phone Number: (831) 454-3234
E-mail: jerry.busch@santacruzcounty.us

Report Reviewed By: Annette Olson
Principal Planner
Development Review

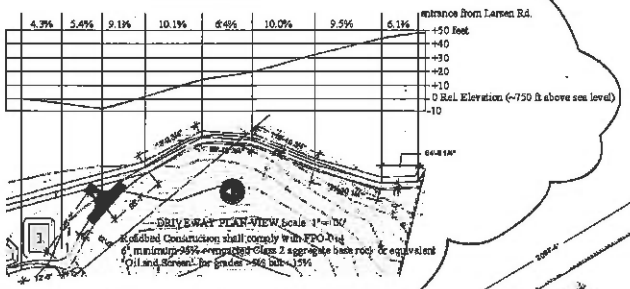
ECT DESCRIPTION
lish an existing derelict detached garage,
a new deached garage,
a new one-story single family home,
lish an existing two-story single family home.

These plans are in compliance with California Building and Fire Codes 2016 edition) and Santa Cruz County Amendments."

the job copies of the building and fire systems plans and permits must be n-site during inspections."

All buildings shall be protected by an approved automatic fire sprinkler system omplying with the currently adopted edition of NFPA 13D and adopted standards f Santa Cruz County"

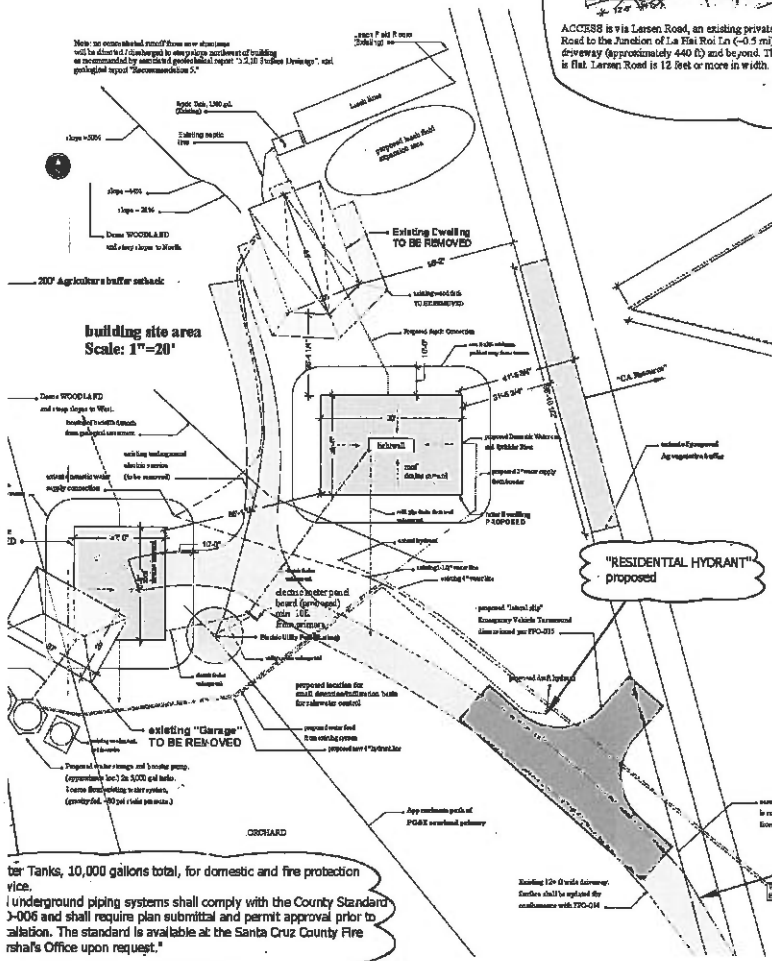
DRIVEWAY PROFILE



DRIVEWAY PLAN VIEW Scale 1"=50'

Roadbed Construction shall comply with FPO-044
6" minimum 95% compacted Class 2 aggregate base rock or equivalent
Oil and Screen" for grades >5% but <15%

ACCESS is via Larsen Road, an existing private road, it is PAVED from Trout Gulch Road to the Junction of La Hai Roi Ln (~0.5 mi), and thence GRAVEL to our driveway (approximately 440 ft) and beyond. The gravel portion is flat. Larsen Road is 12 feet or more in width.



ter Tanks, 10,000 gallons total, for domestic and fire protection vice.
underground piping systems shall comply with the County Standard)-006 and shall require plan submittal and permit approval prior to allation. The standard is available at the Santa Cruz County Fire rshal's Office upon request."

SUMMARY

Parcel area approx. 31.18 Acres
(1,358,375 square feet)
Proposed House: 1672 sq. ft.
Proposed Garage: 1280 sq. ft.
lot coverage: 0.22 %

Square Footage			
	to be removed	to be added	
[illegible]	1830		
[illegible]	1007		
[illegible]	~960		
new dwelling, 2 stories	-	1672	
new detached garage		1280	
other impervious surfaces (lightwell, patios, etc.)		135 (est.)	
impervious area totals	2599	5087	

Utility Districts: None

DRAINAGE CONTROL & STORMWATER MANAGEMENT
(prepared by property owner.)
Required grading will be minimal, largely confined to required excavations for footings and slabs.

- Any bare soils shall be covered with seed and straw mulch during winter season.
- Disturbance will be generally limited to the footprints of the structures plus surrounding ~10 ft.
- A small detention basin is proposed at the outlet of the roof drains to accommodate anticipated higher than normal flow events.
- Total impervious area increase is minimal (428 sq ft) and can easily be accommodated without risk of erosion.

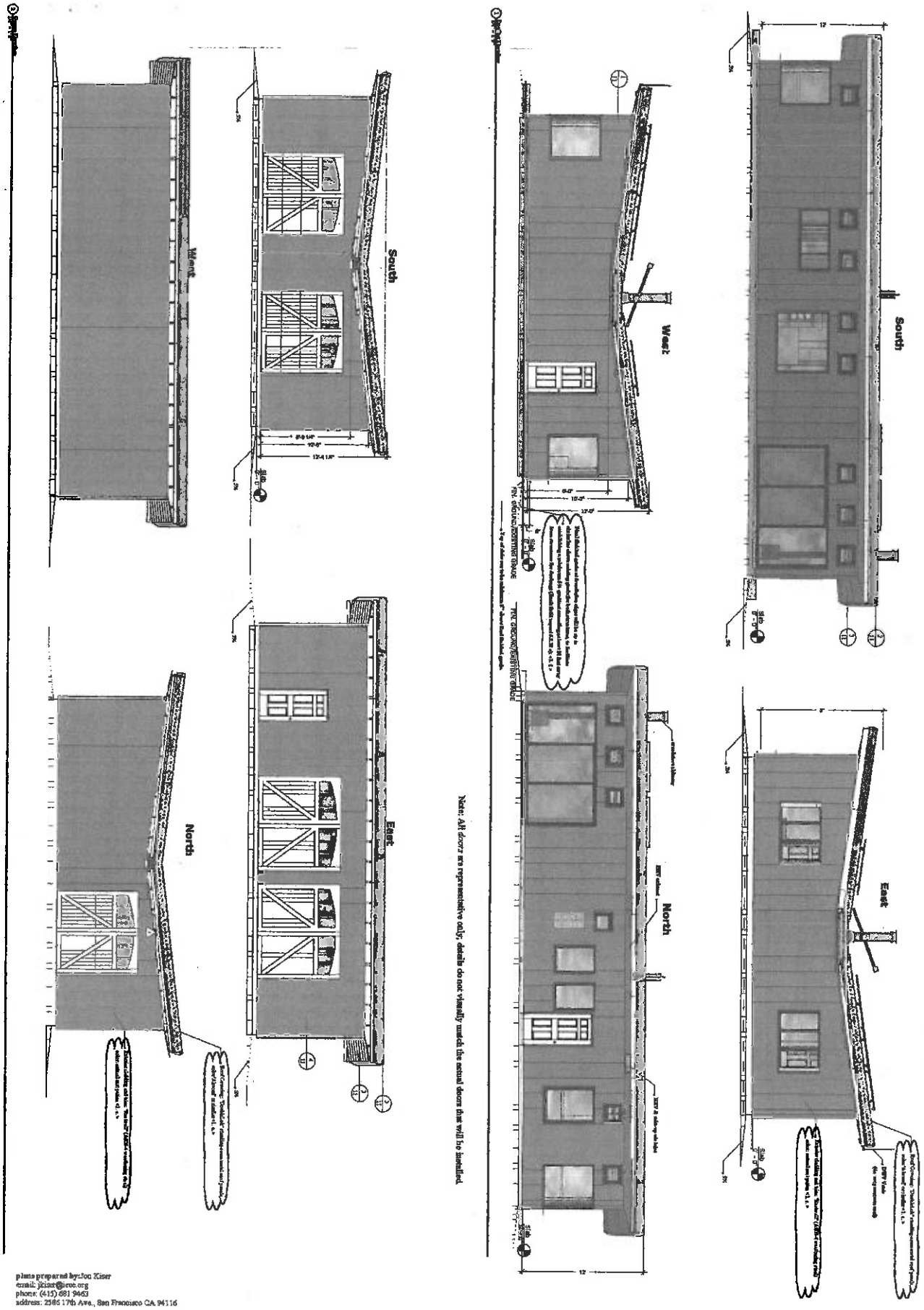
Parking:
Paved and garage is sized to accommodate 2-4 vehicles, depending upon lengths. Additional vehicles can be accommodated in front of the garage. The Lateral Slip is for emergency vehicle use only and is not to be used for parking.

Access Driveway, existing, conforms to width and slope requirements.
Width 12 feet minimum, unobstructed.
Maximum slope ~10%
Vertical clearance maintained >15 ft.

Site Access
Driveway Joins Larsen Road Here
Gate must remain closed except to pass, and is normally locked, contact owner for access.
Directions:
from Aptos, follow Trout Gulch Road,
Turn left on Larsen Road, proceed bay ond the paved road (pavement ends at junction with La Hai Roi Ln.)
1071 will be on the Left.
Note: Larsen is a one-lane two-way road in steep terrain with limited turnouts, downhill traffic yields to uphill traffic. Wait at turnouts for oncoming vehicles.

plans prepared by: Jon Kiser
email: jkiser@pacbell.net
phone: (415) 681 9463
address: 2586 17th Ave., San Francisco CA 94116

DRAWN BY: Jon Kiser
DESCRIPTION: Site Plan
PROJECT: 1071 Larsen Road APN 105-041-02
ISSUE: 06.26.19
RE-ISSUE: 08.14.19
OWNER-BUILDER: Jon Kiser
SHEET CONTENTS: Site Plan
EXHIBIT A
01



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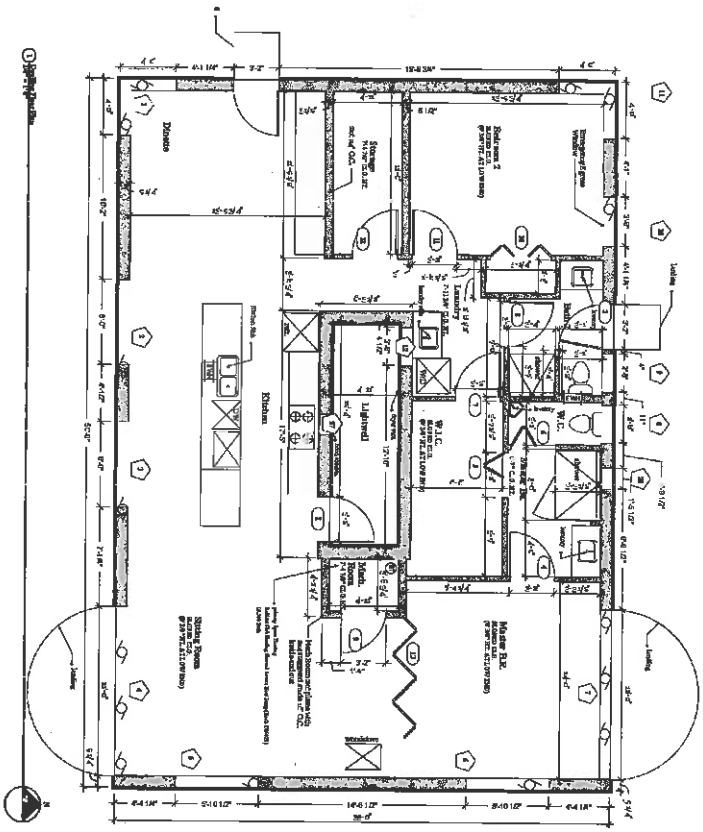
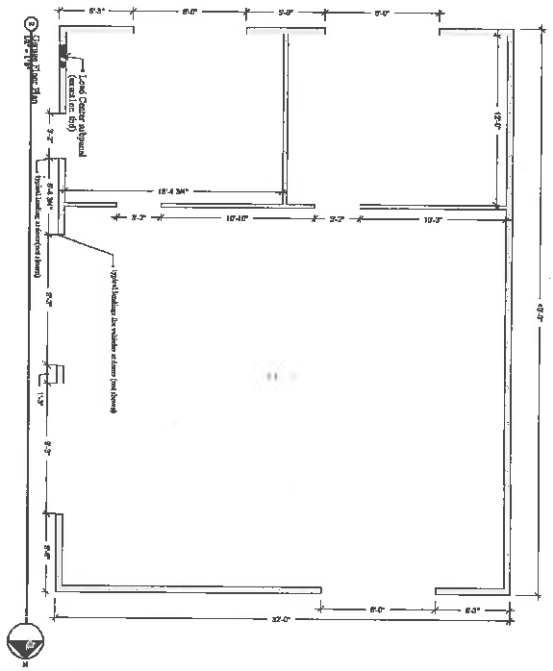
email: jkiser@ieee.org
phone: (415) 681 9463
address: 2586 17th Ave., San Francisco CA 94116

