HENRY JUSTINIANO & ASSOCIATES
GEOTECHNICAL ENGINEERING

Project No. S-180-01
February 27, 2018

P4D-131

Chase and Enrin Sorgel
7717 Kelly Canyon Drive
Dublin, CA 94568

SUBJECT: GEOTECHNICAL INVESTIGATION
Proposed Single Family Dwelling
481 Sycamore Road
Pleasanton, California

Dear Mr. & Mrs. Sorgel:

Our geotechnical report for the proposed new residence at the subject property, is herewith submitted. The report presents the results of our explorations, the review of published geologic literature, along with our evaluations and recommendations for foundation design, and other earthwork related elements of the project.

In our opinion, the site is suitable to receive proposed improvements to the dwelling, provided the recommendations presented in this report, are incorporated into the design and adhered to during construction.

If you should have any questions or need further assistance, please do not hesitate to contact this office.

Respectfully Submitted,

HENRY JUSTINIANO & ASSOCIATES

Henry Justiniano, P.E.
Calif. No. C-42347
Exp. 3/31/2018

Enclosures

cc: Ridgecrest Designs (2)

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1.0 INTRODUCTION

1.1 PURPOSE

This report presents the results of our subsurface investigation of the subject property. General engineering design and geotechnical recommendations are provided, based upon the physical and strength characteristics of the subsurface materials, and take into consideration the proposed project's requisites.

1.2 SITE LOCATION

The subject property is located in the southern periphery of the City of Pleasanton, California. Specifically, the site is located on the southern side of Sycamore Road, approximately 750 feet to the east of Sunol Boulevard and 2,000 feet northeast of the Sunol Boulevard intersection with Highway 680. The precise location is illustrated on the Site Location Map, Figure 1.

1.3 SITE CHARACTERIZATION

The subject property hosts an old, relatively small, one story residence and carport fronting Sycamore Road. The proposed building site is a vacant, level area behind the existing house (Figure 2). There are a few scattered mature trees and bushes, primarily along the pad perimeter.

The setting conforms to the southern margin of the relatively flat lowlands of the broad Amador Valley, near the transition into the foothills.

1.4 SCOPE

The scope of our work included a literature research of available and applicable geological data, exploratory borings, sample collection, and logging of the foundation soils encountered during the field investigation. The geotechnical data compiled was analyzed in support of the recommendations presented herein.

1.5 PROPOSED IMPROVEMENTS

In accordance with the information furnished to this office, it is proposed to construct a single family residence (Figure 2).

1.6 SUMMARY OF RESULTS

Based upon the results of our evaluations, we conclude that there are no geotechnical nor geologic considerations that would preclude the proposed new residence. Information from our review of geological maps, the existing topography and our exploration program, indicates that the proposed building site is within acceptably stable terrain and is feasible, provided that the recommendations presented herein are incorporated into the design and adhered to, during the construction phases of the project.

2.0 GEOLOGY

2.1 SITE GEOLOGY

According to a compilation in the geologic map published by Helley et al., 1997 (Figure 3), the site is underlain by Pleistocene age, alluvial fan deposits. These deposits are described brown, dense, gravely and clayey sand or clayey gravel that fines upward to a sandy clay.

Data from the subsurface exploration indicates that the site is underlain by clayey sands, in general agreement with the above cited description.

2.2 FAULTING/SEISMICITY

The property is not within a current Alquist Priolo Earthquake Hazard Zone (formerly an Alquist Priolo Special Studies Zone). We did not recognize any geomorphic conditions within the property or surroundings that would suggest the presence of an active fault trace. The subject area is assigned a high seismic rating, due to its proximity to several faults . . . in particular, the Calaveras and Hayward Faults.

Table I below presents an assessment of the faults that contribute the most significant ground-motion hazard to the site. Included in the Table is the shortest distance between the site and each fault (as measured in kilometers from the surface trace projection of the fault). The maximum moment magnitude (Mw) for the Upper Bound Earthquake (UBE) estimated for each fault.

TABLE 1
FAULT DISTANCE - MAGNITUDE - ACCELERATION

Fault System	Distance		Upper Bounds Magnitude (Mw)
	Miles	Kilometers	
Calaveras	1.4	2.3	6.8
Greenville	11.2	18.0	6.9
Hayward	7.5	12.1	7.1
San Andreas (Northern)	25.7	41.4	7.9

(Mw): Estimated Moment Magnitude from CDMG (1996) Open File Report 96-08.

A peak ground acceleration (PGA) estimate of 0.926 with 2% probability of exceedance in 50 years, and 0.584 with 10% probability of exceedance in 50 years, was obtained from the California Geological Survey's web site for a Probabilistic Seismic Hazards Assessment (Figure 4).

2.3 POTENTIAL FOR LIQUEFACTION AND SEISMICALLY-INDUCED SETTLEMENT

Liquefaction occurs when a loose, saturated granular deposit changes from a solid to a liquid state due to particle densification and increased pore pressures during seismic shaking. Recent, notoriously conservative Official Mapping by the State of California, delineating Seismic Hazard Zones (2008, Figure 5), does not assign the subject site to an area with a potential for liquefaction.

As indicated by Figures 3 and 5, and confirmed by our borings, the site is underlain by dense clayey sands that are not susceptible to liquefaction or seismically induced compaction within the upper 16.5-feet of the profile. As such, we conclude that the liquefaction potential at the site, under extreme earthquake loading, is possible within a deeper sand layer that might develop some excess pore pressure; however, it is negligible with regard to any effect being realized at the surface.

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

3.1 FIELD INVESTIGATION

On January 26, 2018, our Engineer explored the subsurface conditions at the property, with two borings that were advanced with truck mounted rotary drill rig and a portable drill rig using 4-inch O.D. augers, to a maximum depth of 16.5-feet. The approximate locations of the borings are presented on the Site Plan, Figure 2.

The samples collected during our investigation consisted of relatively undisturbed samples obtained by advancing into undisturbed soil a Standard Penetration split barrel sampler, through the action of a 140-pound hammer falling a distance of 30 inches. The in-situ strength characteristics of the underlying soil is indicated by correlating the blow counts required to drive the sampler the lower 12 inches of a 18-inch sample attempt. The soils encountered were examined and logged in the field by an Engineer from this office. The soil profiles are presented as Figures 6 and 7.

3.2 LABORATORY TESTING

Laboratory testing was performed on selected samples, in order to identify some of their engineering properties. Testing was conducted to establish Atterberg limits and sieve analyses for soil classification.

The determination of Atterberg limits is used to correlate consistency changes with moisture variation, which is indicative of the expansion potential of the soil (ASTM D-4943). Atterberg limits testing performed on the near surface soils yielded a liquid limit of 30, with a plasticity index of 14, which can be correlated to clays with a low shrink-swell potential.

Sieve analyses were conducted to obtain grain size distribution, and to classify the encountered stratigraphic layers (Figure 8 and 9). In general, the grain size distribution curves classify the near surface soils as silty clays that have a low shrink/swell potential and are underlain by clayey sands.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the results of our exploration, it is our opinion that the property may be considered suitable to receive the proposed residence. Relatively dense alluvial deposits that offer a significant granular content (thus low expansive properties) and no geotechnical hazards, were identified for the proposed building pad. The relatively level terrain will not warrant significant grading, however, geotechnical considerations for the project demand thorough pad preparations for the desired slab-on-grade floors and some surficial grade adjustments to promote drainage.

Provided that the building pad is properly prepared, a system comprising conventional footings integrated to slab-on-grade floors, would be acceptable. We anticipate that the total compression related settlement, would be inconsequential.

Detailed recommendations regarding site preparations, foundation design criteria and other pertinent considerations, are presented in the following sections of this report.

In order to avoid saturation of foundation bearing soils resulting from surface flow, the site drainage must be planned so that the foundations are not allowed to saturate, and no ponding of water near the foundation takes place. The behavior of the near surface soils and any surficial improvements such as concrete walkways, will be dependent on the efficiency of the surface drainage provisions. Good surface drainage control will mitigate displacements and volume changes of the foundation supporting soils.

The recommendations presented in this report are for the soil conditions encountered in our exploration. Should other soil or rock conditions be uncovered during construction, due to non-uniformity of the geological formations, we should be contacted to evaluate the need for revision of the recommendations presented herein.

Based on the available geologic maps, it is our opinion that the subject site is not located astride an active fault. It must be understood by the owners, that all risk of geologic hazards cannot be eliminated, due to uncertainties of geologic conditions and unpredictability of seismic activity in the Bay Area. The structural design should incorporate current seismic code requirements. Seismically induced ground shaking with possible structural damage, should be expected to occur within the economic life of the structure. Nevertheless, the hazard of seismic shaking is shared throughout the region.

4.2 SEISMIC DESIGN

Based on the results of our investigation, we recommend that the following seismic design criteria be implemented in accordance with the California Building Code (2015):

Site Class	D
S_s	2.151
S_1	0.822
S_{ds}	1.434
S_{d1}	0.822

4.3 BUILDING PAD PREPARATIONS

While no mass grading is anticipated for the future improvements, the building pad should be scarified and compacted. In addition, it will be necessary to modify the grades in the areas designated to receive structural improvements, to promote drainage. As such, the upper 18-inches should be scarified, moisture conditioned and compacted, in preparation for the pad fine grading.

