Exhibit C-1

PJC & Associates, Inc.

Consulting Engineers & Geologists

December 12, 2019 Job No. 9479.01

Sean Garvey
Komes + Garvey Ranches
1889 W. Zinfandel Lane
St. Helena, CA 94574
Sean@kgranches.com
c/o: Lincoln Agricultural Engineering
Attention: Sarah Pistone
Sarah@LincolnAE.com

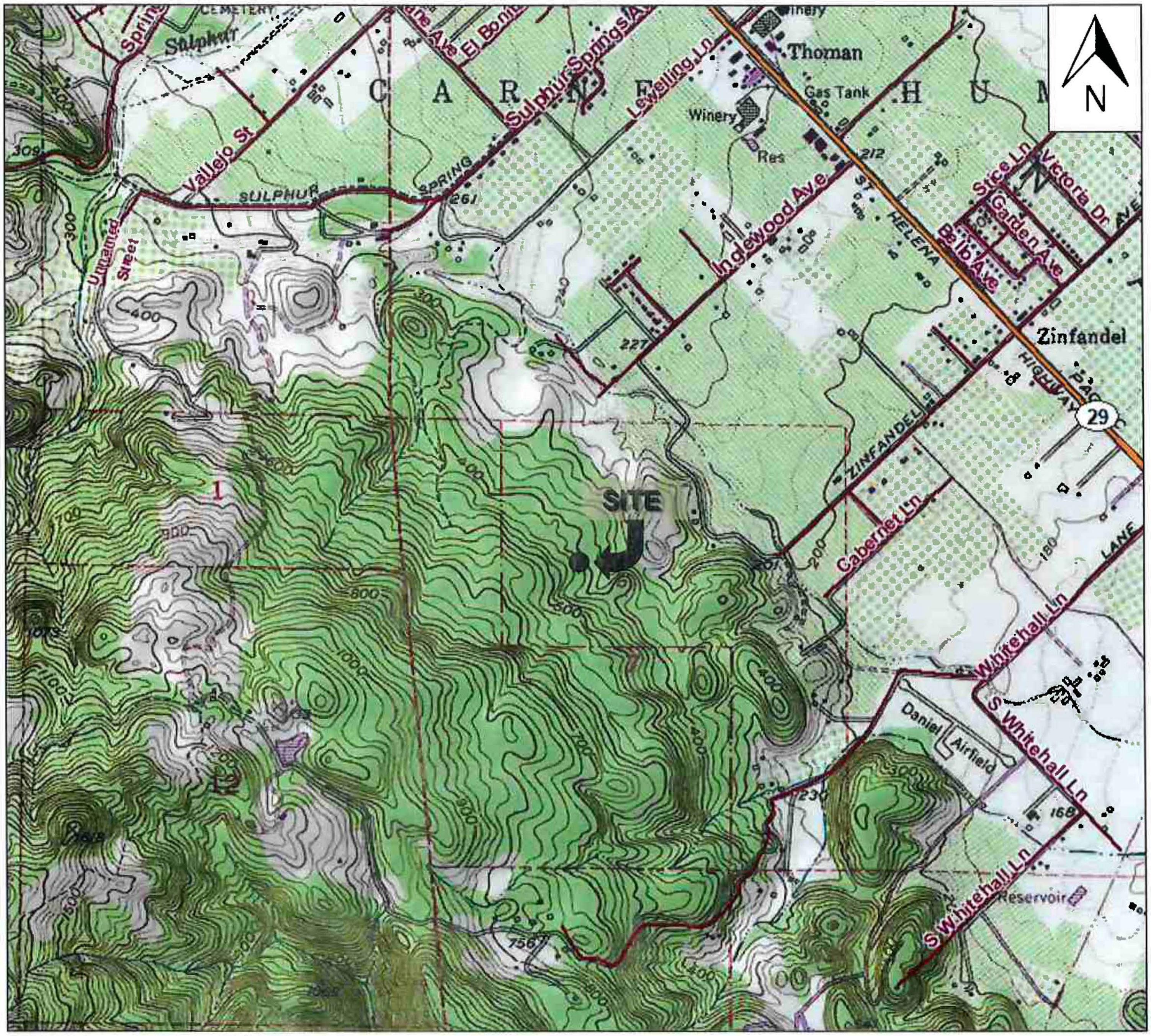
Subject: Stability Report & Landslide Repair
Proposed Vineyard
1889 West Zinfandel Lane
St. Helena, California