02		DRAWN BY Jon Kiser	PROJECT 1073 Larsen Road APN 105-041-02	ISSUE 06.26.19 RE-ISSUE 08.14.19	OWNER-BUILDER Jon Kiser	SHEET CONTENTS **Elevations**

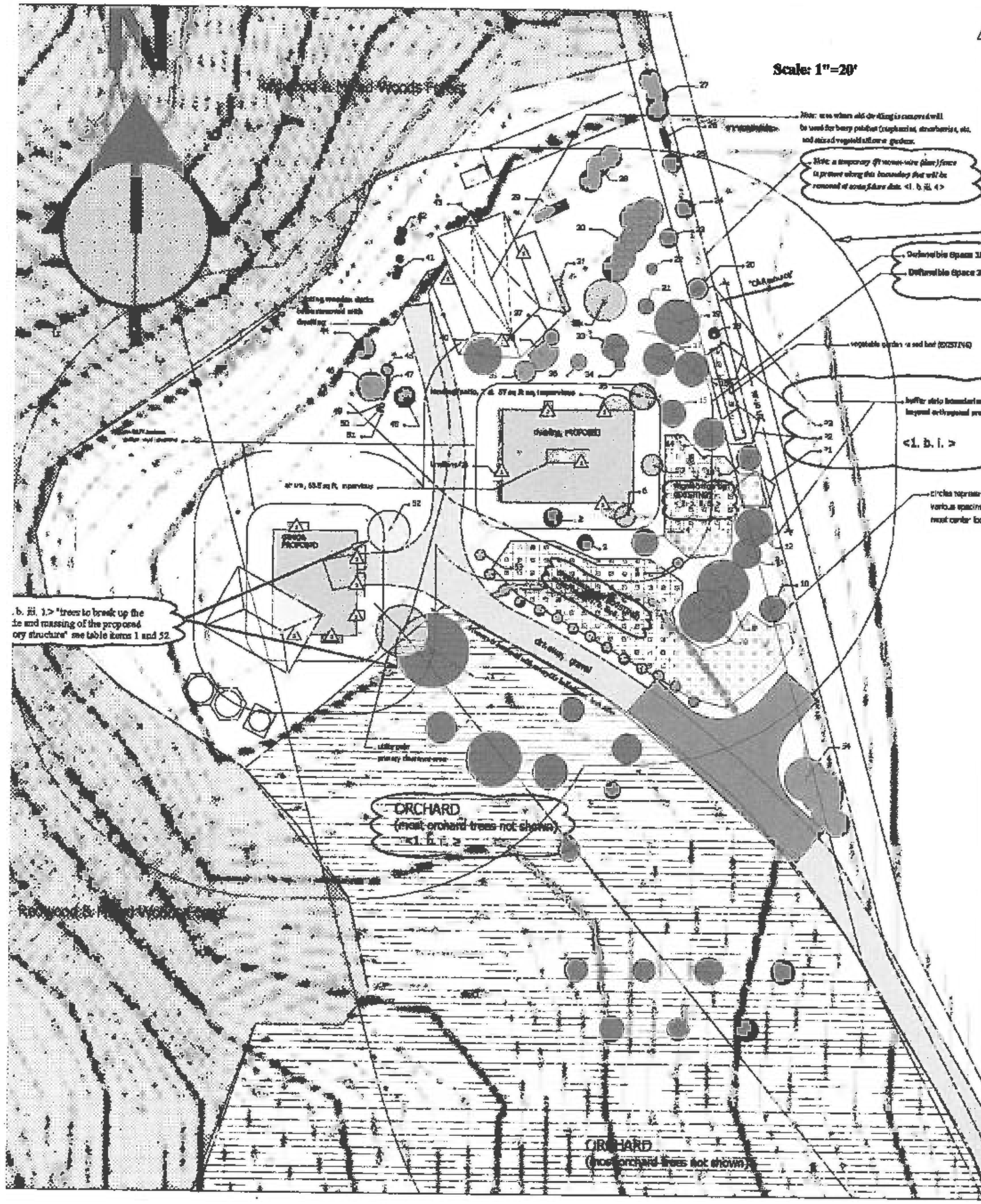
EXHIBIT A





plans prepared by: Jon Kiser
email: jkiser@ieee.org
phone: (415) 681-9463
address: 2586 17th Ave., San Francisco CA 94116

03		DRAWN BY Jon Kiser	PROJECT 1071 Larsen Road APN 105-041-02	ISSUE 06.26.19 RE-ISSUE 08.14.19	OWNER-BUILDER Jon Kiser	SHEET CONTENTS **Floor Plans** **EXHIBIT A**



FIRE RESISTANCE NOTES:

- All existing or proposed trees within the 30-foot defensible space boundary are fire resistant (well maintained deciduous fruit trees and citrus), and spaced sufficiently to hinder spread of fire. Non fire-resistant specimens are few, relatively small, and widely separated (items 39,53).
- The assertion that the 97 foot long agricultural buffer be dense and tall prima facie conflicts with widely recommended guidelines for legally mandated defensible space: that trees be widely spaced to reduce fire spread, with lower limbs removed up 10-15 feet to reduce ladder fuels within 100 feet of structures.
- The proposed spacing of additional buffer vegetation (P1-P3) is intended to avoid creating a hazardous dense fuel cluster, while the species selected (Avocado) has large fleshy leaves that should be relatively fire resistant whilst still providing an effective year-round barrier (evergreen), can achieve significant height, tolerates pruning very well, and is known to thrive at this site.
- A portion of the 100-foot defensible space extends onto neighboring property and can not be altered without the owner's permission.

VEGETATION DETAILS

	Description	Deciduous / Evergreen	Keep/Remove/ Proposed	Height (ft)	Diameter (ft)	notes
1	Avocado	E	K	40 +-	30	top pruned annually for clearance to PG&E primary
2	Orange, blood	E	K	6	7	dwarf; may need to remove or relocate
3	orange, mandarin	E	K	6	6	dwarf
4	Lemon, variety unknown	E	K	12	10	semi-dwarf
5	orange, navel	E	K	4	4	dwarf
6	Apple, red delicious	D	R	12	8	too close to house; old and declining
7	Apple, red delicious	D	R	12	8	too close to house; old and declining
8	Apricot, variety unknown	D	K	15	20	
9	Apricot, variety unknown	D	K	15	20	sporadically productive
10	Apple, Gravenstein	D	K	10	10	standard tree but still re-growing after top-work graft
11	Peach, varieties unknown	D	K	10	11	re-growing after top-work grafts
12	Apple, red delicious	D	K	12	14	old but still productive
13	Nectarine	D	K	9	9	dwarf
14	Peach, variety unknown	D	K	10	12	very early, likely semi-dwarf
15	Peach, varieties unknown	D	K	10	10	re-growing after top-work grafts, likely semi-dwarf
16	Peach, variety unknown	D	K	12	13	late-ish maturity, decent production, likely semi-dwarf
17	Peach, variety unknown	D	K	12	12	early, good production, likely semi-dwarf
18	Asian Pear, Shinseiki	D	K	6	4	re-growing after top-work graft, mature height 15+ ft
19	Apricot, variety unknown	D	K	13	17	marginal production
20	Plum, Howard + Elephant Heart	D	K	12	8	re-growing after top-work grafts
21	European Pear, Red	D	K	11	6	re-growing after top-work graft, mature height 15+ ft
22	Asian Pear, Shinseiki	D	K	6	4	re-growing after top-work graft, mature height 15+ ft
23	Peach, variety unknown	D	K	7	7	re-growing after top-work graft (from 16)
24	Peach, variety unknown	D	K	7	7	re-growing after top-work graft (from 16)
25	European Pear, variety unknown	D	K	12	6	re-growing after top-work graft (from 40)
26	Cactus, Opuntia	E	K	6	hedged	prickly-pear
27	Coyote Brush	E	K			
28	Callistemon (mixed spp. bottle-brush)	E	K	6	8	
29	Narcissus, mixed	n.a.	K			raised bed
30	various local Nursery Trees and Shrubs	D&E	t.b.d.	20+-	various	select specimens will be kept, most moved/removed
31	Salvia sp.	E	K	4		
32	Live Oak	E	R	20	15	canopy agressively managed
33	Plum, likely Howard	D	K	15	10	
34	Asian Pear, Shinseiki	D	t.b.d.	6	3	will probably relocate (too close to 33)
35	Peach, variety unknown	D	R	12	10	unsuited to climate; too close to house
36	Grape, Concord	D	K	6	10	
37	Pomegranate, 'Wonderful'	D	K	8	6	expect 12 ft at maturity
38	Hummingbird Sage	E	K			ground-cover
39	Coyote Brush	E	K	10	8	
40	European Pear, variety unknown	D	K	11	14	productive
41	Pineapple Guava (feijoa)	E	K			
42	Kiwi (fuzzy)	D	K			
43	Ferns, native spp.	E	K			relocate with demo of old house
44	Quince, variety unknown	D	K	12	14	
45	California Lilac 'dark star'	E	K	5	7	
46	Live Oak	E	K	15	15	canopy agressively managed
47	Salvia spp.	E	K	4		
48	rasberries, red	D	K	4		
49	Lilac	D	K	4	3	
50	Rosemary, culinary	E	K	3		
51	White Sage	E	K	7	varies	
52	Magnolia x soulangeana (saucer magnolia)	D	P	16	16	or similar, to soften visual for garage/barn
53	French Lavender	E	K	4-ea	5-ea	driveway border
54	Coyote Brush	E	K	10-ea		
P1	Avocado <1. b. i. >	E	P	15-20	15-20	
P2	Avocado <1. b. i. >	E	P	15-20	15-20	
P3	Avocado <1. b. i. >	E	P	15-20	15-20	

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04	DRAWN BY Jon Kiser	PROJECT 1071 Larsen Road APN 105-041-02	ISSUE 06.26.19 RE-ISSUE 08.14.19	OWNER-BUILDER Jon Kiser	SHEET CONTENTS **Landscape Plan** <1. b. > added page

EXHIBIT A

Required Findings for Agricultural Buffer Setback Reduction
County Code Section 16.50.095(D)

1. Significant topographical differences exist between the agricultural and non-agricultural uses which eliminates or minimizes the need for a 200-foot agricultural buffer setback; or

Not applicable.

2. Permanent substantial vegetation (such as a Riparian Corridor or Woodland protected by the County's Riparian Corridor or Sensitive Habitat Ordinances) or other physical barriers exist between the agricultural and non-agricultural uses which eliminate or minimize the need for a two hundred (200) foot agricultural buffer setback; or

Not applicable.

3. A lesser setback is found to be adequate to prevent conflicts between the non-agricultural development and the adjacent agricultural development and the adjacent agricultural land, based on the establishment of a physical barrier (unless it is determined that the installation of a barrier will hinder the affected agricultural use more than it would help it, or would create a serious traffic hazard on a public or private right of way) or the existence of some other factor which effectively supplants the need for a two hundred (200) foot agricultural buffer setback; or

Not applicable.