All fill that is required to accomplish the designated pad grade elevation, should be placed in lifts that are moisture conditioned to near the optimum moisture content and compacted to a 90 percent of maximum dry density, based on ASTM Test Procedure D1557. The lifts should not exceed 8-inches in loose, uncompacted thickness, prior to receiving a compactive effort.

During pad grading operations, the project Soils Engineer should be granted the opportunity to review the exposed pad conditions, to determine whether additional pad preparations are warranted.

All grading and depression backfill operations must be under the supervision of a qualified Engineer, in addition to the compaction testing procedures conducted by a Field Technician.

4.4 FOUNDATIONS

Geotechnical conditions are acceptable for the construction of conventional strip footing foundations that are structurally integrated to slab-on-grade floors. All footings should be at least 12-inches in width, and

should have their bases located no less than 18-inches below the lowest adjacent finished subgrade. Footings constructed to the given criteria, may be designed for an allowable bearing capacity of 1,500 psf for dead load, and 2,000 psf for dead load plus live load condition. These values may be increased by one-third to accommodate short duration seismic or wind loading conditions.

The footings should contain steel reinforcement over their entire length, with reinforcement as directed by the project Structural Engineer. In no case, however, should the exterior footing contain less than two No. 5 reinforcing bars, both top and bottom.

All slabs should be a minimum thickness as set forth by the Structural Engineer, but should not be less than 5-inches thick, and reinforced by a minimum of No. 4 bars, spaced at 18-inches each way, and centered within the entire slab.

Concrete slabs should include crack control joints for normal lineal shrinkage of the concrete materials. Where large areas of concrete slabs are placed, with irregular projections or inserts within the slab area, stress concentrations will result, causing uncontrolled crack patterns. Where possible, crack control joints should be placed at stress locations where projections from a main slab, or where inserts occur, in order to control the resultant crack pattern.

All concrete slabs-on-grade should be underlain by a 4-inch thick capillary break of clean crushed rock or compacted Class II Aggregate Baserock. To mitigate vapor transmission, it is recommended that an impermeable membrane of 10-mil minimum thickness be placed upon the capillary break material.

4.5 DRAINAGE

It is important to divert surface runoff away from the foundation perimeters. A slope gradient of 3 percent down and away from the dwelling's perimeters, for a minimum of 5 feet, should be provided to the finish grade. Downspouts should be connected to conduits that will transport their effluent to a discharge point away from structural element-bearing soils. Adjacent areas should be sloped toward catch-basins that are designated to low points.

4.6 UTILITY TRENCHES

Utility trenches that are parallel to the sides of the footings, should be avoided. All trenches should be backfilled with native materials compacted uniformly to a 90% relative compaction.

5.0 GENERAL CONDITIONS

5.1 PLAN REVIEW

Prior to the submission of design drawings and construction documents for approval by the appropriate local agency, copies of these documents should be reviewed by our firm, to evaluate whether or not the recommendations contained in this report have been effectively incorporated into the design of the project.

5.2 CONSTRUCTION OBSERVATIONS

A representative of this firm must be present during grading of the site. This item is necessary to properly evaluate the quality of the materials and their relative compaction. Foundation excavations must be inspected by a representative of this firm, in order to make the necessary adjustments as a result of localized irregularities.

At the completion of the earthwork related construction, a report will be submitted summarizing our observations, including the results of the compaction testing program.

To allow for proper scheduling, we request a minimum of 48 hours notice prior to the commencement of earthwork operations requiring our presence.

5.3 LIMITATIONS

This report has been prepared by HENRY JUSTINIANO & ASSOCIATES for the exclusive use of Chase and Enrin Sorgel and their representatives, for consideration of the proposed improvements to the property described in this report.

The interpretations and recommendations presented in this report are professional judgements, and are based on our evaluations of the technical information obtained during this investigation, on our understanding of the characteristics of the planned improvements to the structure, and on our general experience with similar subsurface conditions in other areas. We do not guarantee the performance of this project in any respect, only that our engineering work and judgements meet the standards of care normally exercised by our profession.

It is assumed that the borings are representative of the subsurface conditions throughout the areas designated to receive improvements. Unanticipated soil conditions are commonly encountered and cannot be fully determined by performing exploratory borings. If, during construction, subsurface conditions

different from those indicated in this report, are encountered or appear to be present beneath excavations, HENRY JUSTINIANO & ASSOCIATES should be advised at once so we can review these conditions and reconsider our recommendations, when necessary.

If more than 18 months have elapsed between the submission of this report and the start of work at the site, or if conditions have changed because of natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of the conclusions and recommendations, considering the time lapse or changed conditions.

The scope of our services did not include an environmental assessment, or an investigation of the presence or absence of hazardous, toxic or corrosive materials in the soil, surface water, groundwater, or air, on, below, or around this site.

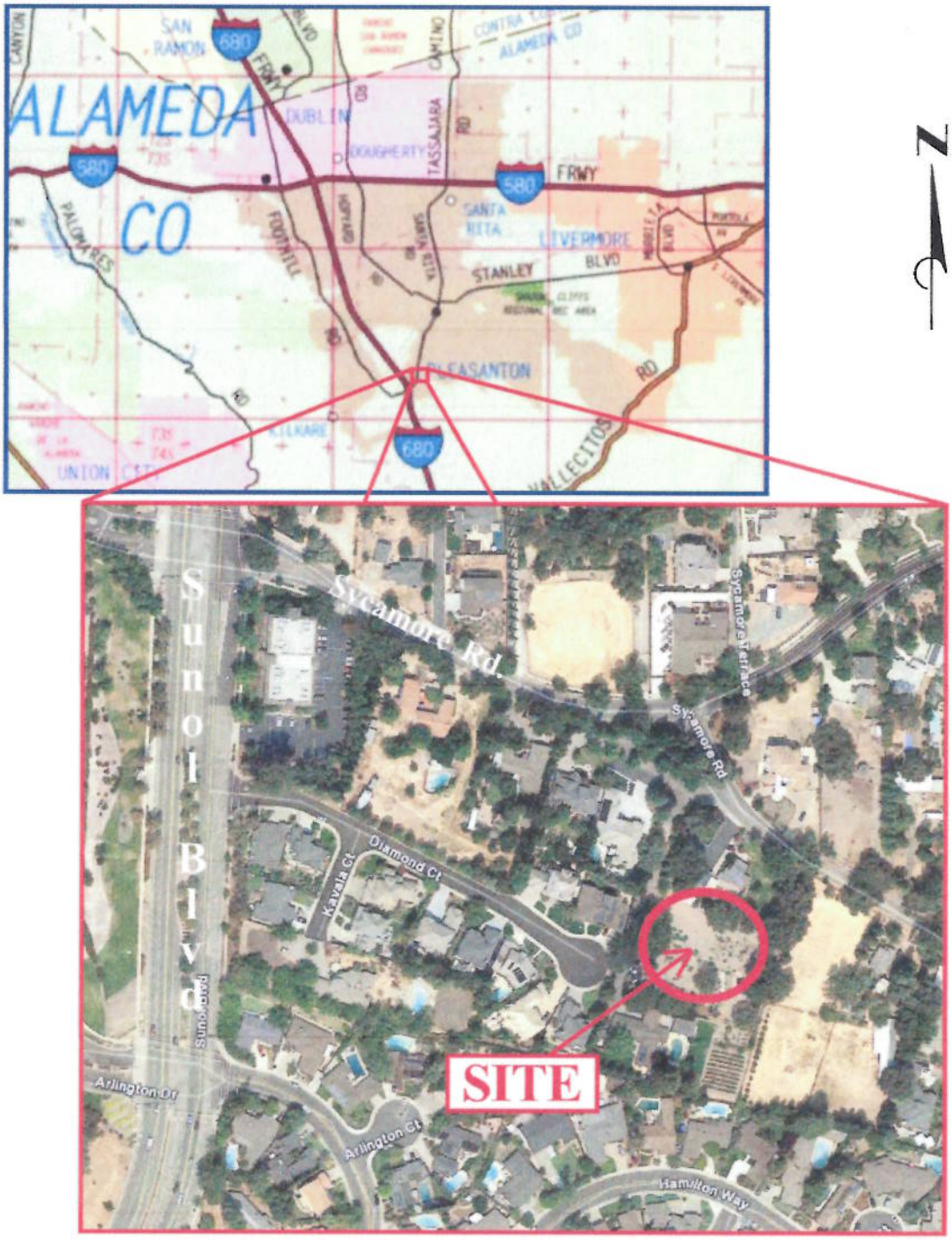
REFERENCES

E. J. Helley and R. W. Graymer, Quaternary Geology of Alameda County and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California: A Digital Database, U.S. Geological Survey Map 97-97.

State of California, Seismic Hazard Zones, Livermore Quadrangle, Official Map, Released August 27, 2008.