Dear Sean,

PJC & Associates, Inc. (PJC) is pleased to submit this report which presents the results of our stability evaluation and guidelines to repair a landslide at the proposed vineyard located at 1889 West Zinfandel Lane, in St. Helena, California. The approximate location of the project site is shown on the Site Location Map, Plate 1. According to field GPS measurements, the approximate coordinates of the project area correspond to latitudinal and longitudinal coordinates of 38.4754° north and 122.4600° west. Our services were completed in accordance with our proposal for geotechnical engineering services, revised/ dated October 14, 2019. The purpose of our work was to perform a geologic reconnaissance of the proposed vineyard blocks, review applicable geologic references, and assess if adverse slope conditions are present that could impact the stability of the proposed vineyard development. This report also presents our engineering opinions and recommendations for repairing the active landslide located in in the southern margin of Block 3. Based on the results of this study, it is our opinion that the landslide at the southern margin of Block 3 can be properly repaired and that the project is feasible from a geotechnical engineering standpoint, provided the recommendations presented herein are incorporated in the design and carried out through construction.

1. PROJECT DESCRIPTION

Based on our review of the proposed vineyard development map prepared Lincoln AE LLC, dated October 3, 2019, it is our understanding that the proposed project will consist of developing approximately 16.3 acres of vineyards at the property. The vineyards will be divided into four separate blocks (Block 2, 3, 5, & 6) and will span across sloping hillside terrain. It is



SCALE: 1:24,000

REFERENCE: USGS RUTHERFORD, CALIFORNIA 7.5 MINUTE QUADRANGLE, DATED 1973.

PJC & Associates, Inc.
Consulting Engineers & Geologists

SITE LOCATION MAP
PROPOSED VINEYARD
1889 WEST ZINFANDEL LANE
ST HELENA, CALIFORNIA

PLATE
1

Proj. No: 9479.01 | Date: 12/19 | App'd by: PJC also planned to repair an active landslide within the southern margin of Block 3. The scope of our work on the project consisted of performing a qualitative slope stability analysis to provide an opinion on the stability of the proposed vineyard blocks. Our work also included an evaluation of the soil, bedrock, and groundwater conditions underlying the landslide at the southern margin of Block 3 and nearby areas. Our scope of work also included providing geotechnical engineering recommendations to repair the active landslide. A site plan displaying the proposed project is presented on Plate 2.

2. SCOPE OF SERVICES

The scope of our work on the project consisted of performing a qualitative slope stability analysis to provide an opinion on the stability of the proposed vineyard development and landslide repair recommendations. Our services included performing the following:

a. Surfical reconnaissance of vineyard blocks to observe topography, surface soils soil creep, and landslide areas. The surface reconnaissance was performed by our certified engineering geologist.

b. Subsurface exploration consisting of five test pits with a track-mounted excavator. Representative soil and bedrock samples were collected from the test pits to evaluate the site soil conditions. The exploratory test pits were logged by our certified engineering geologist. Soil and bedrock samples were collected during the subsurface exploration.

c. Geologic mapping to identify landslide areas.

d. Laboratory testing to evaluate the site soils and bedrock.

e. Review published geologic literature and aerial photographs, discuss site geology, and evaluate site slope stability.

f. Engineering analyses, based on data obtained from the exploration and testing program, to provide opinions and general recommendations for the following items:

    i. Landslide repair options and recommendations.

    ii. Excavation and site earthwork, including placement and compaction of engineered fill, permissible cut and fill slopes, and erosion control.

    iii. On-site soil compaction curve analysis.

iv. Surface and subsurface drainage control.

v. Consultation during the design phase of the project.

g. Preparation of this report, presenting the results of this study.