4. The imposition of a two hundred (200) foot agricultural buffer setback would preclude building on a parcel of record as of the effective date of this chapter, in which case a lesser buffer setback distance may be permitted, provided that the maximum possible setback distance is required, coupled with a requirement for a physical barrier (e.g. solid fencing and/or vegetative screening) to provide the maximum buffering possible, consistent with the objective of permitting building on a parcel of record.

The proposed building envelope for the dwelling is set back approximately 42 feet from the adjacent Commercial Agriculture zoned land. This is the maximum setback from the property line allowed by the geologic report. Because a 20-foot right-of-way straddles the property line at this location, no crops would be planted on the adjoining parcel within 10 feet of the property line. Thus, the effective agricultural setback would be approximately 52 feet, where 200 feet are required. A barrier of overlapping fruit trees will be adequate to prevent conflicts between the non-agricultural development and the adjacent Commercial Agriculture zoned land of APN 105-041-01. New evergreen trees (avocado) are proposed to be planted directly between the proposed dwelling and the property line, to augment the many existing fruit trees, as shown on the landscape plan (Exhibit A, Sheet 4). This barrier, as proposed, would not create a hazard in terms of the vehicular sight distance necessary for safe passage of traffic.

EXHIBIT B

Required Finding for Agricultural Buffer Setback Reduction on Commercial Agriculture (CA) Zoned Land County Code Section 16.50.095(E)

1. In the event that an agricultural buffer setback reduction is proposed and the proposed non-agricultural development is located on Type 1, Type 2, or Type 3 commercial agricultural land, the non-agricultural development shall be sited so as to minimize possible conflicts between the agricultural use on the subject parcel; and the non-agricultural development shall be located so as to remove as little land as possible from production or potential production.

Not required – subject parcel is not Type 1,2 or 3 land.

Required Findings for Development on Land Zoned Commercial Agriculture or Agricultural Preserve County Code Section 13.10.314(A)

Not required – subject parcel is not zoned Commercial Agriculture or Agricultural Preserve.

EXHIBIT B

Conditions of Approval

I. This permit authorizes an Agricultural Buffer Setback reduction from the proposed residential use to APN 105-041-01. This approval does not confer legal status on any existing structure(s) or existing use(s) on the subject property that are not specifically authorized by this permit. Prior to exercising any rights granted by this permit, including, without limitation, any construction or site disturbance, the applicant/owner shall:

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

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

1. Any outstanding balance due to the Planning Department must be paid prior to making a Building Permit application. Applications for Building Permits will not be accepted or processed while there is an outstanding balance due.

C. Submit a completed an Environmental Health (EH) Building Clearance with fees and plot plans including all structures, roads, driveways, septic system (tank, leaching and future expansion) and water source. The building permit will not increase beyond 3-bedrooms and a 1000-sq.ft. non-habitable accessory structure (no plumbing). Please contact Gail Mackey, EH Land Use Inspector, at 831-454-2022.

II. Prior to issuance of a Building Permit the applicant/owner shall:

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

1. A copy of the text of these conditions of approval incorporated into the full-size sheets of the architectural plan set.

2. Color and materials of dwelling and barn. Color and materials shall be consistent with permit 191185.

3. A minimum development setback of 41'5¾" from the single-family dwelling to the adjacent Commercial Agriculture zoned parcel APN 105-041-01.

4. Location and configuration of the geological building envelope for the dwelling established by the Preliminary Geologic Hazards Investigation (REV191018, Exhibit F).

EXHIBIT C

5. Three copies of approved Geotechnical Report (REV191018).

6. Location of the vegetative buffering barrier (and any fences/walls used for the purpose of buffering adjacent agricultural land) consistent with the exhibits of approved permit 191185. Species type, plant sizes and spacing shall be indicated on the final plans for review and approval by Planning Department staff.

7. Proposed lighting and light fixture details. All site lighting shall be directed downward and screened to prevent direct glare towards neighbors.

8. Re-vegetation of the area disturbed by construction shall be consistent with the County's Water Efficient Landscape Ordinance (SCCC Ch. 13.13). The initial submittal shall include, at minimum, a signed Water Efficient Landscape Checklist.

B. The owner shall record a Statement of Acknowledgement, as prepared by the Planning Department, and submit proof of recordation to the Planning Department. The statement of Acknowledgement acknowledges the adjacent agricultural land use and the agricultural buffer setbacks.

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

A. The agricultural buffer setbacks shall be met as verified by the County Building Inspector.

B. The required vegetative and/or physical barrier shall be installed. The applicant/owner shall contact the Planning Department's Agricultural Planner, a minimum of three working days in advance to schedule an inspection to verify that the required barrier (vegetative and/or other) has been completed.

C. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official and/or the County Senior Civil Engineer.

IV. Operational Conditions

A. The vegetative and physical barrier shall be permanently maintained.

B. All required Agricultural Buffer Setbacks shall be maintained.

C. In the event that future County inspections of the subject property disclose non-compliance with any Conditions of this Approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, up to and including permit revocation.

EXHIBIT C

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

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

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

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

2. COUNTY defends the action in good faith.

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

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

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

Please note: This permit expires three years from the effective date listed below or if additional discretionary permits are required for the above permitted project, this permit shall expire on the same date as any subsequent approved discretionary permit(s) unless a building permit (or permits) is obtained for the primary structure described in the development permit (does not include demolition, temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the building permit and to complete all of the construction under the building permit, resulting in the expiration of the building permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

EXHIBIT C

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Agricultural Policy Advisory Commission under the provisions of County Code Chapter 16.50, may appeal the act or determination to the Board of Supervisors in accordance with chapter 18.10 of the Santa Cruz County Code.

EXHIBIT C

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections 15061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 191185
Assessor Parcel Number: 105-041-02
Project Location: 1071 Larsen Rd.

Project Description: Agricultural Buffer Setback Reduction

Person or Agency Proposing Project: Jon Kiser

Contact Phone Number: (831) 431-3396

A. _____ The proposed activity is not a project under CEQA Guidelines Section 15378.
B. _____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).
C. _____ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgment.
D. _____ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

E. __X__ **Categorical Exemption**

Specify type: Class 3 - New Construction or Conversion of Small Structures (Section 15303)

F. Reasons why the project is exempt:

Project consists of demilition of an existing dwelling and garage and construction of replacement dwelling and garage of similar size.

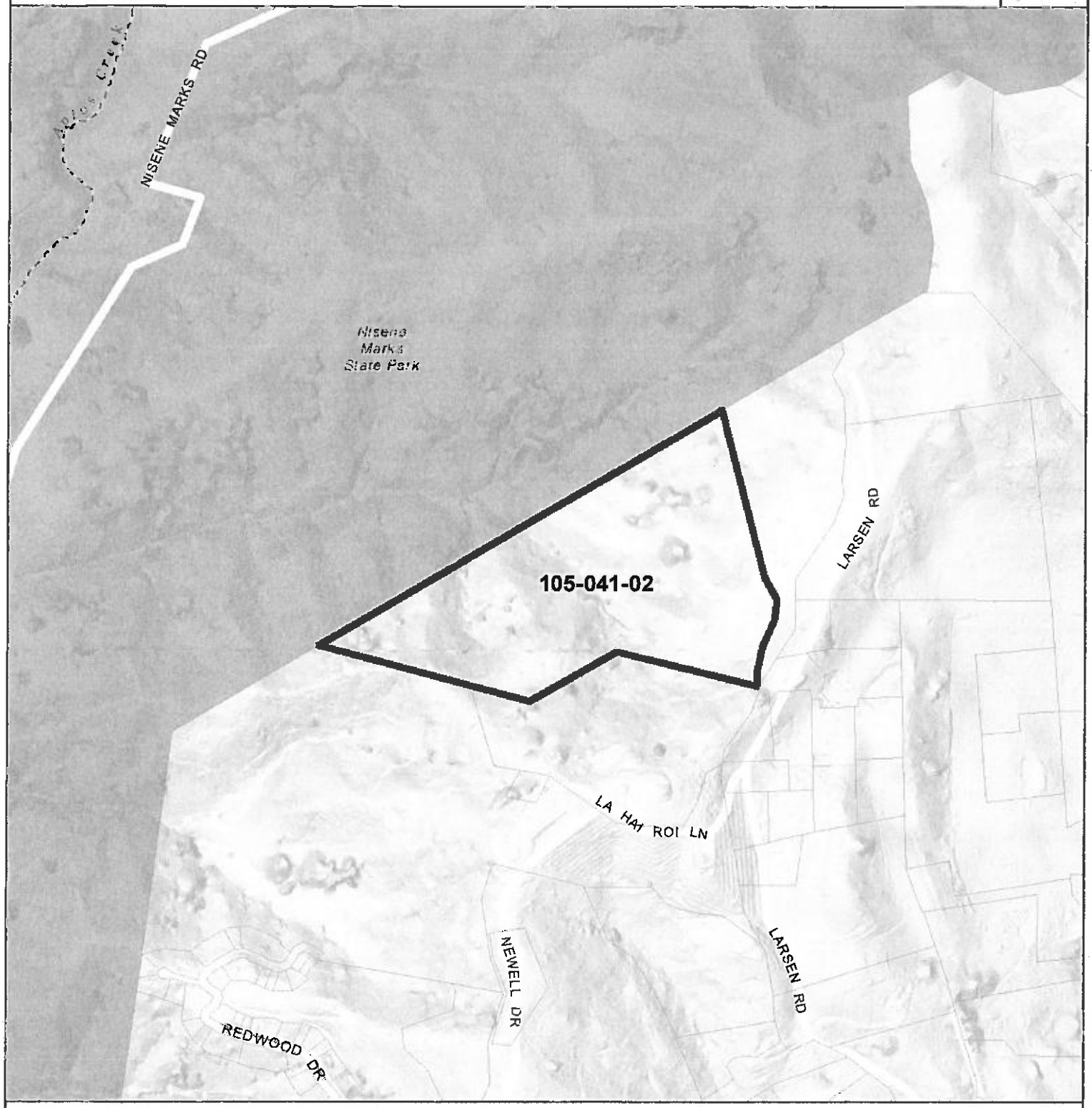
In addition, none of the conditions described in Section 15300.2 apply to this project.