Davis, J., 1982, State of California, Special Studies Zones, Official Map, Livermore 7.5' Quadrangle Alameda County, California.

Petersen, et al. (1996, and 2003 Revisions), Probabilistic Seismic Hazard Assessment for the State of California, U.S.G.S. Open-File Report 96-706, D.M.G. Open-File Report 96-08.



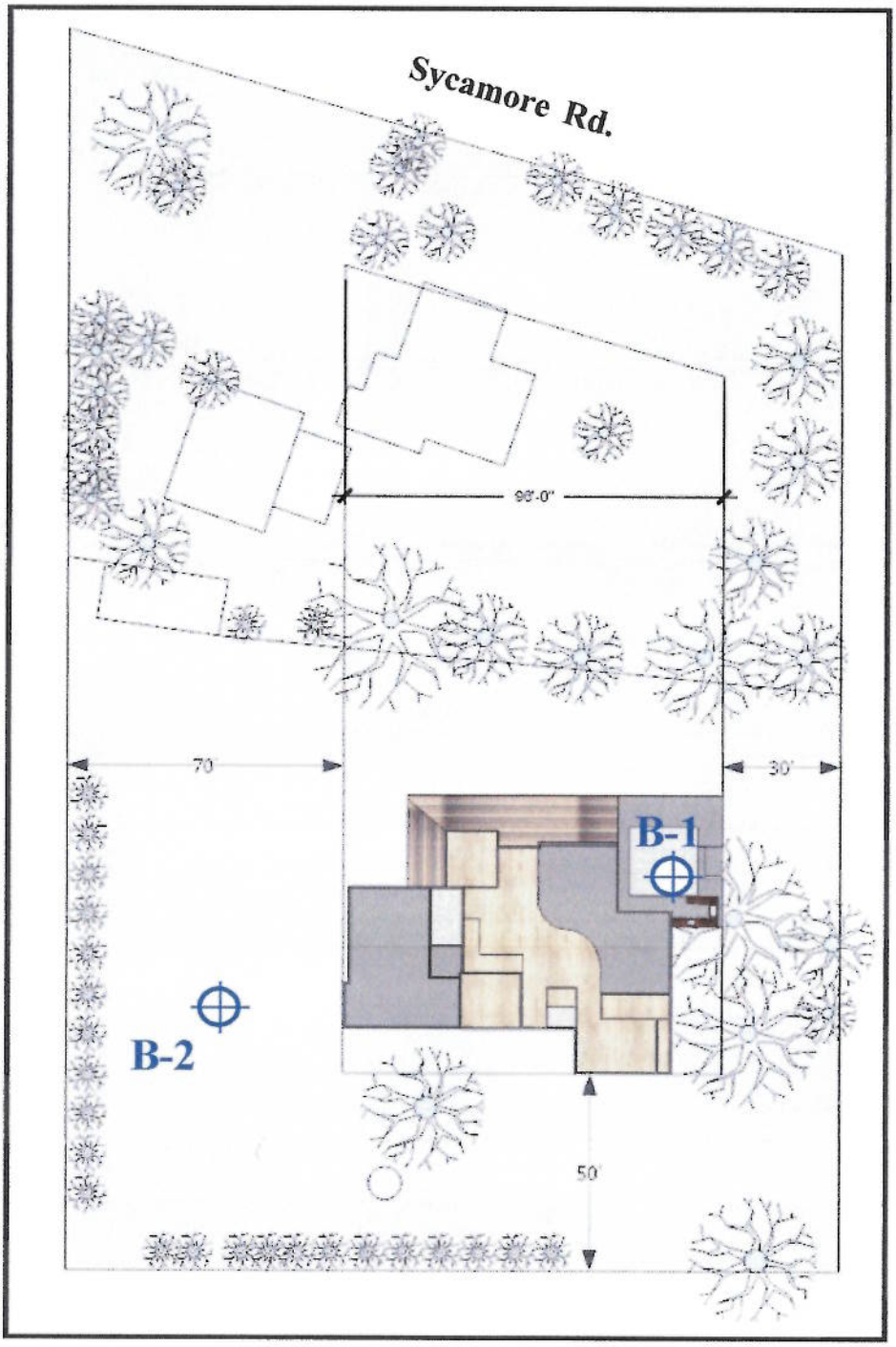
SITE LOCATION

Project No.: S-180-01	Date: 02-27-18	Scale: NTS

Source: Thomas Guide, 1997
Google Earth 2018

Henry Justiniano & Associates
Soils and Foundation Engineering

Figure No. 1



SITE PLAN

Explanation

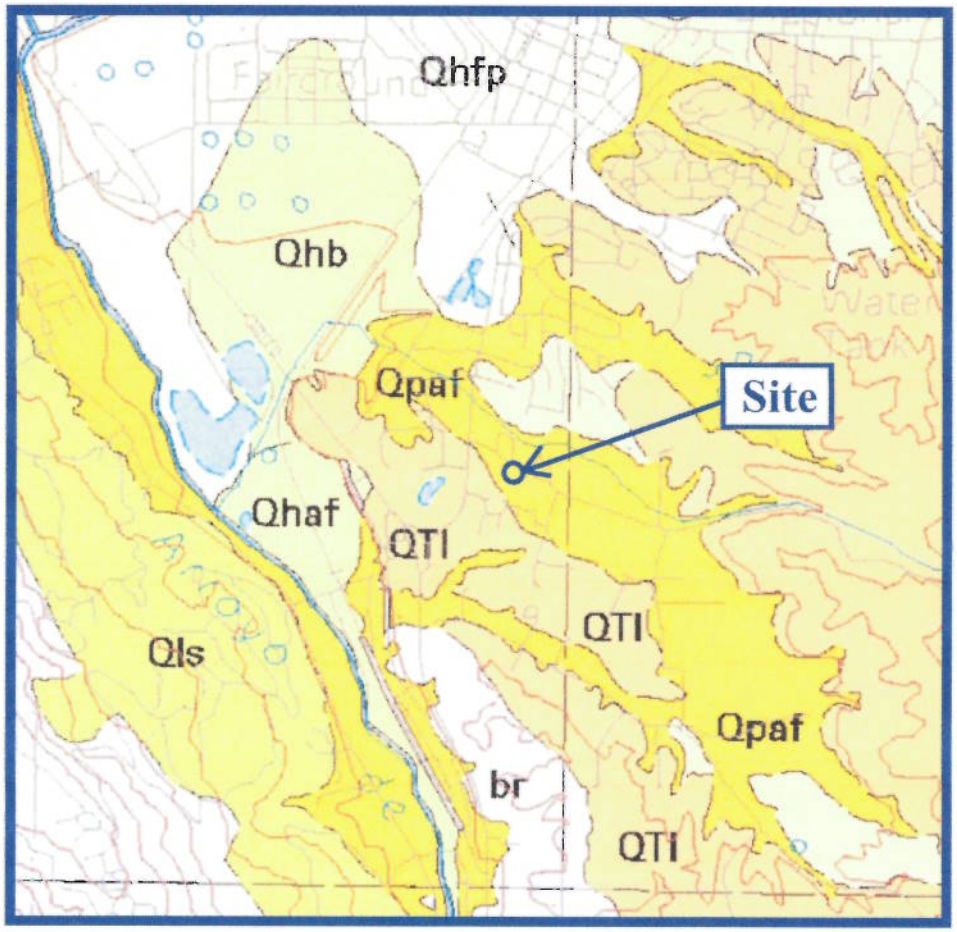
Approximate Location of Borehole

Source: Ridgecrest Designs

Project No. : S-180-01	Date: 02-27-18	Scale: NTS

Henry Justiniano & Associates
Soils and Foundation Engineering

Figure No. 2



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EXPLANATION

Qhaf –Alluvial Fan deposits (Holocene)

Qhfp –Floodplain deposits (Holocene)

Qhb –Basin deposits (Holocene)

Qpaf –Alluvial Fan deposits (Pleistocene)

QTl –Livermore gravels (Pleistocene and/or Pliocene)

Qls –Landslide deposits (Holocene and/or Pleistocene)

GEOLOGY MAP

E. J. Helley and R.W. Graymer, 1997

Project No.: S-180-01	Date: 02-27-18	Scale: NTS

Henry Justiniano & Associates
Soils and Foundation Engineering

Figure No. 3

N

EXPLANATION

Liquefaction
Areas where historical occurence of liquefaction, or local geological, geotechnical and ground-water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

STATE OF CALIFORNIA SEISMIC HAZARD ZONES

DUBLIN QUADRANGLE [RELIMINARY MAP

RELEASED FEBRUARY 27, 2008 (MODIFIED)

Project No.: S-180-01	Date: 02-27-18	Scale: NTS

Henry Justiniano & Associates
Soils and Foundation Engineering

Figure No. 5

Exploration Boring Log by:
Henry Justiniano
& Associates

Boring Log No.: B-1
Project: Sycamore Rd., Pleasanton
Client: Sorgel
Date Drilled: 01/26/18
Equipment Used: Mobile Drill, 140 Lb., 30 inch Drive, 4.5" Continuous Flight, Samplers As Noted.
Location: 48' South, 41' West of Northeastern Lot Corner