3. SITE CONDITIONS

The project site is located approximately three miles south of the Town of St. Helena, in the foothills flanking the western margin of Napa Valley. The project site is located approximately 1,600 feet west of West Zinfandel Lane. Terrain across the project area consists of gentle to moderately steep hillsides with nearby seasonal drainages. At the time of our field investigation, the proposed vineyard blocks were undeveloped and generally covered in native grasses within nearby gray pine and oak tree forests. Serpentinite rock outcrops and boulders were observed, in and around the margins of Blocks 2 and 3. The previously mentioned active landslide was observed in the southern margin of Block 3. The landslide covers an area of just over one acre in an area covered in perennial grasses. The landslide consists of a translation block landslide which occurred due to the presence of weak clayey materials, slippery serpentinite bedrock, and poor surface and subsurface drainage conditions.

4. SITE GEOLOGY

a. Regional Geology. The site is located in the Coast Ranges Geomorphic Province of California. This province is characterized by northwest trending topographic and geologic features, and includes many separate ranges, coalescing mountain masses, and several major structural valleys. The province is bounded on the east by the Great Valley and on the west by the Pacific Ocean. It extends north into Oregon and south to the Transverse Ranges in Ventura County.

The structure of the northern Coast Ranges region is extremely complex due to continuous tectonic deformation imposed over a long period of time. The initial tectonic episode in the northern Coast Ranges was a result of plate convergence, which is believed to have begun during the late Jurassic period. This process involved eastward thrusting of oceanic crust beneath the continental crust (Klamath Mountains and Sierra Nevada) and the scraping off of materials that are now accreted to the continent (northern Coast Ranges). East-dipping thrust and reverse faults were believed to be the dominant structures formed.

Right lateral, strike slip deformation was superimposed on the earlier structures beginning mid-Cenozoic time, and has progressed northward to the vicinity of Cape Mendocino in Southern Humboldt County. Thus, the principal structures south of Cape Mendocino are northwest trending, nearly vertical faults of the San Andreas system.

b. <u>Local Geology</u>. According to the geologic map of the Rutherford 7.5-minute quadrangle, prepared by the California Geologic Survey (CGS), the project area is underlain by a massive Quaternary landslide deposit (Qls) which is bordered by serpentinite bedrock (sp). The mapped global landslide extends from near the peak of the mountain west of the site, to the east and all the way down to near the floor of Napa Valley. The mapped global landslide appears to be a deep-seated ancient feature which likely previously moved during the extremely wet climatic time of the Pleistocene Epoch, coinciding with a severe seismic event. We did not observe any indications that the mapped global landslide is actively moving or has moved in recent history. The local active landslide in the southern margin of Block 3 appears to the result of the presence of weak clayey materials, slippery serpentinite bedrock, and poor surface and subsurface drainage conditions. We judge the active landslide in Block 3 can be properly repaired as a compacted fill buttress.

c. <u>Faulting</u>. According to CGS geologic map, an approximately located fault trace runs near the eastern perimeter of Blocks 2 and 3. However, this approximately located fault trace is not considered be an active seismic source during the Holocene Epoch according to the State of California. The project area is not located in the Alquist-Priolo Earthquake Fault Studies Zone. According to the USGS National Seismic Hazard Map (2008), the closest known active faults to the site are the West Napa, the Hunting Creek-Berryessa, and the Rodgers Creek faults. The West Napa fault is located 6.6 miles to the southeast, the Hunting Creek-Berryessa fault is located 12.0 miles to the northeast, and the Rodgers Creek fault is located 12.2 miles west of the site.

5. SUBSURFACE CONDITIONS

a. <u>General</u>. Subsurface conditions were investigated by excavating five exploratory test pits (TP-1 through TP-5), three of which were located within the landslide area. The approximate test pit locations are shown on Plate 2. Test pit depths ranged from 6.5 to 12 feet below the ground surface. The test pits were excavated to observe the soil, bedrock, and groundwater conditions and to collect samples of the underlying soils for visual examination and laboratory testing. The excavation and sampling procedures, laboratory procedures, and test pit logs are presented in Appendices A and B, respectively.