_____ Date: 10-28-19
Jerry Busch, Project Planner

EXHIBIT D

SANTA CRUZ COUNTY PLANNING DEPARTMENT

Parcel Location Map



Parcel: 10504102

- Study Parcel
- Assessor Parcel Boundary
- Existing Park

Map printed: 28 Oct. 2019

N

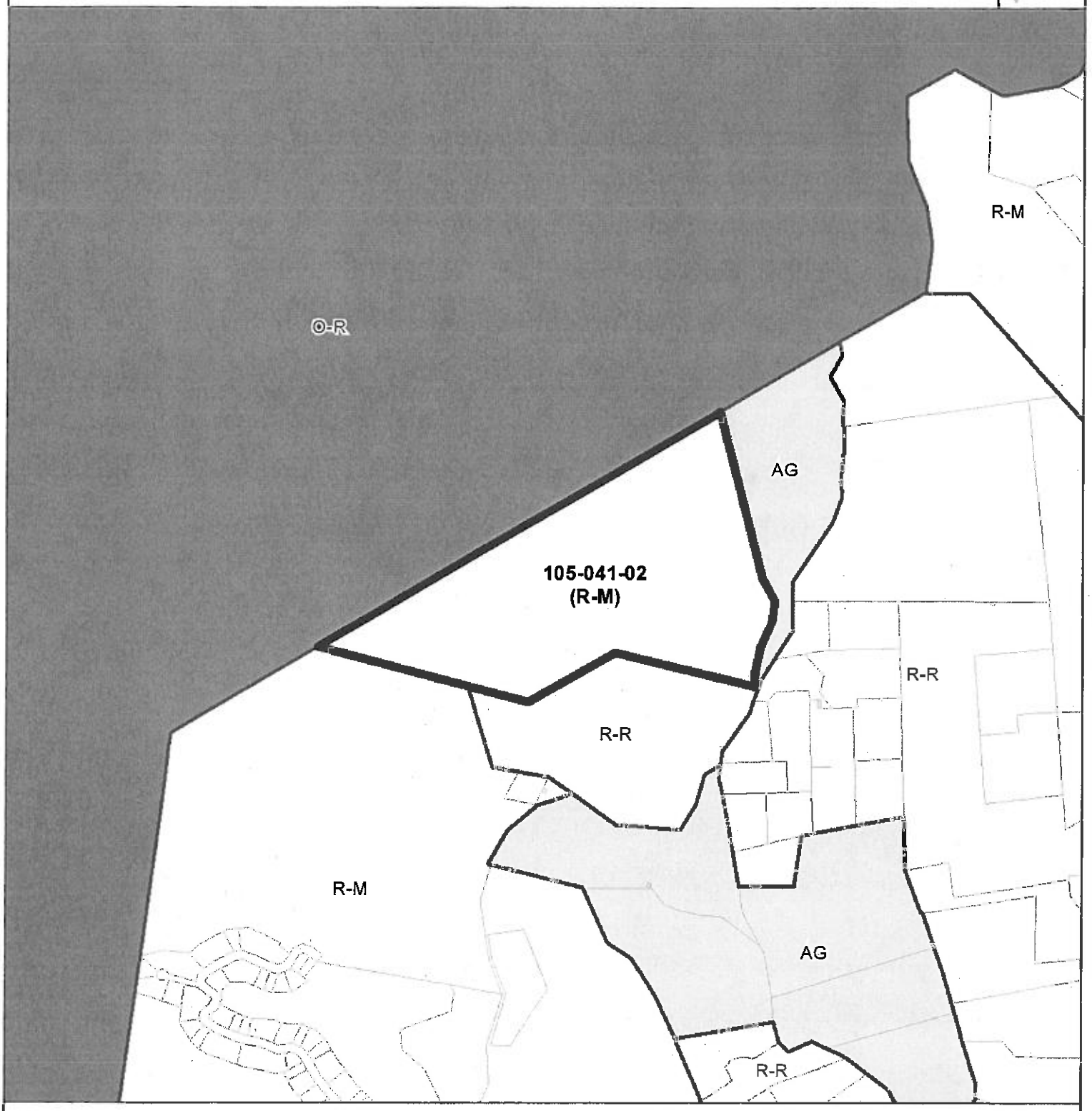
0 210 420

Feet

EXHIBIT E

SANTA CRUZ COUNTY PLANNING DEPARTMENT

Parcel General Plan Map



AG *Agricultural*
O-R *Parks, Recreation & Open Space*
R-M *Residential Mountain*
R-R *Residential Rural*

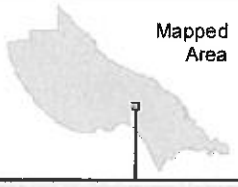
N

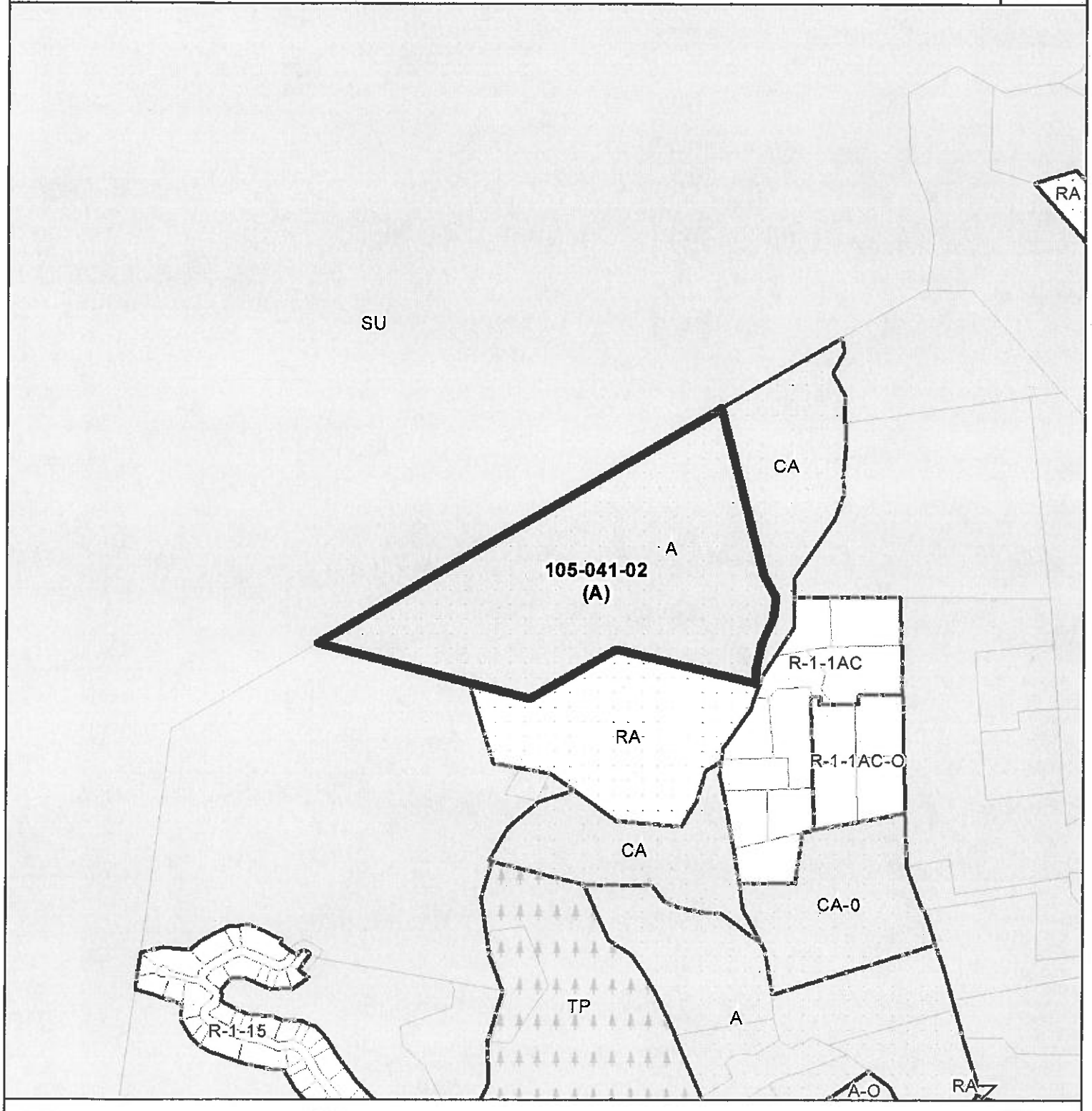
0 210 420
Feet

EXHIBIT E

SANTA CRUZ COUNTY PLANNING DEPARTMENT

Parcel Zoning Map





A *Agriculture*
CA *Commercial Agriculture*
RA *Residential Agricultural*
R-1 *Single-Family Residential*
SU *Special Use*
TP *Timber Production*

N

0 210 420

Feet

EXHIBIT E

PRELIMINARY GEOLOGIC HAZARDS INVESTIGATION

Proposed Single Family Residence
Property at 1071 Larsen Road
Santa Cruz County
APN:105-041-02

Prepared for:
Jon Kiser

Prepared by:
Nolan Associates
P.O. Box 597
Santa Cruz, CA 95061

January 17, 2019

Job No. 18030

• Engineering Geology
• Hydrogeology
• GIS Services

NOLAN ASSOCIATES

Jon Kiser
1070 Larsen Road
Aptos, CA 95003

Subject: **Preliminary Geologic Hazards Investigation**

Project: Proposed Single Family Residence
Property at 1070 Larsen Road
Santa Cruz County, California
APN: 105-041-02

Dear Mr. Kiser:

We have completed our preliminary geologic hazards investigation for the above-referenced property. Our investigation was a geologic site evaluation intended to address potential geologic hazards associated with permitting and developing a new single family residence on the subject property.

Because of its proximity to the San Andreas fault, the subject property is likely to be affected by intense seismic shaking within the design life of the proposed residence. Your design consultants should carefully review our seismic shaking analysis and incorporate our recommendations, where prudent.

The County of Santa Cruz landslide map does not show any landsliding underlying the subject property. However, our geologic reconnaissance of the property identified evidence for older landsliding that encompasses part of the subject property. The existence of older landslide deposits was evident in our geologic trenching. The landsliding does not appear to have reactivated in Holocene time. We have made design recommendations to help protect the proposed development from risks associated with landsliding at the site.

Our recommendations are intended principally to lower the risks posed to habitable structures by geologic hazards to an "ordinary" level of risk. An "ordinary" risk is the level of risk to which structures in similar settings are typically exposed. Various risk levels associated with geologic hazards are defined in Appendix B of this report.

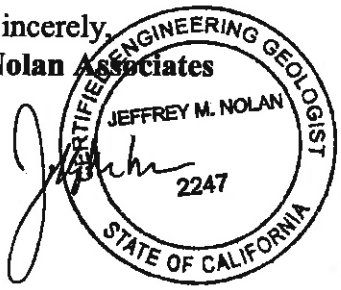
If you would like to have your project designed to a level of risk lower than "ordinary", we would be happy to provide you a revised scope of services to provide specific design recommendations to lower the risk posed to the project by geologic hazards.

This report in no way implies that the subject property will not be subject to earthquake shaking, landsliding, faulting or other acts of nature. Such events could damage the property and affect

the property's value or its viability in ways other than damage to habitable structures. We have not attempted to investigate or mitigate all such risks and we do not warrant the project against them. We would be happy to discuss such risks with you, or provide a proposal for services to investigate these risks, at your request.

If you have any questions or comments regarding this report, please contact us at your earliest convenience.

Sincerely,
Nolan Associates



Jeffrey M. Nolan
Principal Geologist
C.E.G. #2247

TABLE OF CONTENTS

EXHIBIT F

NOTE: This report should not be considered complete without all listed figures and plates.

INTRODUCTION

This report presents the results of our preliminary geologic hazards investigation for a proposed new single family residence. The subject property is located on Larsen Road in central Santa Cruz County, about 2.9 miles north of the town of Aptos, California, on Assessor's Parcel Number (APN) 105-041-02. Figure 1, Topographic Index Map, depicts the location and topographic setting of the subject property.

PURPOSE AND SCOPE

The proposed project is to consist of development of a new single family residence and detached garage on the subject parcel. The purpose of our study was to evaluate risks posed to the proposed single family residence by geologic hazards. The principal geologic hazards relevant to this site include strong seismic shaking, landsliding, and co-seismic ground cracking.

Where particular geologic hazards were found to present greater than ordinary risks to the project, we developed recommendations to reduce these risks. Our geologic hazards risk analysis was based on an assumed 50-year design life span for the project.

Work performed during this study included:

1. Research of select published and unpublished geologic maps and reports relevant to the subject property;

2. Examination and interpretation of 13 flights of stereographic aerial photos ranging in age from 1935 to 2003 and inspection of Lidar imagery of the site and vicinity;

3. Geologic mapping on and around the subject site. Based on the geologic mapping, we prepared a geologic map and geologic cross sections for the subject site depicting site geology;

4. Exploratory trenching by backhoe in the area of the proposed building site.

5. Analysis and interpretation of the geologic data and preparation of this geologic report.

SITE DESCRIPTION

The subject property is a irregularly-shaped parcel of about 31 acres located on a northwest facing slope in the central Santa Cruz Mountains (Figure 1). The property occupies the upper east flank of Aptos Creek and extends up to the ridge crest along the property's easternmost boundary (Figure 1). There is an existing residence and detached garage on the property. It is

our understanding that the existing residence and garage are both to be replaced with the new proposed residence and a new detached garage. The property is accessed by an existing, unpaved driveway from Larsen Road.

Topographic elevation of the property ranges from approximately 500 to 800 feet above mean sea level. The gentlest natural slope gradients exist in the area of the proposed development, situated on a short, nearly level spur ridge extending in a westerly direction from the main ridge line (Figure 1 and Plate 1, Geologic Site Map). The slope at the proposed home site is about 4% gradient to the south (Plate 1). Slopes steepen to the west where the slopes descend into the Aptos Creek drainage, locally reaching gradients up to 60% (Plate 1). The area around the proposed home site is vegetated with grass. Redwood, Oak, and Madrone trees line local drainages and cover steeper slopes.

We did not observe any flowing or standing water on the property at the time of our field exploration (9/6/18 to 11/14/218).