Depth (in Feet)	Other Laboratory Tests	Dry Density (pcf)	Moisture Content %	Blow Count per 12 inch Drive	Sample Number & Type	Groundwater	Description of Material
1							Brown Silty CLAY
	Sieve			11	B-1-A SPT		Tan, Silty CLAY Low Plasticity Moist, Stiff
5	Sieve			10	B-1-B SPT		Tan, Silty Clayey SAND Moist, Loose to Medium Dense
							Becomes stiffer drilling @8'
10	Sieve			35	B-1-C SPT		Reddish-Tan-Grey, Silty Clayey SAND Moist, Dense
15	Sieve			58	B-1-D SPT		Reddish-Tan-Grey, Silty Clayey SAND Moist, Very Dense
							Terminated @ 16.5'
20							

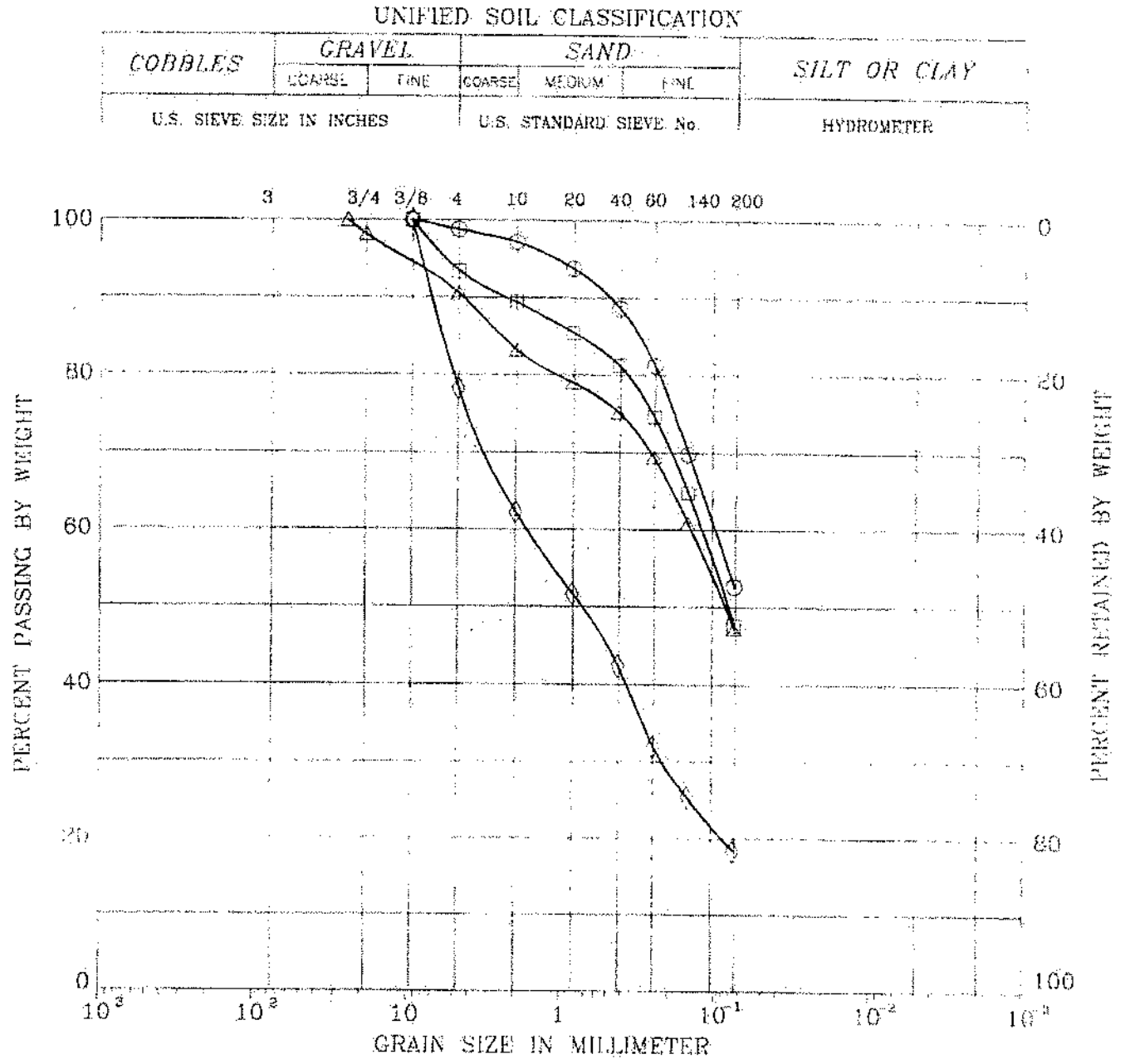
Figure No. 6

Exploration Boring Log by:
Henry Justiniano
& Associates

Boring Log No.: B-2
Project: Sycamore Rd., Pleasanton
Client: Sorgel
Date Drilled: 01/26/18
Equipment Used: Mobile Drill, 140 Lb., 30 inch Drive, 4.5" Continuous Flight, Samplers As Noted.
Location: 40' East, 65' North of Southwestern Property Corner

Depth (in Feet)	Other Laboratory Tests	Dry Density (pcf)	Moisture Content %	Blow Count per 12 inch Drive	Sample Number & Type	Groundwater	Description of Material
1							Brown Silty CLAY
	Atterberg Limits Liquid Limit = 30 Plasticity Index = 14			9	B-2-A SPT		Tan, Grey, Silty CLAY Low Plasticity Moist, Stiff
5	**Sieve**			11	B-2-B SPT		Reddish-Tan, Silty Clayey SAND Moist, Medium Dense
10	**Sieve**			21	B-2-C SPT		Reddish-Tan-Grey, Silty Clayey SAND Moist, Dense Terminated @ 11.5'
15							
20							

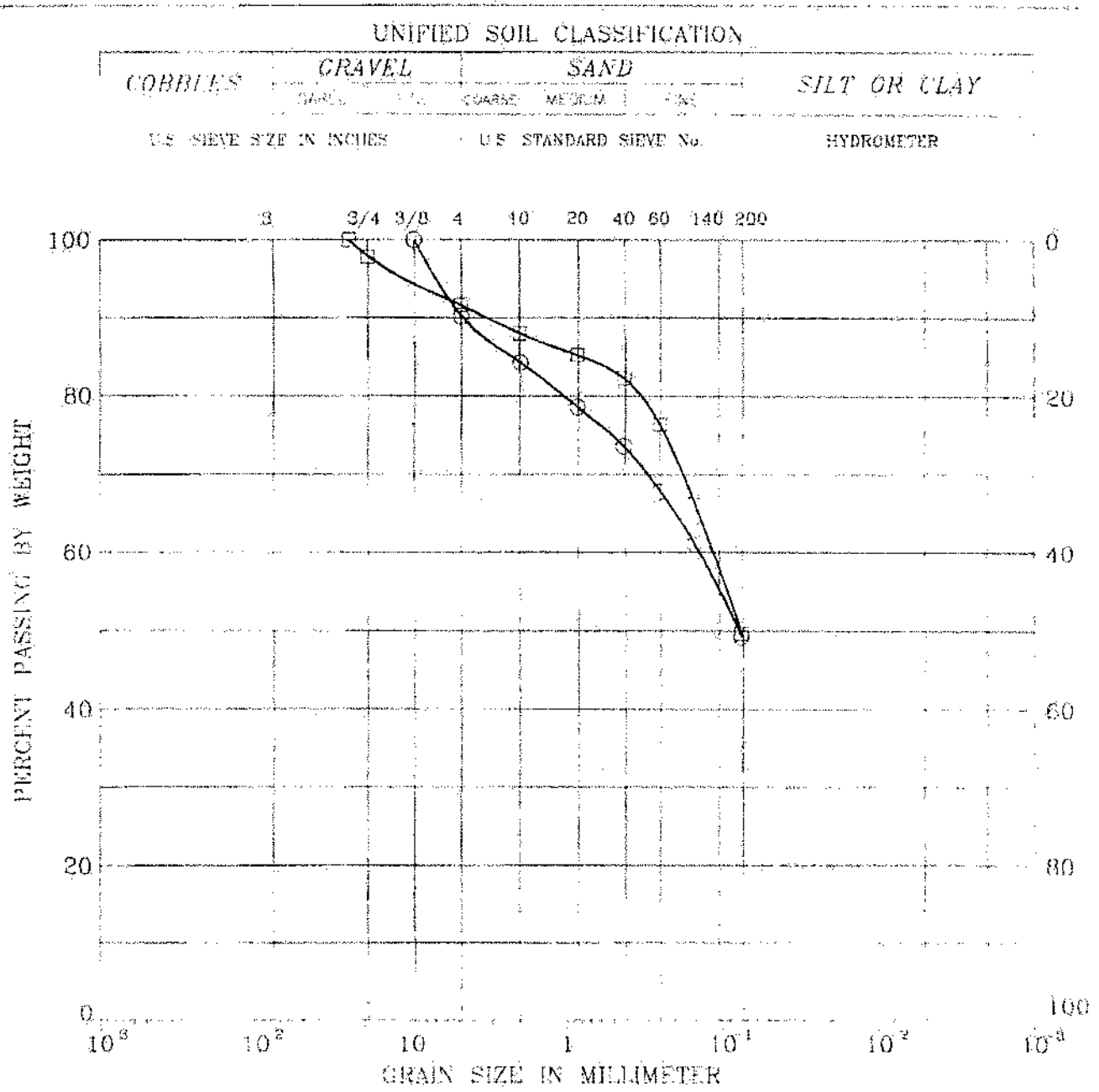
Figure No. 7



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	B-1-A	2.5-3.5			INORG. SILTS AND CLAYS (ML, CL)
□	B-1-B	5.0-6.5			SILTY, CLAYEY SAND (SM, SC)
△	[illegible]	[illegible]			[illegible]
◇	[illegible]	[illegible]			[illegible]