TP-1 was excavated southwest of the head scrap of the landslide. The test pit encountered three feet of sandy clay colluvium. The colluvium was very moist, medium stiff, exhibited high plasticity characteristics and desiccation cracks. Underlying the colluvium, a gravelly clay residual soil layer was encountered which extended 3 to 5 feet below the ground surface. This stratum appeared very moist, very stiff, exhibited high plasticity, and contained fine to coarse subangular gravels. Underlying this layer, an additional residual soil stratum of clayey gravel was encountered, which extended to the maximum depth explored. This layer appeared very moist, dense, and contained fine to coarse subangular serpentinite cobbles in a clay matrix.

TP-2 and TP-3 were excavated in the middle of the landslide mass. The landslide deposits encountered consisted of sandy clay and extended 7 to 10 feet below the existing ground surface. The layers appeared moist to very moist, medium stiff to very stiff, and exhibited high plasticity characteristics. Underlying the landslide deposits in TP-2, sandy & silty clay residual strata were encountered which extended to the maximum depth explored. This strata appeared moist to very moist, very stiff, and exhibited high plasticity characteristics. Underlying the landslide deposit in TP-3, evidence of a landslide plane was observed, which extended 10 to 10.5 feet in depth. This layer appeared very moist, stiff, exhibited high plasticity, and contained obvious slickensided (polished) surfaces. Underlying this stratum, serpentinite bedrock was encountered which extended to the maximum explored depth of 12 feet. The bedrock appeared moderately hard, weak, and highly weathered.

TP-4, which was excavated at the toe of the landslide mass and encountered landslide deposits overlying serpentinite bedrock. The landslide deposits consisted of sandy clay which extended to 5.5 feet below the ground surface. The deposits appeared moist to very moist, medium stiff to stiff, exhibited high plasticity, and contained rock fragments. Underlying the deposits, the serpentinite bedrock encountered extended to the maximum depth explored. The bedrock appeared moderately hard, weak, and highly weathered.

TP-5, excavated in the northern portion of Block 3 and well out of the landslide, encountered colluvial surface & near surface layers which extended approximately 5 feet below the surface. This stratum was composed of sandy clay which appeared very moist, stiff to very stiff, and exhibited high plasticity characteristics.

b. Groundwater. Groundwater was not encountered at the time of our subsurface exploration on October 16, 2019. Based on evidence of spring activity in the project area, topographic location of the landslide and site soils we judge that seepage is likely present during and following prolonged rainfall and could be significant. It appears that any groundwater would dissipate following the end of seasonal rainfall. However, the presence of subsurface groundwater and seepage must be taken into account in repair and stabilization efforts in the project area.

6. SLOPE STABILITY & LANDSLIDE INTERPRETATION

a. Global Landslide. According to the map of the "Regional Slope Stability of the Northeastern San Francisco Bay Region" plate 2, the project area is located in an area that is underlain or is immediately adjacent to landslide deposits (Category 5). Areas mapped in this slope stability category generally contain abundant landslides. Furthermore, as previously discussed, according to the CGS geologic map of the Rutherford 7.5 Minute Quadrangle, the entire project area and nearby slopes are mapped within a massive Quaternary landslide deposit (Qls). On October 16, 2019 our certified engineering geologist visited the project site to perform a geologic reconnaissance and subsurface exploration. Global landslide geomorphology was apparent in the project area, with large-scale hummocky terrain features across the project area and nearby slopes. However, as previously indicated, we judge the mapped global landslide is a deep-seated ancient feature and currently appears to be in a dormant state. Although a detailed study of the global landslide is beyond the scope of our work on the project, we do not anticipate that the planned vineyard will have any adverse effect on the deep-seated global landslide.

b. Local Landslide. The previously mentioned active landslide was observed in the southern margin of Block 3. The landslide covers an area of just over one acre and is covered in perennial grasses with a few blackberry brambles. The landslide consists of a translation block landslide which occurred due to the presence of weak clayey materials, slippery serpentinite bedrock, and poor surface and subsurface drainage conditions. The landslide occurred in a concave topographic feature with adverse geologic conditions. A map presenting the location of the mapped landslide is shown on Plate 2.

It is our opinion that the weak natural soils coupled with prolonged rainfall generated high porewater pressures. These factors coupled with the concave topography were the primary causes of the landslide at the southern margin of Block 3. Our observations and analysis indicate that landslide headward advancement and future enlargement will occur, if the landslide is not properly repaired.

c. Overall Slope Stability. Aside from active landslide at the southern margin of Block 3, we did not observe any other evidence of slope instability within Block 3 or within the other blocks in the project area.