REGIONAL GEOLOGY AND SEISMICITY

The subject property is located within the central portion of the Coast Ranges Physiographic Province of California, a series of coastal mountain chains that parallel the pronounced northwest-southeast directed structural grain of Central Californian geology. The property is located on the southwest flank of the central Santa Cruz Mountains, which are mostly underlain by a large, elongate structural unit known as the Salinian Block. The Salinian Block is floored with granitic and metamorphic rocks of Mesozoic age, and is separated from contrasting basement rock of the Franciscan Complex to the northeast and southwest by the San Andreas and Nacimiento-San Gregorio-Sur faults, respectively. The granitic basement is overlain by a sequence of dominantly marine sedimentary rocks of Paleocene to Pliocene age and non-marine sediments of late Pliocene to Pleistocene age (Figure 2, Regional Geologic Map).

Throughout the Cenozoic Era, this portion of California has been dominated by tectonic forces associated with lateral or "transform" motion between the North American and Pacific lithospheric plates, producing long, northwest-trending faults such as the San Andreas and San Gregorio, with horizontal displacements measured in tens to hundreds of miles. Accompanying the horizontal (strike-slip) movement of the plates have been episodes of compressive stress, reflected by repeated episodes of uplift, deformation, erosion and deposition of sedimentary rocks. Near the crest of the Santa Cruz Mountains, this tectonic deformation is evidenced by steeply dipping folds, overturned bedding, faulting, jointing, and fracturing in the sedimentary rocks older than the middle Miocene. Along the coast, the on-going tectonic activity is most evident in the formation of a series of uplifted marine terraces.

The Quaternary history of the Santa Cruz Mountains includes abundant evidence for landslide related processes as an important factor shaping the evolution of the modern landscape. Historical accounts and geologic studies of the San Andreas earthquake of 1906 and the Loma Prieta earthquake of 1989 indicate that there is a strong correlation between major earthquakes

and resulting landslides, earth flows and ground cracking in this region. The occurrence of landsliding is also strongly controlled by the amount of seasonal rainfall the area receives.

California's broad system of strike-slip faulting has a long and complex history. Locally, the San Andreas, Zayante-Vergeles, Sargent, Monte Vista-Shannon and San Gregorio faults and the Monterey Bay fault zone present a seismic hazard to the subject property (Figure 3, Regional Seismicity Map). These faults are associated with Holocene activity (one or more movements in the last 11,000 years) and are therefore considered by the State of California to be active (Petersen et al., 1996, 2008, 2014; Cao et al., 2003).

The region as a whole is subject to on-going seismicity (Figure 3). The most severe historic earthquakes to affect the subject property are the 1906 San Francisco Earthquake and the 1989 Loma Prieta Earthquake, with Richter magnitudes of about 8.3 and 7.1, respectively. Other historic earthquakes of note include two magnitude 6.1 earthquakes in Monterey Bay in 1926 and pre-instrumental earthquakes that have been associated with portions of the San Andreas fault.

SITE GEOLOGY

The Geologic Site Map (Plate 1), Geologic Cross Sections (Plate 2), and Trench Log (Plate 3) depict relevant geologic information collected for the subject property and vicinity. Refer also to the Local Geologic Map (Figure 4) and the Santa Cruz County Landslide Map (Figure 5) for additional geologic information for the subject property and surrounding area.

Stratigraphy and Earth Materials

Purisima Formation

The subject property is mapped as being underlain by Purisima Formation bedrock of Pliocene age (Figure 4), which has been described by previous researchers as very thick bedded, yellowish gray, tufaceous and diatomaceous siltstone and fine- to medium-grained, thick-bedded to massive, yellowish-brown to bluish gray semi-friable sandstone (McLaughlin et al., 2001). Our geologic trench revealed mostly light yellowish-brown fine to very fine grained sand with minor olive to light yellowish brown clayey or silty sand, all derived from the Purisima Formation (Plate 3).

Pedogenic Soils and Colluvium

Where geologic materials are exposed within the uppermost few feet of the ground surface for extended periods of time, a combination of physical and chemical weathering and biological processes (bioturbation by burrowing insects and rodents) act to break them down into softer soils. This pattern of in-situ breakdown is called pedogenic soil development, and typically results in the development of discrete soil horizons (layers or strata).

The uppermost soil horizon, referred to as the A-horizon, is characterized by strong weathering, dark coloration and a relative depletion of clays and certain minerals from leaching by rainfall. The A horizons are typically one to two feet thick. B-horizon soils underlie the A-horizon soils, and are commonly characterized by relatively reddish hues and accumulations of clays and minerals washed down from overlying earth materials. B horizons are usually one to three feet thick. C-horizons underlie B-horizons and typically comprise weathered native earth materials, generally without a discernible accumulation or depletion of clays or minerals. C horizons may be a few feet thick to tens of feet thick. Other types of soil horizons exist in certain areas and the basic A, B, and C soil horizons are often further subdivided by soil stratigraphers. Some soil layers may have characteristics of two or more soil horizons, due to overprinting of older soils by more recent processes.

Soil horizons develop gradually over time. Therefore, the amount or degree of soil profile development can be used as a rough tool for dating the age of the surface on which they are developing. Soil development processes tend to accelerate in areas where the parent earth materials are extensively fractured and dilated (such as landslide deposits), as the increased fracture porosity permits deeper and faster weathering.

The development of soil horizons requires a stable land surface. Since soil horizons develop gradually over time, the material on which the soils are developing must remain relatively undisturbed for long periods of time. Consequently soil horizons do not usually develop on steep slopes, where the effect of gravity and the wetting and drying of clay minerals causes the soil to move downslope gradually over time. The downslope creep of the soils combined with biologic activity causes the soils to overturn and mix with organic matter from decaying plans, producing a dark, organic rich soil with a mixture of grain sizes and little or no stratification. This type of soil, formed on slopes, is called colluvium.

Colluvium tends to be relatively thin on steep slopes, but will accumulate in greater thickness at the base of steep slopes or in hollows on the slope. Where steep slopes taper into gently sloping terrain, we often see the colluvium gradually transition into pedogenic soil horizons as the slope decreases.

We noted moderately developed pedogenic soils in the upper approximate four feet of our trench excavation (Plate 3). These soils are developing on a gently sloping hillside

Artificial Fill (af)

Artificial fill exists where earth work (grading) creates deposits of reworked native soils or where soils have been transported to the site from another source area. Minor grading has occurred along the driveway on the subject property and down hill from the existing residence (Plate 1). This grading consisted of minor cutting of the valley slope and re-deposition of the cut soils downslope to create a road bed.

Local Geologic Structure and Faulting

The Purisima Formation sandstone underlying the subject property is mapped as dipping between 3° and 5° to the south. Steeper dips are noted on the map to the north and east, approaching the Zayante fault (Brabb, 1989; see Figure 4). We did not observe bedrock orientations on or around the subject property. Trench T-1 was advanced in earth materials derived from the Purisima Formation that we have interpreted as landslide deposits.

Table 1: Distances and Directions to Local Faults

Fault	Distance from Site (km)	Distance from site (miles)	Direction from site
Zayante-Vergeles	1.8	1.1	northeast
San Andreas (main trace)	7.1	4.4	northeast
Sargent	10.1	6.3	southwest
Monte Vista-Shannon	21.1	13.1	northeast
Monterey Bay-Tularcitos	21.3	13.2	southwest
Silver Creek	27.5	17.1	northeast
San Gregorio	28.3	17.6	southwest
Hayward	30.1	18.7	northeast
Calaveras	30.6	19	northeast

Table 1 contains a list of active faults near the subject property, with distances and directions to each fault (Brabb, 1989; Petersen et al., 2008). The San Andreas, Zayante-Vergeles, Sargent, Monte Vista-Shannon, Silver Creek, Calaveras, Hayward, Monterey Bay-Tularcitos and San Gregorio faults have been designated as being active seismic sources in this region as part of the probabilistic seismic risk assessment performed for California by the U.S. Geological Survey (Peterson et al., 2008, 2014; Cao et al., 2003). See Figure 3 for a map depicting these nearby faults, and Appendix A for more detailed discussions of the San Andreas, Sargent, and Zayante faults.

Landsliding

Landsliding has occurred throughout the Santa Cruz Mountains during recent geologic history. The Santa Cruz County landslide map (Figure 5; Cooper-Clark and Associates, 1975) does not show any landslides mapped on the subject property. This landslide map is a planning level document; it was compiled at a small scale from aerial photographs and it is not necessarily complete or accurate at the scale of an individual parcel. Because the interpretation of landslides from aerial photos is not always accurate, especially in areas of heavy tree cover (such as the present site), the map incorporates a ranking of the landslides- definite, probable, or uncertain- depending on how confident the map's authors were in their interpretation (Figure 5).

To investigate landsliding on the parcel, we conducted a review of stereographic aerial photos and lidar imagery of the property, performed detailed field mapping around the subject parcel, and excavated an exploratory trench. The results of our geologic mapping are summarized on Plate 1. In our opinion, the property is underlain by a large, very old landslide deposit. The existence of landsliding on the property is suggested by the site geomorphology, visible on Figure 6, Landslide Map. The proposed residence site occupies a large, gently sloping area that is set slightly below the ridge crest elevation. The short, moderately steep slope segment separating this gently sloping area from the main ridge crest is broadly arcuate in shape, convex facing uphill, and extending across several parcels. We have interpreted these land forms as a headscarp and associated unit surface.

The landslide morphology is very subdued. It was not recognized as a landslide by the authors of the Santa Cruz County landslide map and there are no sharp or well formed landscape features that would be indicative of youthful landsliding, such as sharply defined scarps or lateral margins, closed depressions, or hummocky terrain. Our ground reconnaissance on the slopes below (west of) the proposed home site revealed only relatively smooth, even gradient hillsides. We did note evidence for some secondary landsliding on the slope below the proposed home site (Plate 1). The drainage pattern on the inferred landslide block is well developed and is largely indistinguishable from drainage patterns developed on ridge flanks not considered to be part of large landslide blocks. The toe of the landslide block deflects the stream drainage on which it impinges. The deflection of the stream drainage around the toe of the landslide indicates that it is likely buttressed against the opposing wall of the stream drainage.

The landslide interpretation derived from surface observations is supported by our observations in the exploratory trench. The bedrock observed in the trench was disturbed, with detached and rotated blocks of Purisima Formation sandstone (Plate 3). We also noted deepening soils in the eastern end of the trench, approaching the inferred headscarp, which we interpreted as colluvial soils filling a pull apart area at the head of the landslide block. The entire area of the suspected landslide was too large to depict on our Geologic Site Map (Plate 1). We have drawn in the approximate boundaries of the landslide on Figure 6, Landslide Map.

Subsurface Observations

Our exploratory trench T-1 (Plate 3) revealed a well-developed pedogenic soil profile over the trenched interval. We did note variations in the nature of the soil profile due to changes in the parent material, but we saw little evidence for discrete offsets of the soil profiles. The eastern end of the trench exposes colluvium throughout the depth of the trench. The soil developed on the colluvium was uniform, with only minor perturbations. No irregularities in the soil profile were traceable into the opposite wall of the trench. This portion of the trench profile is considered to be aggrading due to continued input of colluvial soil from nearby slopes. Consequently, the soil profile is thickening and soil horizons would therefore be migrating upward over time.

We observed some light colored, vertically oriented zones that appeared depleted of clays near the base of the trench from station 95 to 120 (note N18, Plate 3). There was no evidence of

deformation associated with these features– no evidence of extension and in-filling of fractures, shearing, or offset of pedogenic horizons. We attribute these zones to leaching of clays by enhanced ground water flow through the profile, probably combined with minor variations in permeability of the sediments. This portion of the trench is centered over a drainage swale where we expect increased ground water flow through the profile in the downhill direction. This leaching is also partially attributed to the colluvial aggradation and upward migration of soil horizons over time.

Progressing westward in the trench, disturbed Purisima Formation sediments rise in elevation from the floor of the trench starting at station 80 and occur near the ground surface from station 55 through the end of the trench. Included within ~~the~~ this section are zones of relatively loose, weathered Purisima sandstone and rotated blocks of hard, intact appearing sandstone. Steps in the B horizon between stations 54 to 58 are due to sharp contacts with blocks of hard sandstone and are not considered to be actual offsets of the soil horizons.