Remark :

Project No.S-18001	Sycamore Rd., Pleasanton
H. Justiniano And Associates	GRAIN SIZE DISTRIBUTION Figure No. 8



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	B-2-B	5-6.5			SILTY, CLAYEY SAND (SM-SC)
□	B-2-C	10-11.5			SILTY, CLAYEY SAND (SM-SC)

Remark :

Project No.S-18001 | Sycamore Rd. Pleasanton

H. Justiniano
And
Associates

GRAIN SIZE DISTRIBUTION Figure No. 9

EXHIBIT D

TRAVERSO TREE SERVICE
WHEN IT HAS TO BE DONE RIGHT

January 7, 2019

Erin Sorgel
esorgel@gmail.com

Re: Revised Arborist Report for 481 Sycamore Road, Pleasanton

Dear Erin,

This arborist report addresses the proposed project at 481 Sycamore Road. Per the City of Pleasanton's Tree Preservation Ordinance Chapter 17.16, the scope of work includes:

- Tag, identify and measure trees with a diameter of 6" or greater on or overhanging the property.
- Note trees that are considered "Heritage" per city ordinance, defined as:
    - Any single-trunked tree with a circumference of 55" or greater (17" in diameter), measured 4.5' above ground.
    - Any multi-trunked trees of which the two largest trunks have a circumference of 55" (17" diameter) or more.
    - Any tree 35' or more in height.
    - Any tree of particular historical significance specially designated by official action.
    - A stand of trees, the nature of which makes each dependent upon the other for survival or the area's natural beauty.
- Identify dripline locations and tree numbers on site plan.
- Assess individual tree health and structural condition.
- Assess proposed improvements for potential encroachment.
- Based on proposed encroachment, tree health, structure, and species susceptibility, make recommendations for preservation.
- Provide appraised values for all trees whose driplines may be encroached.

This report was revised to address the city's comments. Changes are noted with "revised 1/7/19".

Project Discussion
The property is currently developed with a single-family home to the north, which is separated from the undeveloped south portion by an existing wire fence. The proposed project will develop the open area with a new residence, served by a new driveway that extends the existing driveway (Figure 1). Many landscaping improvements are also proposed throughout the entire property, including but not limited to a pool & cabana, new hardscape, fencing and walkways.

I included fifty-six (56) trees in my inventory, eighteen (18) of which are considered Heritage trees per City ordinance. Eighteen (18) trees are dead or nearly dead but were included per city request. I also noted four (4) trees on the neighbor's property since their canopies are overhanging the site. However, they will not be affected by the proposed project. *(revised 1/7/19)*

Figure 1. The rear/south half of the property is an open undeveloped field. Oak #13 can be seen at the upper left; I recommend removing it due to encroachment and excessive cankering (see photo below).

Nearly all on-site trees are located along the perimeter of the property or on the developed north half, where they will not be directly affected by the proposed house. The exceptions include a valley oak (#13) immediately south of the proposed home. In addition to dripline encroachment by the proposed porch and house, the tree #13's condition also warrants its removal (Figure 2). It has sustained either physical or biological injury over the years, with nearly the entire circumference of its trunk girdled by cankers. Multiple seasons of cankers are visible, and the tree does not appear to be healthy enough to overcome this chronic issue. I recommend removing the tree to accommodate the proposed home.

I also recommend removing the significantly drought-stressed, trunk-cankered redwoods (#6 & 7) along the west property line. Replacing these young trees will be more cost-effective than attempting to restore their health. Other trees (#2, 10-12, 33, 34 & 259) will be removed for proposed landscaping improvements.

A valley oak (#23) was originally slated for removal due to proximity of the proposed cabana and pool

Figure 2. Oak #13 is suffering from severe trunk cankers which recur and coalesce. It is also located 3' from the porch of the proposed home.

hardscape. The city requested it be saved, so Traverso Tree staff dug an exploratory trench along the proposed hardscape to locate and assess roots. Few significant roots were encountered – one 1.5" root was found to the south, but all other roots were 1" or smaller (Figure 3). Since encroachment is low, the pool and cabana design can be constructed as designed. Roots were pruned prior to trench backfilling. *(revised 1/7/19)*

The retained trees shall be protected by temporary protection fencing. The ideal type of fencing is 6' chain-link, as it is difficult to encroach, but alternative types may be approved by the City. Any type of fencing shall not be adjusted or removed without consulting the arborist.

In summary, it is my opinion that twenty-eight (28) trees will need to be removed, eighteen (18) of which are dead. The remaining twenty-eight (28) trees can be retained given that the protection measures within this report are followed. *(revised 1/7/19)*

Assumptions & Limitations

This report is based on my site visit on 4/26/18, grading & drainage plan by Alexander & Associates, Inc. (dated 7/18/18), and the landscape plan by Environmental Foresight, Inc. (dated 10/17/18). It was assumed that the proposed improvements and trees were accurately surveyed.

The health and structure of the trees were assessed visually from ground level. No drilling, root excavation, or aerial inspections were performed except for oak #23. Internal or non-detectable defects may exist and could lead to part or whole tree failures. Due to the dynamic nature of trees and their environment, it is not possible for arborists to guarantee that trees will not fail in the future.

Figure 3. Exploratory trench by tree #23 was dug by hand with air spade assistance. Largest root measured 1.5" in diameter (above); all other roots were 1" or smaller. Roots were cleanly pruned before trench was backfilled.

Tree Inventory & Assessment Table
#s: Each tree was given a numerical tag from #1-34 (missing tag #18) & 255-259. Dead/dying redwoods were assigned a letter from A-Q but were not physically agged. Their locations are given in the tree protection plan.
DBH (Diameter at Breast Height): Trunk diameters in inches were calculated from the circumference measured at 4.5' above average grade.

Health & Structural Condition Rating
Dead: Dead or declining past chance of recovery.
Poor (P): Stunted or declining canopy, poor foliar color, possible disease or insect issues. Severe structural defects that may or may not be correctable. Usually not a reliable specimen for preservation.
Fair (F): Fair to moderate vigor. Minor structural defects that can be corrected. More susceptible to construction impacts than a tree in good condition.
Good (G): Good vigor and color, with no obvious problems or defects. Generally more resilient to impacts.
Very Good (VG): Exceptional specimen with excellent vigor and structure. Unusually nice.

Age
Young (Y): Within the first 20% of expected life span. High resiliency to encroachment.
Mature (M): Between 20% - 80% of expected life span. Moderate resiliency to encroachment.
Overmature (OM): In >80% of expected life span. Low resiliency to encroachment.

DE: Dripline Encroachment (X indicates encroachment)
CI: Anticipated Construction Impact (L = Low, M = Moderate, H = High)

#	Species	DBH	Health	Structure	Dripline N	Dripline E	Dripline S	Dripline W	Age	DE	CI	Comments	Action
A	Redwood (*Sequoia sempervirens*)	3	Dead	-								*(Added 1/7/19)*	Remove.
B	Redwood	3	Dead	-								*(Added 1/7/19)*	Remove.
C	Redwood	3	Dead	-								*(Added 1/7/19)*	Remove.
D	Redwood	3	Dead	-								*(Added 1/7/19)*	Remove.
E	Redwood	5	Dead	-								*(Added 1/7/19)*	Remove.
F	Redwood	2, 2	Dead	-								*(Added 1/7/19)*	Remove.
G	Redwood	6.5	Dead	-								*(Added 1/7/19)*	Remove.