7. CONCLUSIONS

We judge that the proposed vineyard blocks generally appear to be relatively stable and suitable for planting as planned from a geologic standpoint, provided that the landslide at the southern margin of Block 3 is properly repaired. Our findings indicate that headward advancement and future enlargement of the active landslide at the southern margin of Block 3 will occur, if not properly repaired. We recommend that the loose ruptured landslide debris be removed and that a keyway be excavated into bedrock along the entire toe of the landslide. The location of the keyway should be determined by PJC in the field during grading and earthwork. The keyway should be excavated at least ten feet deep and a minimum of five feet into competent bedrock, as illustrated on Plate 10. However, deeper keyway depths could be required depending on conditions encountered in the field during grading. The geotechnical engineer should observe grading and earthwork in the field and approve the keyway depth. Improving site drainage will greatly enhance stability of the slope. We recommend that keyway subdrains should be incorporated into the landslide repair. Following completion of the keyway, in-sloping benches should be excavated through the landslide plane. Additional subdrains may be required on the benches. The project civil engineer should prepare plans to control surface water. PJC should review the plans and approve all discharge locations. Provided the landslide is properly repaired, we judge this area may be planted with vines.

Recommendations for landslide repair are presented in the following sections.

8. EARTHWORK AND GRADING- LANDSLIDE REPAIR

a. Stripping. We recommend that landslide repair area be stripped of loose ruptured debris, surface vegetation, roots and the upper few inches of soil containing organic matter. These materials should be moved off site. If any underground utilities pass through the slide area, we recommend that these utilities be removed and rerouted. Voids generated from the removal of utilities or other obstructions should be replaced with compacted engineered fill under the observation of the project geotechnical engineer.

b. Benching and Keying. The loose debris and any weak material should be removed from the landslide mass. A keyway should be excavated at the toe of the landslide mass and observations should be provided by the geotechnical engineer to determine where the keyway should be located. All keys should be a minimum of 10 feet in width and extent at least five feet into competent bedrock or firm residual soil as measured on the downhill side. The materials excavated during keying and benching may be used as structural fill if they conform to the requirements indicated under "Excavation and Compaction." Subdrains should be installed in keyway. Following completion of the keyway, in-sloping benches should be excavated through the landslide plane, extending above the head of the landslide mass.

A subdrain should be installed along the rear of the keyway. Subdrains will also be required on the benches, as determined in the field during construction. For budgetary estimates, subdrains should be anticipated on the benches every 20 vertical feet or where subsurface seepage is encountered. The subdrains should consist of a one-inch basal layer of Class II permeable material upon which a four-inch diameter SDR-35 perforated heavy-walled plastic pipe is set. The pipe should be covered by a two-foot wide layer of Class II permeable material that extends up the upslope wall of the keyway excavation. Clean-out risers should be provided for all keyway and benching subdrains. The perforated pipe should outlet into a solid line that discharges onto an approved erosion resistant area down slope from the repair area.

c. Excavation and Compaction. The bottom of the keyway should be scarified to a depth of eight inches; moisture conditioned within two percent of the optimum moisture content and compacted to a minimum of 90 percent of the maximum dry density of the materials, as determined by the ASTM D 1557-09 laboratory compaction test procedures.

The excavated fill, landslide debris and native soils, free of organics and rocks larger than four inches in size could be reused as engineered fill if approved by the geotechnical engineer in the field. The fill material should be spread in eight-inch thick loose lifts; moisture conditioned within two percent of the optimum moisture content, and compacted to at least 90 percent of the maximum dry density of the materials. Imported fill, if needed, should be evaluated and approved by the geotechnical engineer before importation.