We did note several features in the trench that we considered to be possible evidence of older ground cracks (see Plate 3, notes N6, N8, N9, N12, and N15). The potential provenance of these features as ground cracks is questionable. They showed no soil in-filling and were marked only by small fracture surfaces lined by illuvial clays and roots. There did appear to be some disturbance of the B soil horizon at notes N6 and N8 (Plate 3). However, neither of these features could be traced across into the opposite wall of the trench, indicating that they are minor features. None of these features were traceable into the B soil horizon, and they are therefore considered to be older features. All of these features may be attributable to natural weathering of shears formed in the Purisima Formation at the time of the original landslide formation and may not be indicative of any subsequent movement or deformation.

GEOLOGIC HAZARDS

Potential geologic hazards relevant to the subject property include the effects of strong seismic shaking, landsliding, and co-seismic ground deformation. We saw no evidence for active faulting crossing the subject parcel, so we consider the potential for ground surface rupture due to faulting to be low.

Seismic Shaking Hazards

Seismic shaking at the subject site will be intense during the next major earthquake along one of the local fault systems. Modified Mercalli Intensities (see Appendix A, Table A1) of VIII to X are expected at the site, based on the intensities reported by Lawson (1908) for the 1906 earthquake and by Stover et al. (1990) for the 1989 Loma Prieta earthquake. It is important that our recommendations regarding seismic shaking be considered in the design for future developments and site improvements.

We have estimated expected deterministic seismic shaking intensities for the site. A deterministic assessment considers only the effects of the largest ground motion that can be expected at a given

site, regardless of how likely it is to occur within the typical 50-year design life of a single family residence.

For comparison, we have included the results of a statewide probabilistic assessment, applied to the project site. A probabilistic seismic analysis differs from a deterministic analysis in that it evaluates the probability for shaking of a certain intensity to occur at a particular site within a given time frame (50 years for residential development).

The intensity of seismic ground shaking is typically characterized as the peak acceleration that a point on the ground experiences during the shaking. Acceleration is measured as a proportion of the acceleration of the Earth's gravity, g. Both the deterministic and probabilistic ground shaking estimates are for generic site conditions (firm rock and/or stiff soil/soft rock). Seismic shaking intensity can be affected by site specific conditions, such as bedrock type or topography. Consequently, the seismic shaking parameters listed below should be adjusted for site specific conditions, as necessary, before being used in design.

Deterministic Seismic Shaking Analysis

For the purpose of evaluating deterministic peak ground accelerations for the site, we have considered the San Andreas and Zayante faults as potential earthquake sources. (Peterson et al., 2008). While other faults in this region are active, their potential contribution to deterministic seismic hazards at the site is overshadowed by these much closer and/or larger faults.

Table 2: Deterministic Ground Motions

Fault	$M_{W(MAX)}$*	Rupture Geometry*	PGA (g)	PGA + ∂ (g)	Duration D_{05}-D_{95} (sec)	Recurrence Interval (years)
San Andreas (1906 type rupture)	7.9	Strike-slip	0.45	0.78	31	133-266**
Zayante	7.0	Strike-slip	0.53	0.92	14	8821***

*$M_{W(MAX)}$: Moment magnitude of maximum credible earthquake and rupture geometry: 2008 Seismic Hazards Maps - Fault Parameters: http://geohazards.usgs.gov/cfusion/hazfaults_search/hf_search_main.cfm
**Recurrence Interval after Bryant and Lundberg, 2002
***Recurrence Interval after Petersen et al., 1996
PGA and PGA+σ: Mean peak horizontal ground accelerations based on an evenly weighted average of attenuation relationships by Campbell and Bozorgnia (2014), Chiou and Youngs (2014), and Boore and Atkinson (2014).
Duration: Abrahamson and Silva, 1996

Table 2 shows estimated magnitude ($M_{W(MAX)}$) and rupture geometry for the maximum expected earthquake on the San Andreas and Zayante faults (Petersen et al., 2008; USGS, 2008; Bryant, 2000; Bryant and Lundberg, 2002). Estimated peak ground acceleration (PGA) values for the site

were calculated using this information and the fault distances shown in Table 1. The accelerations are based on attenuation relationships derived from the analysis of historical earthquakes (Campbell and Bozorgnia (2014), Chiou and Youngs (2014), and Boore and Atkinson (2014)). These attenuation relationships describe how shaking intensity diminishes as distance from the earthquake source increases.

The PGA values in Table 2 are for sites founded on stiff soil to soft rock (site class C/D boundary). We caution that the listed values are approximations, based on theoretical curves fit to a limited data set: actual measured accelerations may be larger or smaller. The PGA + σ (mean plus one standard deviation) value, also shown on Table 2, is a conservative design value that is intended to compensate for the uncertainty in the attenuation relationships.

The duration of strong seismic shaking shown in Table 2 is calculated from a magnitude-dependent formula proposed by Abrahamson and Silva (1996). Expected recurrence interval (RI) is the expected time between major earthquakes on the fault. Expected recurrence intervals often depend on the particular earthquake scenario chosen, so the recurrence intervals in Table 2 should be considered approximate and are meant only to indicate the relative level of activity of the listed faults.

In summary, the Zayante fault, passing within 1.8 km of the site, is expected to generate the largest earthquake ground motion at the site. The characteristic earthquake on this fault ($M_{W(MAX)}$ = 7.0) is expected to generate estimated mean peak horizontal ground accelerations of about 0.53g, with an upper level design ground motion (mean plus one standard deviation) of 0.92g. Duration of strong seismic shaking from this event will be about 14 seconds. The estimated recurrence interval for this earthquake is relatively long; therefore, the probability of this earthquake occurring within the project life-span is considered to be low. It should be noted that this level of seismic shaking, 0.53 to 0.92g, is very intense.

The maximum event on the San Andreas fault ($M_{W(MAX)}$ = 7.9; recurrence interval ~133-266 years) is much more likely to occur within the project life-span. Such an event is expected to cause seismic shaking at the project site comparable to, but slightly lower than that of the Zayante fault. The expected duration of strong shaking from the San Andreas earthquake (31 seconds) is significantly longer than that of the Zayante-Vergeles earthquake. The duration of strong seismic shaking may have also have a significant impact on structures.

Probabilistic Ground Motion Estimates

The U.S. Geological Survey has produced probabilistic seismic hazards assessments for California (Petersen et al., 1996, Cao et al., 2003; Petersen et al., 2008; Petersen et al,. 2014). These studies consider the likelihood of large earthquakes occurring on each of the regionally important active faults in California. Using that data and studies of how seismic shaking diminishes (attenuates) with distance, the researchers create maps showing the intensity of seismic shaking that has a certain probability of occurring at a given location.

Probabilistic peak ground motions based on the 2008 National Seismic Hazard Mapping Program data (Petersen et al., 2008; CGS, 2014) are listed in Table 3. These estimated ground motions assume soil profile type of site class C/D (soft rock/stiff soil), per the 2016 California Building Code (CBSC, 2016). We caution that these values are not based on a site-specific probabilistic assessment, which is normally required for critical structures such as schools and hospitals, and are probabilistic hazard values rather than risk-based design values corresponding to a particular building code or other design standard.

Table 3: Probabilistic Ground Motions

Ground Motion Measure	Acceleration in Soft Rock/Firm Soil (g) (Site Class CD boundary)
Peak Horizontal Ground Acceleration (g), 10% probability of being exceeded in 50 years)	0.55
Peak Horizontal Ground Acceleration (g), 2% probability of being exceeded in 50 years)	0.94

from: http://www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html, accessed 1/17/19

The ground motion intensities shown in Table 3 are the seismic shaking intensities that have only a 10% chance and a 2% chance of being exceeded in 50 years.

The ground motions listed in tables 2 and 3 are not site specific values. These ground motions may be reduced or increased by site specific conditions. We recommend that the project structural engineer carefully consider both the deterministic and probabilistic acceleration values and the site characteristics in performing the seismic design.

Landslide Hazards

The geologic evaluation of landslide hazard is based on a qualitative assessment of geologic conditions around the proposed residence. Among the factors considered are the distribution, ages, and types of landsliding in the area surrounding the proposed development site; the steepness of slopes; the occurrence of geologic conditions in the area that would favor or limit landslide movement, such as weak bedrock or a toe buttress; and, any human caused factors that could increase the risk of landsliding. The type, location and activity of past landsliding are most heavily relied upon as an indicator of possible future landsliding. It should be pointed out, however, that there is always some potential for landsliding in areas of steep slopes or mountainous terrain, regardless of past conditions, and anyone building in such areas must be

prepared to assume some risk due to landsliding. No amount of qualitative or quantitative analysis can be expected to identify every factor that might cause landsliding to occur.

The landslide discussion included in the Site Geology section, above, summarized geomorphic and trenching evidence for the existence of landsliding at the site. The geomorphology of the site and surrounding area summarized in the landslide section indicate that the landslide is of great age. Based on the character of the pedogenic soils observed in the exploratory trench and the lack of clear deformation or offset of those soils, we consider the principal movement of the landslide to be older than Holocene.

However, as noted following the 1989 Loma Prieta earthquake, many large, older landslides in the Santa Cruz Mountains that were formerly considered dormant were reactivated by the earthquake. These reactivations consisted of downslope movement ranging from inches to several feet and were evidenced by open ground cracks around the tops and along the sides of the landslide masses. Trenching studies of these ground cracks revealed evidence for multiple older reactivations of these landslides (Nolan and Weber, 1998), with displacements similar to those observed in 1989. These older reactivations are attributed to pre-historic earthquakes, although it is expected that extreme climatic events could also cause landslide movement (Nolan and Weber, 1998).

The evidence for older (pre-1989) landslide reactivations in the Santa Cruz Mountains came from trenching studies in areas where landslide related ground cracks occurred in 1989. The older ground cracks exposed in the trench walls were typically funnel-shaped and filled with surficial soils that showed little or no pedogenic soil development. The soil filled cracks also commonly cross-cut and offset pedogenic soil horizons. Most of the homes and other structures existing on these reactivated landslides at the time of the earthquake were not significantly damaged by the earth movement, as long as they were not situated over areas of open ground cracks.

We did note equivocal evidence for some minor, older ground cracking in the trench in the form of small fracture zones containing translocated clays and invaded by plant roots. These suspected cracks were confined to the western end of the trench. The cracks were generally not funnel shaped and did not offset pedogenic soils across the trench. Consequently, we consider their provenance as landslide related ground cracks to be doubtful. It is more likely that they represent fractures that occurred in bedrock at the time of the initial landslide formation, modified over time by preferential ground water migration and translocation of secondary clays. Nevertheless, the slopes to the west of the proposed building site are steep. To provide a setback from the steep slopes and to provide a setback from areas where any suspicion of older ground cracking exists, we have positioned the proposed building envelope to the east of station 48 in the trench. We have projected the suspected feature in note N15 in the trench out along a bearing of 050° and set the proposed building envelope back from this projected trend.

The age of initial landsliding on the property and the lack of evidence for reactivation of the landslide noted in the trenching study indicates that the site is sufficient stable to permit the proposed development.

A different type of landslide hazard is presented by the potential for debris flow impacts. Debris flows typically form in swales or ravines cut in steep slopes. As soils on the upper portions of the slopes begin to move due to saturation by precipitation, they liquefy and flow down hill in rapidly moving torrents. The proposed building site is situated away from steep slopes and there are no swales or hollows on the steeper slopes above the building site that would facilitate formation or downslope movement of debris flows. Based on this geomorphic setting, we do not consider the site susceptible to debris flow hazard.

Provided that our recommendations are followed, we consider the risk posed by landsliding at this site to be "ordinary" (see Appendix C for a description of "ordinary" risk).

Co-seismic Ground Deformation Hazards

During strong earthquakes, sites in the epicentral region of the earthquake may develop ground cracks or experience other types of ground deformation as a result strong seismic shaking. Structures may be detrimentally affected by development of significant ground cracks or soil settlement. Detailed studies of ground cracks and related ground deformation observed in the Santa Cruz Mountains after the 1989 Loma Prieta earthquake are summarized in Griggs and Associates, 1990; Ponti and Wells, 1991; Hart et al., 1990; Harp, 1998; and Nolan and Weber, 1998.