#	Species	DBH	Health	Structure	Dripline N	Dripline E	Dripline S	Dripline W	Age	DE	CI	Comments	Action
H	Redwood	2.5	Dead	-								Not surveyed. *(Added 1/7/19)*	Remove.
I	Redwood	1	Dead	-								Not surveyed. *(Added 1/7/19)*	Remove.
J	Redwood	1	Dead	-								*(Added 1/7/19)*	Remove.
K	Redwood	2.5	Dead	-								*(Added 1/7/19)*	Remove.
L	Redwood	4	VP	-								Nearly dead. *(Added 1/7/19)*	Remove.
M	Redwood	3	Dead	-								Not surveyed. *(Added 1/7/19)*	Remove.
N	Redwood	4	Dead	-								*(Added 1/7/19)*	Remove.
O	Redwood	4	Dead	-								*(Added 1/7/19)*	Remove.
P	Redwood	2" x 4	Dead	-								*(Added 1/7/19)*	Remove.
Q	Redwood	7	Dead	-								*(Added 1/7/19)*	Remove.
1	Monterey Pine (*Pinus radiata*)	28	G-F	G	15	15	15	18	M	X	L	**Heritage tree.** Canopy slightly sparse, no signs of flagging or beetle infestation. Low growing branches. Proposed fence 12' from tree; improvements to driveway in existing location.	Install temporary protection fencing.
2	Deodar Cedar (*Cedrus deodara*)	10.5	G	G-F	10	10	10	10	Y		L	Slight kink at top of trunk. Slightly crowded by adjacent pine. Noted as removal on proposed landscaping plan.	Remove.
3	Valley Oak (*Quercus lobata*)	23	G	F	15	18	20	18	M	X	L	**Heritage tree.** Multiple co-dominant stems at 10' above grade, appears to have been topped in the past. Abundant sprouting from wood. Within 2' of existing driveway. Flare slightly buried. Proposed improvements to existing driveway in same footprint.	Install temporary protection fencing.
4	Valley Oak	18.5	G	F	0	15	20	0	M	X	L	**Heritage tree.** Trunk flare buried. Large scaffold removed at 3', wound completely closed. Shaded by adjacent tree. 1' from existing driveway. Proposed improvements to existing driveway in same footprint.	Install temporary protection fencing.
5	Valley Oak	13	G	G-F	15	12	12	12	M	X	L	Trunk flare buried. 3' from existing driveway. Co-dominant stems at 7'. Sprouting along trunk. 7' from proposed driveway; proposed improvements to existing driveway in same footprint.	Install temporary protection fencing.

#	Species	DBH	Health	Structure	Dripline N	Dripline E	Dripline S	Dripline W	Age	DE	CI	Comments	Action
6	Redwood	6	P	G	3	3	3	3	Y		L	Unusual recurring trunk cankers up to 6', appears to be regular occurrence over the years. Girdled by stakes. Foliage bronzed. 17' from proposed driveway. Recommend removal due to poor condition.	Remove.
7	Redwood	7	P	G	3	3	3	3	Y		L	Persistent trunk cankers. 20' from proposed driveway. Recommend removal due to poor condition.	Remove.
8	Redwood	11.5	G-F	G-F	6	6	6	6	Y		L	Top sparse. 15' from proposed driveway.	Install temporary protection fencing.
9	Redwood	11.5	F	F-P	6	6	6	6	Y		L	Sparse canopy. Reverse taper in trunk due to canker damage. 16' from proposed driveway.	Install temporary protection fencing.
10	Redwood	9.5	F	F	6	6	6	6	Y		L	Not surveyed. Trunk canker. Clear of construction. To be removed for new landscaping.	Remove.
11	Redwood	8.5	F	F-P	6	6	6	6	Y		L	Sparse canopy; trunk canker. 12' from proposed house (*revised 1/7/19).* To be removed for new landscaping.	Remove.
12	Redwood	7.5	F	F-P	3	3	3	3	Y		L	Severe trunk cankers. Top of tree thin. 4' from proposed house (*revised 1/7/19).* To be removed for new landscaping.	Remove.
13	Valley Oak	19.5	P	F	18	18	18	18	M	X	H	**Heritage tree**. Multiple stems at 7'. Moderate deadwood in canopy; canopy sparse. Significant trunk cankering around 90% of trunk. 3' from proposed covered porch, 15' from proposed house. Not worthy of preservation.	Remove.
14	Valley Oak	18.5	G-F	F	20	20	20	20	M	X	L	**Heritage tree.** 8' from proposed fence.	Install temporary protection fencing. Hand dig fence footings within 10' of trunk.
15	Coast Live Oak (*Quercus agrifolia*)	31.5	G-F	G-F	12	12	20	25	M	X	L-M	**Heritage tree.** Elongated co-dominant stems with wide attachment. East side of trunk with no flare (may indicate root issues). Existing concrete slab 17' from tree. 11' from proposed fence; additional landscaping beneath dripline.	Install temporary protection fencing. Hand dig fence footings within 15' of trunk.
15B	Valley Oak	11.5	Dead									No tag. *(Added 1/7/19)*	Remove.

#	Species	DBH	Health	Structure	Dripline N	Dripline E	Dripline S	Dripline W	Age	DE	CI	Comments	Action
16	Valley Oak	24	G-F	G-F	10	20	20	15	M	X	L-M	**Heritage tree.** Canopies slightly sparse. Minor lean away from adjacent oaks. DBH estimated due to fence. Proposed flagstone paving 5' from tree.	Install temporary protection fencing. Cleanly prune roots ≥2" if encountered during excavation.
17	Valley Oak	27.5	G-F	F	20	20	15	15	M	X	L-M	**Heritage tree.** Canopy slightly sparse. Co-dominant stems at 5'. Minor trunk canker. 22' from existing concrete slab. 19' from corner of proposed covered porch; 21' from proposed hardscape.	Install temporary protection fencing.
19	Valley Oak	19	G	F	15	10	20	20	M		L	**Heritage tree.** Trunk flare half buried. Low growing scaffolds towards home. 23' from proposed limit of grading.	Install temporary protection fencing.
20	Valley Oak	15	G	F	12	15	18	0	M		L	Trunk flare buried. Existing fence 3' from tree. 23' from proposed limit of grading.	Install temporary protection fencing.
21	Valley Oak	15	G-F	G	15	15	15	15	M	X	L-M	Trunk flare buried. 10' from proposed pool deck; 7' from proposed DI. (*revised 1/7/19)*	Install temporary protection fencing.
22	Valley Oak	13	G-F	F	20	0	0	15	Y	X	L-M	Trunk flare buried. Shading by adjacent oaks. 6' from proposed pool paving; 8' from proposed cabana.	Install temporary protection fencing. Cleanly prune roots ≥ 2" in diameter if encountered during grading.
23	Valley Oak	22	G	G-F	8	0	20	12	M	X	L	**Heritage tree.** Trunk flare buried. Shaded by adjacent oaks. <6' from proposed pool paving, 5' from proposed cabana. Exploratory trenching on 1/7/19 revealed no significant roots. *(revised 1/7/19)*	Install temporary protection fencing at 5'-5.5' from trunk. (*revised 1/7/19)*
24	Valley Oak	21	F	F	0	15	18	15	M	X	L	**Heritage tree.** Canopy slightly sparse; sprouting from wood. Slight lean to south.14' from proposed pool cabana. Existing shed to be demolished beneath dripline.	Install temporary protection fencing. Cleanly prune roots ≥ 2" in diameter if encountered during grading.
25	Valley Oak	23	F	F	15	20	15	20	M		L	**Heritage tree.** Moderate deadwood. 19' from proposed pool cabana trellis; 31' from proposed pool.	Install temporary protection fencing.
26	Valley Oak	13	F	F	20	20	0	0	Y		L	Understory tree, suppressed by adjacent oak (within 1'). Clear of construction.	Install temporary protection fencing.
27	Persimmon (*Diospyros* sp.)	7, 8	F	F	15	15	15	15	M	X	L	Trunk flare buried. Co-dominant stems at 4'. Canopy slightly sparse. 7' from proposed plastic header.	Install temporary protection fencing.
28	Valley Oak	14.5	G-F	F	0	10	15	15	M		L	Trunk flare buried. Multiple elongated stems.	None.

#	Species	DBH	Health	Structure	Dripline N	Dripline E	Dripline S	Dripline W	Age	DE	CI	Comments	Action
29	Valley Oak	25	F	F	15	15	15	25	M		L	**Heritage tree.** Trunk flare buried. Multiple systems at 10'. Elongated scaffold over lawn. Canopy slightly sparse. 18' from proposed plastic header.	None.
30	Valley Oak	20	F	F	20	20	10	10	M		L	**Heritage tree.** Old circular tag #100. Trunk flare buried.	None.
31	Valley Oak	21	F	F	15	15	30	10	M	X	L	**Heritage tree.** Trunk flare buried. Elongated scaffold over lawn. 17' from proposed plastic header.	None.
32	Ash (*Fraxinus* sp.)	14.5, 13	F	F-P	15	8	20	20	M	X	L	**Heritage tree.** Co-dominant stems at 2' with included bark. Consider cabling in future. Trunk flare buried. 17' from proposed plastic header.	None.
33	Apple (*Malus* sp.)	4, 4, 4	F	F	6	6	6	6	M		L	Topped. Trunk flare buried. To be removed for new landscaping.	Remove.
34	White Birch (*Betula pendula*)	5, 3.5, 4	G	G-F	7	7	7	7	Y	X	H	Not surveyed. Triple trunks. ~1.5' from proposed concrete paving. (*revised 1/7/19)*	Remove.
255	Valley oak	8, 8	F	F	20	20	0	0	M		L	Neighbor's tree, not surveyed. Tag on fence. Within 6" of existing fence. Unknown trunk cankers at 5'. Lopsided canopy due to shade. (*added 1/7/19)*	Install temporary protection fencing.
256	Valley oak	10, 10	F	F	25	25	15	20	M		L	**Heritage tree.** Neighbor's tree, not surveyed. Tag on fence. Co-dominant stems at 1'. Canker at 5'. (*added 1/7/19)*	Install temporary protection fencing.
257	Valley oak	11, 6, 8	F	F	0	25	20	0	M		L	**Heritage tree.** Neighbor's tree, not surveyed. Tag on fence. Trunk cankers at 5'. Stunted growth. (*added 1/7/19)*	Install temporary protection fencing.
258	Valley oak	11	G-F	F	0	25	0	0	M		L	Phototropic lean to east. All canopy in upper half. (*added 1/7/19)*	Install temporary protection fencing.
259	Euonymus (*Euonymus japonicus*)	8.5, 7 (at 6")	G-F	G-F	8	6	0	10	M	X	H	Umbrella-shaped shrub. Minor powdery mildew. To be removed for landscaping project. (*added 1/7/19)*	Remove.