We observed little evidence for co-seismic ground cracking in our trench T-1 and we have set the proposed home site away from areas of suspected ground cracks, as discussed above. The site is situated near a ridge crest in a highly seismically active region. Seismic ground motions tend to be amplified at ridge crests relative to adjacent valley bottoms. Given the site's setting, we recommend that the foundation of the proposed residence be reinforced to reduce the potential for damage due to minor ground cracking or settlement. Consequently we recommend that the building's foundation be designed to withstand a ground crack with 2" to 3" inches of horizontal extension and ½" of vertical offset, passing anywhere through the foundation. Provided our recommendations are followed, we consider the risk of co-seismic ground deformation to be "ordinary" for this site.

CONCLUSIONS

We have evaluated hazards at the site from strong seismic shaking, landsliding, and co-seismic ground deformation. Based on the results of our investigation, we consider the risks posed to the proposed single family residence by geologic hazards to be ordinary, as defined in Appendix C, provided that our recommendations are followed.

Strong seismic shaking may damage or destroy structures that are not properly designed to resist seismic loads. Provided that the subject residence is designed for the level of seismic shaking discussed in this report, risks to the proposed residence from seismic shaking can be reduced to ordinary levels.

It is our opinion that the risk due to potential landsliding and co-seismic soil deformation posed the project are also considered to be ordinary provided our recommendations are followed.

The following recommendations are intended principally to lower the risks posed to habitable structures by geologic hazards. Provided that our recommendations are followed, it is our opinion that the proposed residence will be subject to ordinary risks due to geologic hazards. This report in no way implies that the subject property will not be subject to earthquake shaking, landsliding, faulting or other acts of nature. Such events could damage the property and affect the property's value or its viability in ways other than damage to habitable structures. We have not attempted to investigate or mitigate all such risks and we do not warrant the project against them. We would be happy to discuss such risks with you, at your request.

RECOMMENDATIONS

1. Development of a single family residence at the site should be confined to the Geologically Suitable Building Envelope shown on Plate 1. The building envelope designated on Plate 1 is based in part on the scope of this investigation and is not meant to imply that it is the only geologically feasible building site on the parcel. We reserve the right to amend the building envelope recommendations where consistent with sound geologic judgement. Any structures or appurtenances constructed outside the proposed building envelope may be subject to higher than ordinary risks.

2. We recommend that the project engineers consider the findings of our seismic shaking analysis in project evaluation. Given the potential for strong seismic shaking to occur during the design life span of the proposed structures, all structures should be designed to the most current standards of the California Building Code, at a minimum. In particular, we recommend that the project structural engineer carefully consider both the deterministic and probabilistic acceleration values and the site characteristics, including the potential for topographic amplification of seismic shaking, when performing the seismic design.

3. Due to the geologic setting of the subject residence, we consider it prudent to design the foundation of the existing structure to accommodate up to ½ inch of vertical offset and 3 inches of horizontal extension along a potential future ground crack through the proposed structure. Such a ground crack should be assumed to run in an approximately north-south direction, parallel or sub-parallel to the ridge crest bounding the subject property to the east, occurring anywhere under the structure

4. We recommend that the project geotechnical engineer review the findings of this investigation with respect to the geotechnical aspects of the project and make supplemental recommendations, as needed.

5. We recommend that all drainage from improved surfaces be captured by closed pipe or lined ditches and dispersed on site in such a way as to maintain the pre-development

runoff patterns as much as possible. At no time should any concentrated discharge be allowed to spill directly onto the ground adjacent to structures or to fall directly onto steep slopes. The control of runoff is essential for erosion control and prevention of water ponding against foundations and other improvements.

6. This report is issued with the understanding that it is the duty and responsibility of the owner, or of his representative or agent, to ensure that this report is provided to and brought to the attention the architect, engineer(s) and general contractor for the project, and that all recommendations made in the report are incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out the report's recommendations in the field.

7. We request the privilege of reviewing final project plans for conformance with our recommendations. If we are not permitted such a review, we cannot be held responsible for misinterpretation or omission of our recommendations.

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, Nolan Associates should be notified so that supplemental recommendations can be given. Our conclusions and recommendations shall not be considered valid unless the changes are reviewed and the conclusions in this report are modified or verified in writing by a representative of Nolan Associates.

9. We suggest that home owners familiarize themselves with simple safety procedures outlined by Peter Yanev and Andrew Thompson in their book, *Peace of Mind in Earthquake Country: How to Save Your Home, Business, and Life.* This book contains a wealth of information regarding earthquakes, seismic design and precautions that the individual home owner can take to reduce the potential for loss of life, injury and property damage.

INVESTIGATIVE LIMITATIONS

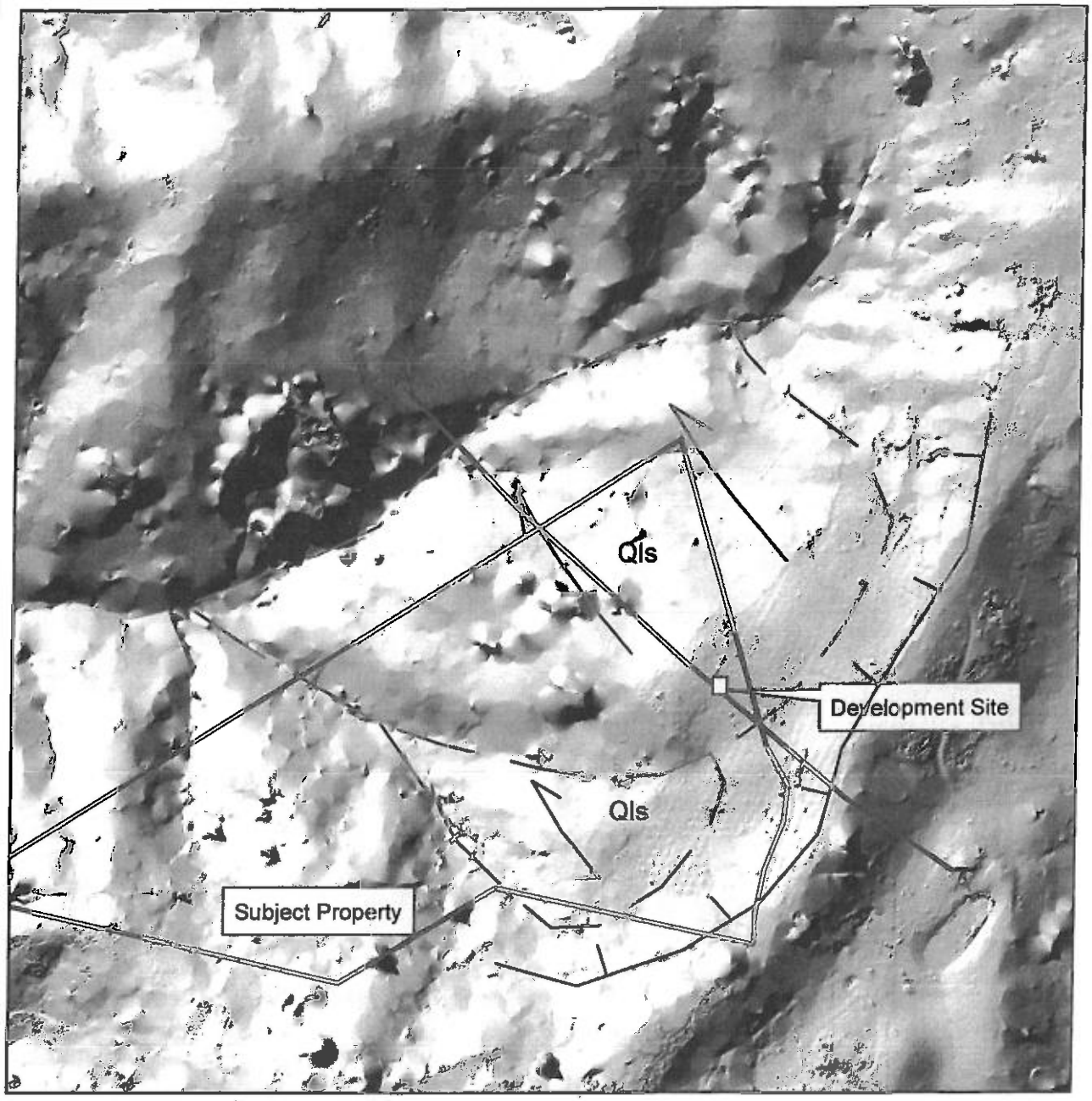
1. The conclusions and recommendations noted in this report are based on probability and in no way imply the site will not possibly be subjected to ground failure or seismic shaking so intense that structures will be severely damaged or destroyed. The report does suggest that implementation of the recommendations contained within this report will reduce the risks posed by geologic hazards.

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

3. If any unexpected variations in soil conditions or if any undesirable conditions are encountered during construction or if the proposed construction will differ from that planned at the present time, Nolan Associates should be notified so that supplemental recommendations can be given.

4. The findings of this report are valid as of the present date. However, changes in the conditions of the property and its environs can occur with the passage of time, whether they be due to natural processes of the works of man. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, the conclusions and recommendations contained in this report cannot be considered valid beyond a period of two years from the date of this report without review by a representative of this firm.

5. Our services consist of professional opinions and recommendations made in accordance with generally accepted engineering geology principles and practices. No warranty, expressed or implied, including any implied warranty of merchantability or fitness for the purpose is made or intended in connection with our services or by the proposal for consulting or other services, or by the furnishing of oral or written reports or findings.



Reference: Hillshade from Lidar by AMBAG, 2010

EXPLANATION

Qls — Landslide, arrows indicate direction of movement, barbed line at headscarp

A — A' — Line of cross section A-A' see figure 7 for section

SCALE 1:4,800

0 120 240 480 720 Feet

N

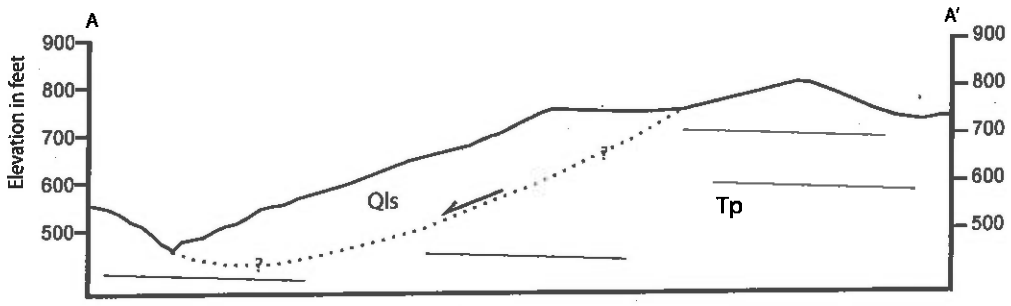
• Engineering Geology
• Hydrogeology
• GIS Services

NOLAN ASSOCIATES

Landslide Map
Lands of Kiser
Larsen Road
APN 105-041-02
Santa Cruz County, California

FIGURE # 6
JOB # 18030

EXHIBIT F



Scale 1:4800

Explanation

Qls	landslide
Tp	Purisima Formation

• Engineering Geology
• Hydrogeology
• GIS Services

NOLAN ASSOCIATES

Regional Cross Section
Lands of Kiser
Larsen Road
APN 105-041-02
Santa Cruz County, California

FIGURE # **7**
JOB # **18030**

EXHIBIT F

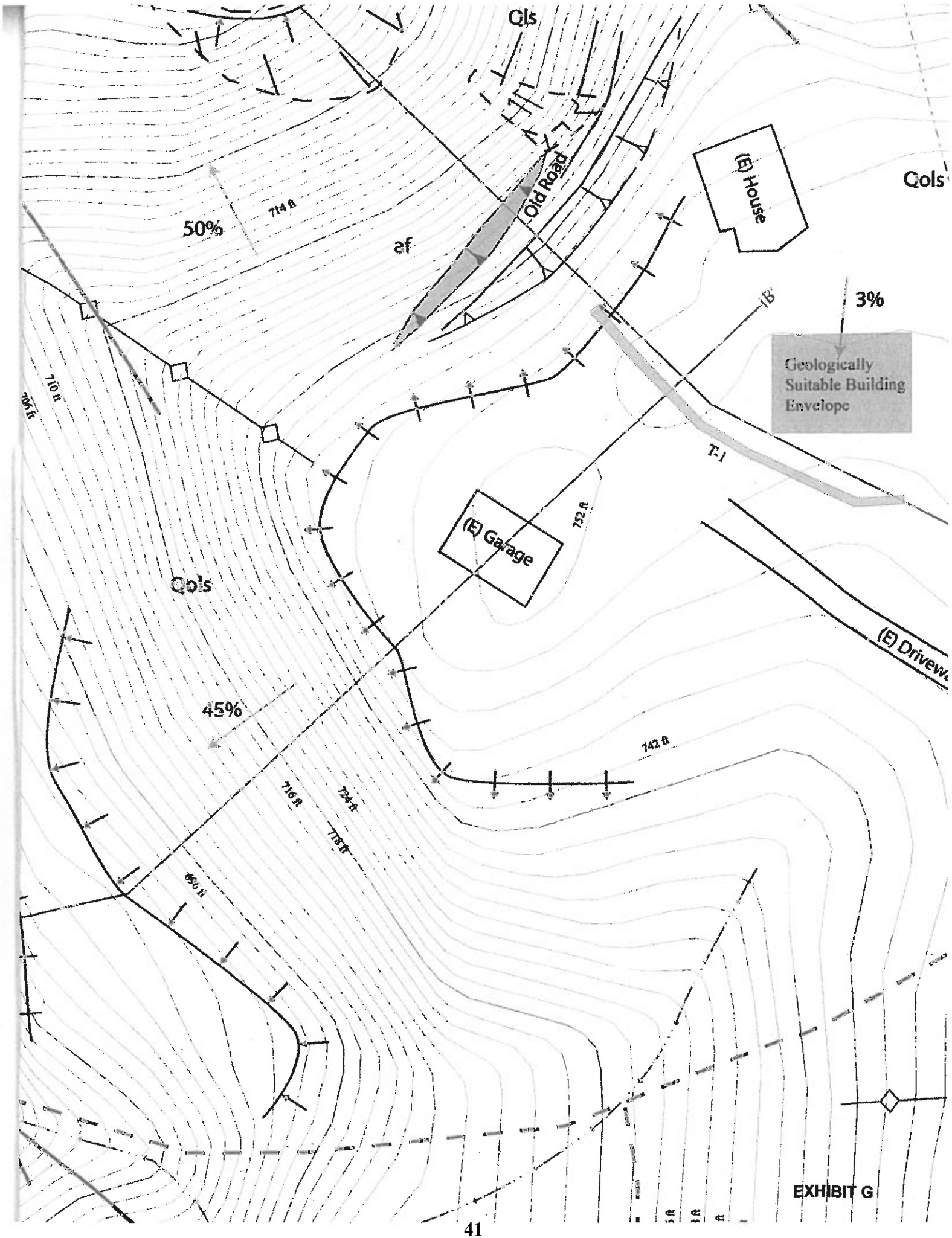

Qls
(E) House
Old Road
Qols
50%
714 ft
af
3%
B'
Geologically
Suitable Building
Envelope
710 ft
706 ft
T-1
752 ft
(E) Garage
Qols
(E) Driveway
45%
742 ft
716 ft
724 ft
718 ft
656 ft

EXHIBIT G

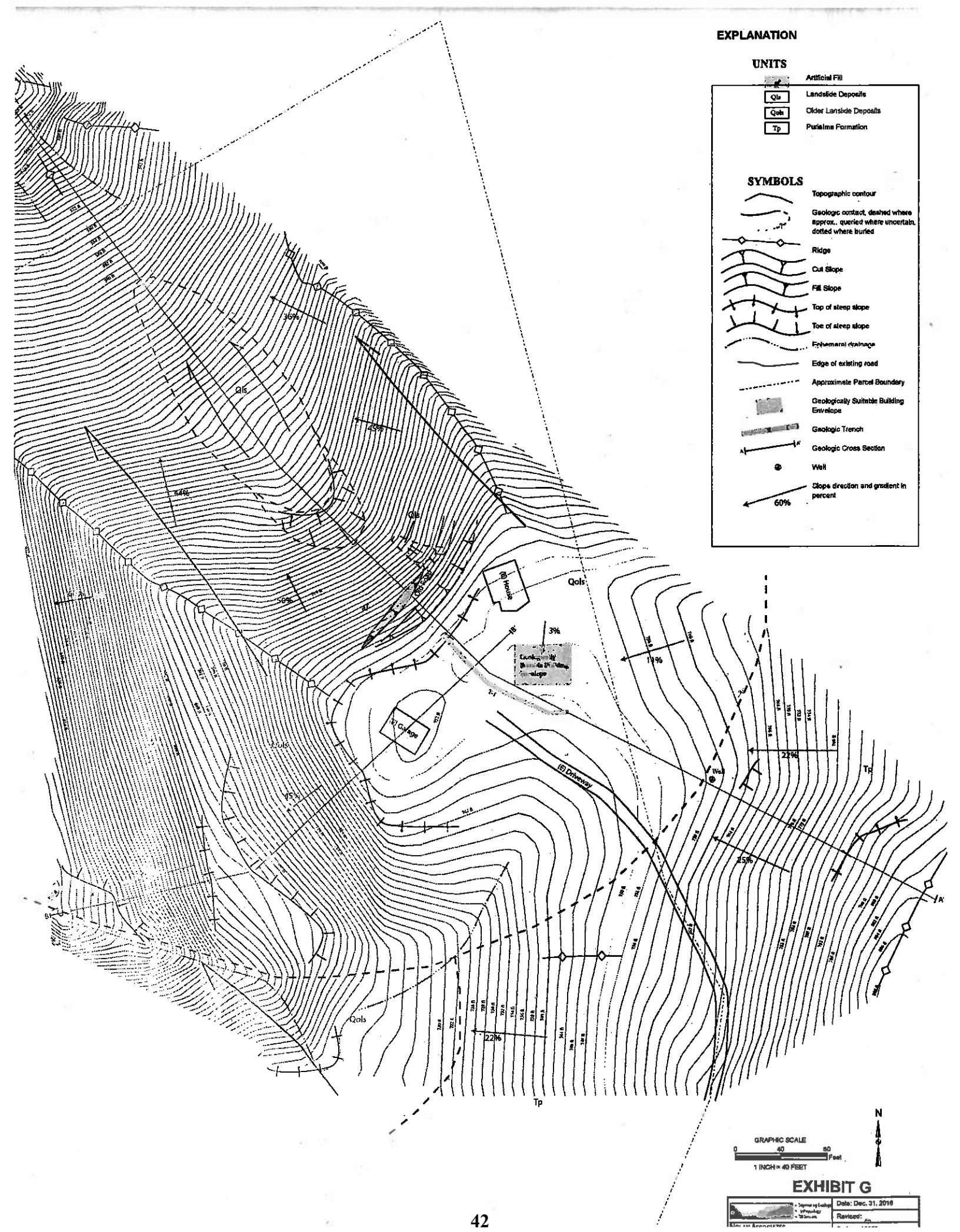


EXHIBIT G

	Date: Dec. 31, 2016
	Revised:

Property Uses on adjoining parcel (1075 Larsen Road, APN 105-041-02) <page 2 of 2>

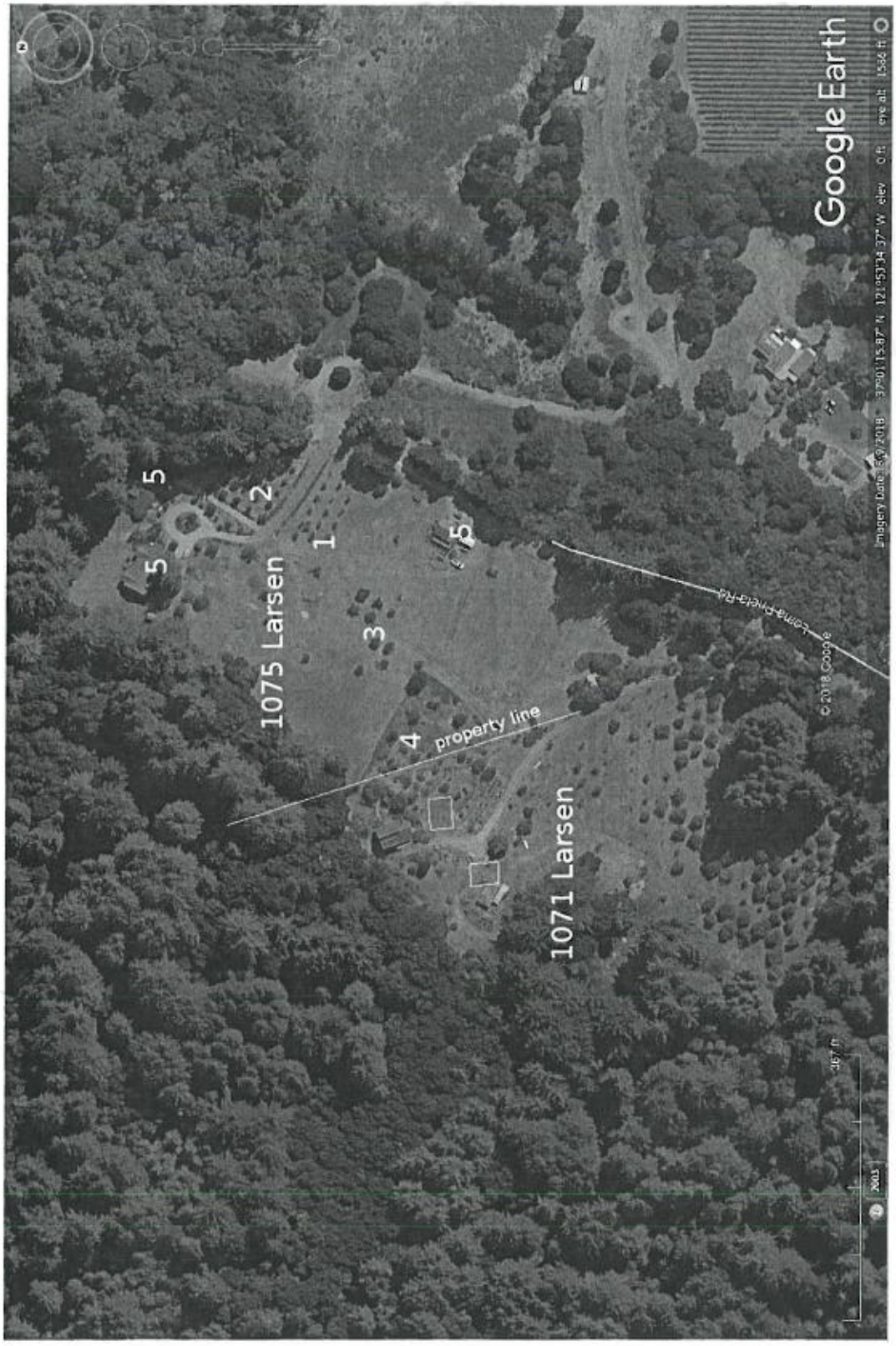


EXHIBIT H

Property Uses on adjoining parcel (1075 Larsen Road, APN 105-041-02) <page 1 of 2>
Currently there are no commercial agricultural activities at 1075 Larsen Road.
Parcel Assessors Acres (from GISWeb): 10.125
Several acres of this parcel are steep, on forested North-facing slopes, and unsuitable for agriculture.
Several cleared acres of this parcel have steep slopes and could be suitable for untilled orchard or vineyard.
The remaining several, cleared gently-sloping acres of this parcel, could be used for other agricultural activities within constraints dictated by highly erodible sandy-loam soil on sloping terrain.
Current Uses (locations indicated by numerals in image on page 2):

1. Olives, 21+- young trees, planted relatively recently, 335+ feet distant from our property boundary,
2. Mixed citrus, avocados, etc., 30+- trees, planted within last 10 years, 395+ feet distant from our property boundary,
3. Apples, 9 trees, plus several scattered remnants of original orchard, very old, 140+ feet distant from our property boundary,
4. Mixed 'home-center nursery trees' (~12), mostly dwarf, feral and not maintained over the last 10+ years, remnants from previous owner, adjacent to our property boundary,
5. Dwellings (three), currently used as rentals.

The owners of 1075 Larsen have indicated that they wish to observe Organic practices on their land. They harvest their apples, and I believe donate them to Second Harvest food bank.
Realistically, this parcel can be considered a Hobby Farm – term not intended disparagingly, we selected our parcel specifically for this use. To provide income of any significance on a parcel of such limited size will require extraordinarily high value crop(s) or products. To consider this parcel viable for Commercial Agriculture (by definition ***large-scale***) is dubious at best.

9 August, 2019