Trees that will need to be removed: 2, 6, 7, 10-12, 13*, 33, 34, 259 (10 trees; asterisk indicates heritage tree)
Dead trees to be removed: A-Q, 15B (18 trees)
Trees to be saved that will be subjected to dripline encroachment: 1, 3-5, 14-17, 21, 22-24, 27, 31, 32 (15 trees)
Trees to be saved that will not be encroached: 8, 9, 19, 20, 25, 26, 28-30, 255-258 (13 trees)

Tree Appraisal (*Revised 1/3/19 with all trees ≤ 6" DBH)*
Per city ordinance, appraisals are required for all trees whose driplines will be encroached. The following appraised values were determined using the Trunk Formula Method, used for larger trees that cannot be readily replaced by equal-sized specimens. All figures below were calculated using a worksheet formatted from *The Guide for Plant Appraisal (9th Edition)* written by the Council of Tree & Landscape Appraisers, and the *Species Classification and Group Assignment Guide* written by the Western Chapter of the International Society of Arboriculture. (Worksheets available upon request)

#	Species	DBH	Basic Value	Species Rating	Condition Rating	Location Rating	Appraised Value
A-Q	Redwoods, dead	-	-	-	-	-	$0.00
1	Monterey Pine	28	$22,550.15	30%	88%	38%	$2,280.00
2	Deodar Cedar	10.5	$4,107.10	90%	94%	33%	$1,160.00
3	Valley Oak	23	$19,050.66	90%	81%	38%	$5,300.00
4	Valley Oak	18.5	$12,386.28	90%	86%	35%	$3,360.00
5	Valley Oak	13	$10,393.40	90%	89%	38%	$3,190.00
6	Redwood	6	$1,200.28	90%	59%	30%	$190.00
7	Redwood	7	$1,571.34	90%	63%	30%	$270.00
8	Redwood	11.5	$3,947.51	90%	75%	33%	$890.00
9	Redwood	11.5	$3,947.51	90%	69%	32%	$780.00
10	Redwood	9.5	$2,748.72	90%	70%	28%	$490.00
11	Redwood	8.5	$2,234.95	90%	67%	28%	$380.00
12	Redwood	7.5	$1,778.27	90%	67%	28%	$300.00
13	Valley Oak	19.5	$23,169.04	90%	60%	43%	$5,400.00
14	Valley Oak	18.5	$20,870.94	90%	84%	42%	$6,600.00
15	Coast Live Oak	31.5	$34,881.42	90%	86%	52%	$13,900.00
15B	Valley Oak	11.5	Dead				$0.00
16	Valley Oak	24	$35,007.30	90%	91%	35%	$10,000.00
17	Valley Oak	27.5	$45,908.17	90%	81%	47%	$15,600.00
19	Valley Oak	19	$22,004.87	90%	88%	57%	$9,900.00
20	Valley Oak	15	$13,780.08	90%	84%	52%	$5,400.00
21	Valley Oak	15	$13,780.08	90%	78%	52%	$5,000.00
22	Valley Oak	13	$10,393.40	90%	89%	38%	$3,190.00
23	Valley Oak	22	$29,443.47	90%	81%	48%	$10,400.00
24	Valley Oak	21	$26,842.98	90%	75%	53%	$9,700.00
25	Valley Oak	23	$32,164.91	90%	75%	55%	$11,900.00
26	Valley Oak	13	$10,393.40	90%	77%	30%	$2,160.00
27	Persimmon	7, 8	$7,340.13	90%	78%	40%	$2,060.00
28	Valley Oak	14.5	$12,888.05	90%	81%	37%	$3,440.00
29	Valley Oak	25	$37,970.64	90%	77%	63%	$16,700.00

#	Species	DBH	Basic Value	Species Rating	Condition Rating	Location Rating	Appraised Value
30	Valley Oak	20	$24,363.45	90%	78%	53%	$9,100.00
31	Valley Oak	21	$26,842.98	90%	78%	60%	$11,300.00
32	Ash	14.5, 13	$11,026.07	30%	75%	43%	$1,080.00
33	Apple	4, 4, 4	$3,358.04	70%	78%	50%	$920.00
34	White Birch	5, 3.5, 4	$1,921.33	30%	97%	48%	$270.00
255	Valley oak	8, 8	$7,490.53	90%	75%	50%	$2,530.00
256	Valley oak	10, 10	$13,780.08	90%	69%	53%	$4,560.00
257	Valley oak	11, 6, 8	$12,026.26	90%	72%	50%	$3,900.00
258	Valley oak	11	$7,490.53	90%	70%	63%	$2,990.00
259	Euonymus	8.5, 7 (at 6")	No reference data available for shrubs. Based on Traverso Tree Service planting cost for 24" box replacement				$750.00
						Total Value of Appraised Trees	$187,340.00

Recommendations (to be printed on site plans)

Pre-construction

- Remove trees #2, 6, 7, 10-12, 13*, 33, 34, 259 (10 trees; asterisk indicates heritage tree). Dead trees A-Q & 15B will also be removed.
- Prior to construction or grading, contractor shall install fencing to construct a temporary a Tree Protection Zone (TPZ) around each tree or grove of trees as indicated on the tree protection plan. 6' tall chain-link fencing is recommended, though other types of fencing may be used with City approval.
- TPZ fencing shall remain in an upright sturdy manner from the start of grading until the completion of construction. Fencing shall not be adjusted or removed without consulting the project arborist (PA).

Foundation, Grading, and Construction Phase

- Hand dig fence footings within 10' of trunk of tree #14, and 15' within trunk of tree #15.
- If roots $\geq$ 2" are encountered during excavation by trees #16, 22 & 24, they shall be cleanly pruned, covered, and kept moist till backfilled.
- If needed, pruning shall be performed by personnel certified by the International Society of Arboriculture (ISA). All pruning shall adhere to ISA and American National Standards Institute (ANSI) Standards and Best Management Practices.
- Should TPZ encroachment be necessary, the contractor shall contact the PA for consultation and recommendations.
- Contractor shall keep TPZs free of all construction-related materials, debris, fill soil, equipment, etc. The only acceptable material is mulch spread out beneath the trees.
- Should any damage to the trees occur, the contractor shall promptly notify the PA to appropriately mitigate the damage.

Landscaping Phase

- Contractor shall avoid trenching and grade changes within oak driplines.
- All planting and irrigation shall be kept a minimum of 10' away from native oaks. All irrigation within the driplines shall be targeted at specific plants, such as drip emitters or bubblers. No overhead irrigation shall occur within the driplines of native oaks.
- All planting within oak driplines shall be compatible with oaks, consisting of plant material that requires little to no water after two years' establishment. A list of oak-compatible plants can be found in a publication from the California Oak Foundation, available at: http://californiaoaks.org/wp-content/uploads/2016/04/CompatiblePlantsUnderAroundOaks.pdf

Thank you for the opportunity to provide this report, and please do not hesitate to contact me if there are any questions or concerns.

Sincerely,

Jennifer Tso
Certified Arborist #WE-10270A
Tree Risk Assessor Qualified

TREE PROTECTION RECOMMENDATIONS

Pre-construction

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Foundation, Grading, and Construction Phase

- Hand dig fence footings within 10' of trunk of tree #14, and 15' within trunk of tree #15.
- If roots ≥ 2" are encountered during excavation by trees #16, 22 & 24, they shall be cleanly pruned, covered, and kept moist till backfilled.
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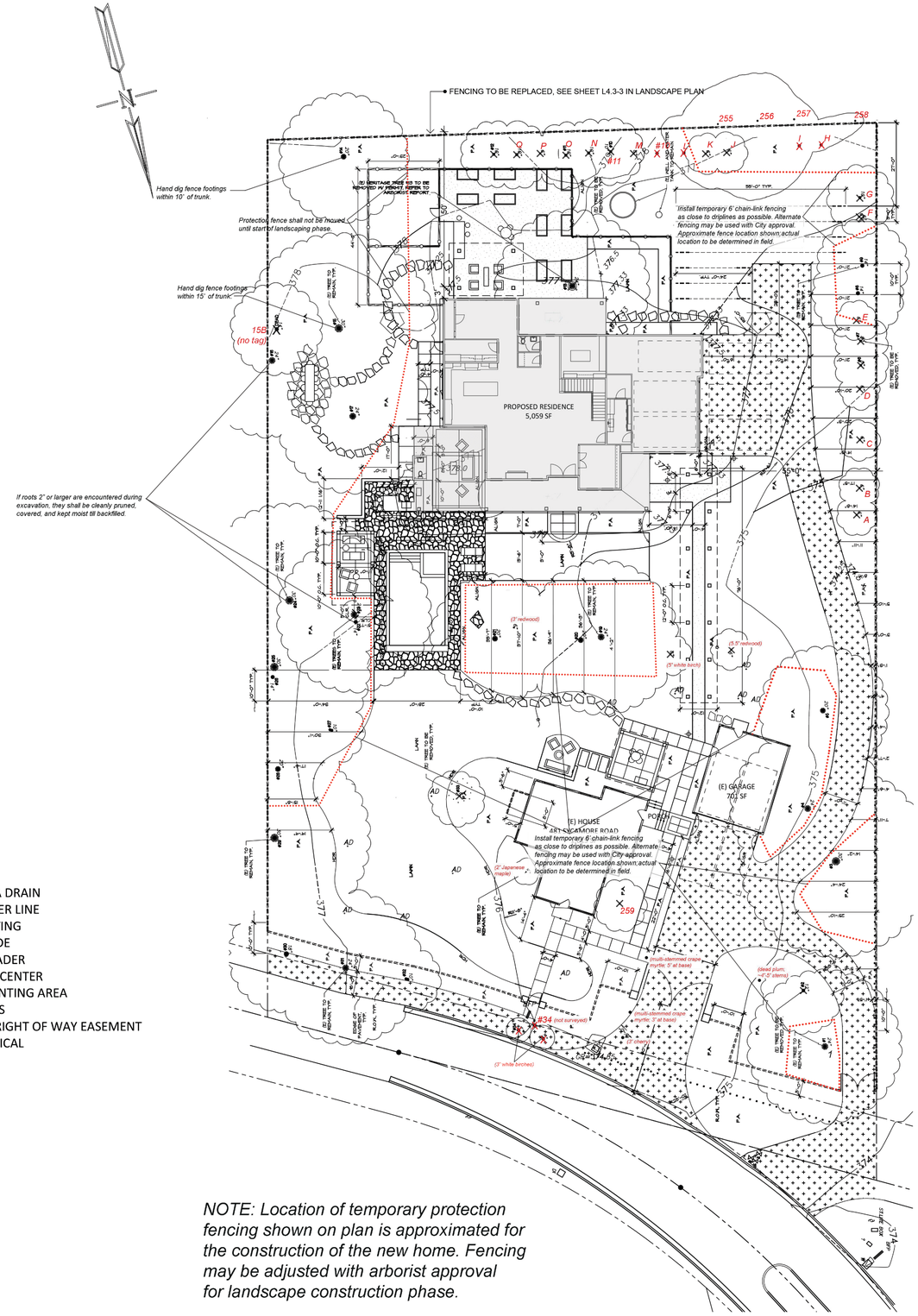
SCALE: 1" = 20' 0" 0 5' 10' 20' 30' 50'



LEGEND:

- SETBACK LINE
- GAS LINE
- TREE TRUNK & DIAMETER
- TREE TO BE REMOVED
- PROPOSED FENCE
- PROPERTY LINE
- DECORATIVE GRAVEL PAVING
- DECOMPOSED GRANITE
- 8' PUBLIC SERVICE EASEMENT
- ROW DEDICATION
- PROPOSED STRUCTURE
- 10' x 20' PARKING SPOT

AD = AREA DRAIN
CL = CENTER LINE
(E) = EXISTING
GR = GRADE
HDR = HEADER
O.C. = ON CENTER
P.A. = PLANTING AREA
R = RADIUS
R.O.W. = RIGHT OF WAY EASEMENT
TYP. = TYPICAL

NOTE: Location of temporary protection fencing shown on plan is approximated for the construction of the new home. Fencing may be adjusted with arborist approval for landscape construction phase.

TREE PROTECTION PLAN
By: Jennifer Tso
Certified Arborist #WE-10270A
Traverso Tree Service, Inc.
January 7, 2019
(drawn on proposed site plan)

SITE PLAN - PROPOSED A3 01

DRAWING SCALE
1"0" = 20'0"

CLIENT
CHASE & ERIN SORGEL
481 SYCAMORE ROAD
PLEASANTON, CA 94566

ISSUE
1.18.2019

RE-ISSUE
MM.DD.YY

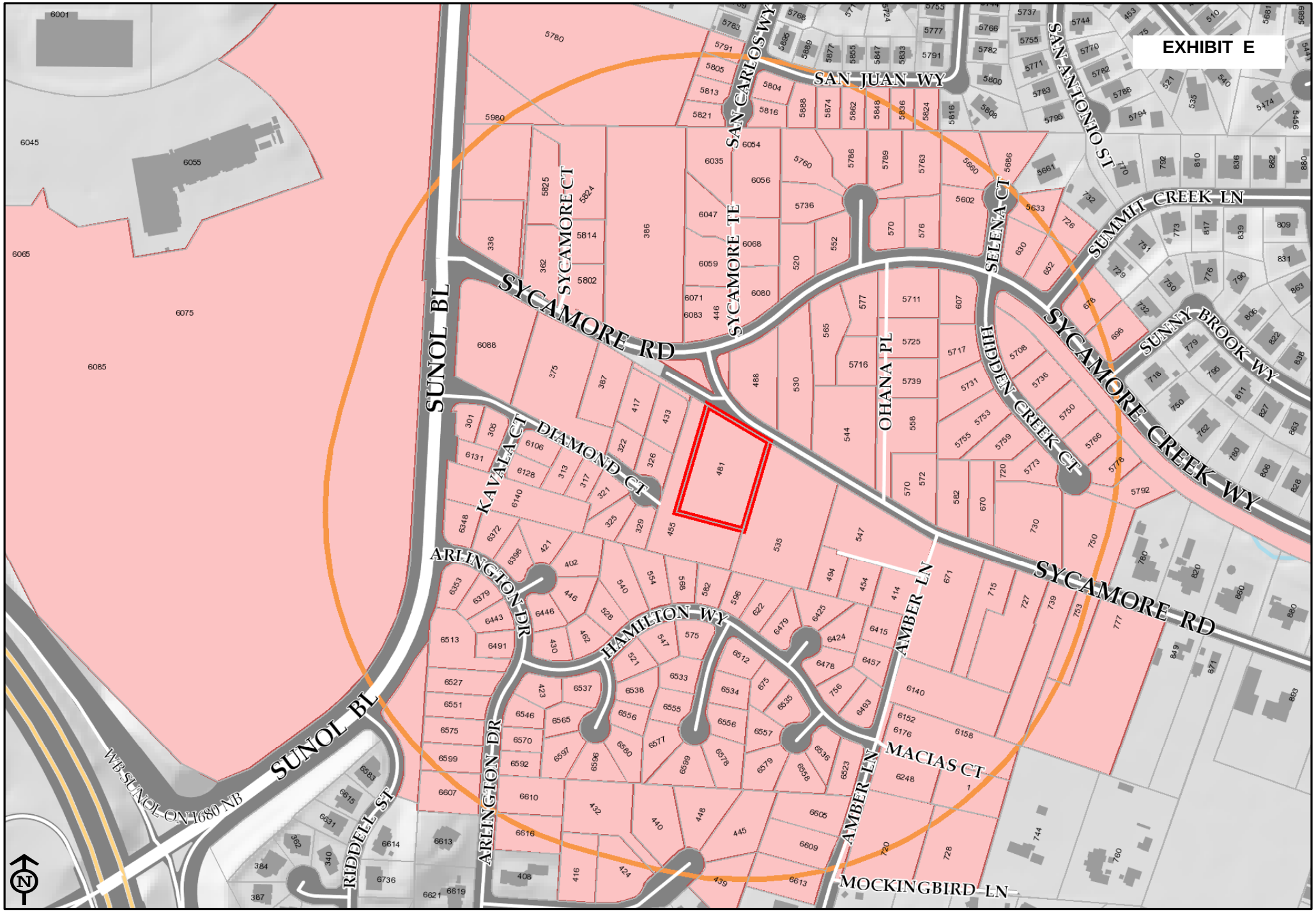
PROJECT NO.
245.170

PROJECT
SORGEL RESIDENCE

DRAWN BY
RIDGECREST DESIGNS
HB, JB

DESCRIPTION
SITE PLAN - PROPOSED

a



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0 0.05 0.1 mi

0 262.5 525 Feet

PUD-131, 481 Sycamore Road, Henry Batteate for Erin Sorgel

Planning Division
February 27, 2019

THE CITY OF PLEASANTON