As the keyway is being filled, level benches at least 10 feet wide, should be constructed as the fill continues upslope. The benches should be excavated into bedrock or firm residual soil as determined by the geotechnical engineer. The geotechnical engineer should be consulted on the location of the subdrains. The benches may be filled with on-site approved soils placed in thin lifts, moisture conditioned to two to four percent over the optimum moisture content and compacted to at least 90 percent of the materials maximum dry density.

d. Temporary Cut Slopes. Depending on conditions encountered in the field during grading, temporary cut slopes could be considered acceptable during construction. The geotechnical engineer should observe the excavation and determine if temporary cut slopes are acceptable. Based on subsurface findings we recommend that temporary cut slopes should not exceed one-half horizontal to one vertical (0.5H:1V). However, during construction 0.5H:1V cut slopes maybe considered unacceptable depending on conditions encountered during construction. The geotechnical engineer should observe the excavation to determine if 0.5H: 1V cut slopes are acceptable during construction. Depending on conditions encountered during construction, benching and terracing will likely be necessary and accounted for in the project budget. Temporary cut slopes should not be left exposed longer than absolutely necessary. If the slopes are allowed to dry out, they will likely loss strength and be prone to failures.

e. Cut and Fill Slopes. It is recommended that fill slopes be constructed at an inclination not steeper than 2H:1V. Any cut slopes steeper than 2H:1V may become unstable under saturated and seismic conditions. If potentially unstable subsurface conditions, such as adverse bedding, joint planes, zones of weakness, weak clay zones, or exposed seepage are encountered, it may be necessary to flatten slopes or provide other treatment. It is recommended that a geotechnical engineer observe the cut slopes and provide final recommendations for the control of adverse conditions during grading operations, if encountered. During the rainy season, the cut slopes should be checked for springs or seepage areas. The surfaces of the cut slopes should be treated as needed in order to minimize the possibility of slumping and erosion.

f. Erosion Control. To minimize the probability of slumping and/or erosion of fill slopes, the faces of the slopes should be properly treated. The slopes should be constructed at least two feet (horizontally) beyond the planned final face plane using proper compaction equipment and be compacted to a minimum of 90 percent relative compaction. The slope face should then be trimmed back to the final face plane. This operation should expose properly compacted material on the finished face of the slope. Disturbed slopes should be planted or seeded with deep-rooted ground cover and covered with straw matting to prevent erosion. Surface drainage should be directed away from cut and fill slopes. The exterior slopes should be protected from erosion as determined by the project civil engineer.

A representative of PJC should observe all site preparation and fill placement. It is important that during the stripping, grading and scarification processes, a representative of our firm should be present to observe whether any undesirable material is encountered in the construction area.

Generally, grading is most economically performed during the summer months when on-site soils are usually dry of optimum moisture content. Delays should be anticipated in site grading performed during the rainy season or early spring due to excessive moisture in the on-site soils. Special and relatively expensive construction procedures should be anticipated if grading must be completed during the winter and early spring.

9. DRAINAGE CONTROL

a. Surface Drainage. Drainage control design should include provisions for positive surface gradients so that surface runoff is not permitted to pond, particularly above the repaired slope. Surface runoff should be directed away from the repaired slope and collected in ditches or drainage swales as necessary. Pipes should be discharged away from slopes and onto erosion resistant areas.

b. Keyway and Bench Subdrains. The keyway and bench subdrains construction specifications are provided in the grading section of this report.

10. LIMITATIONS

This report has been prepared for the exclusive use of Sean Garvey and Lincoln AE, LLC. for the proposed vineyard and landslide repair at 1889 West Zinfandel Lane in St. Helena, California. Our services consist of professional opinions and conclusions developed in accordance with generally accepted geologic principles and practices. We provide no other warranty, either expressed or implied. Our conclusions are based on the information provided us regarding the proposed project, the results of our field reconnaissance, and professional judgment.

11. ADDITIONAL SERVICES

We recommend that we review the vineyard development and landslide repair plans for conformance with the intent of our recommendations. Observation and testing services should be provided by PJC to verify that the intent of the plans and specifications are carried out during construction; these services should include site grading, observing keyway excavations, observing bench grading, observation and field density testing during grading and placement of fill, and installation of the surface and subsurface drainage facilities.

These services will be performed only if PJC is provided with sufficient notice to perform the work. PJC does not accept the responsibility for items that they are not notified to observe. It has been a pleasure working with you on this project. Please call us if you have any questions regarding the results of this investigation, or if we can be of further assistance.

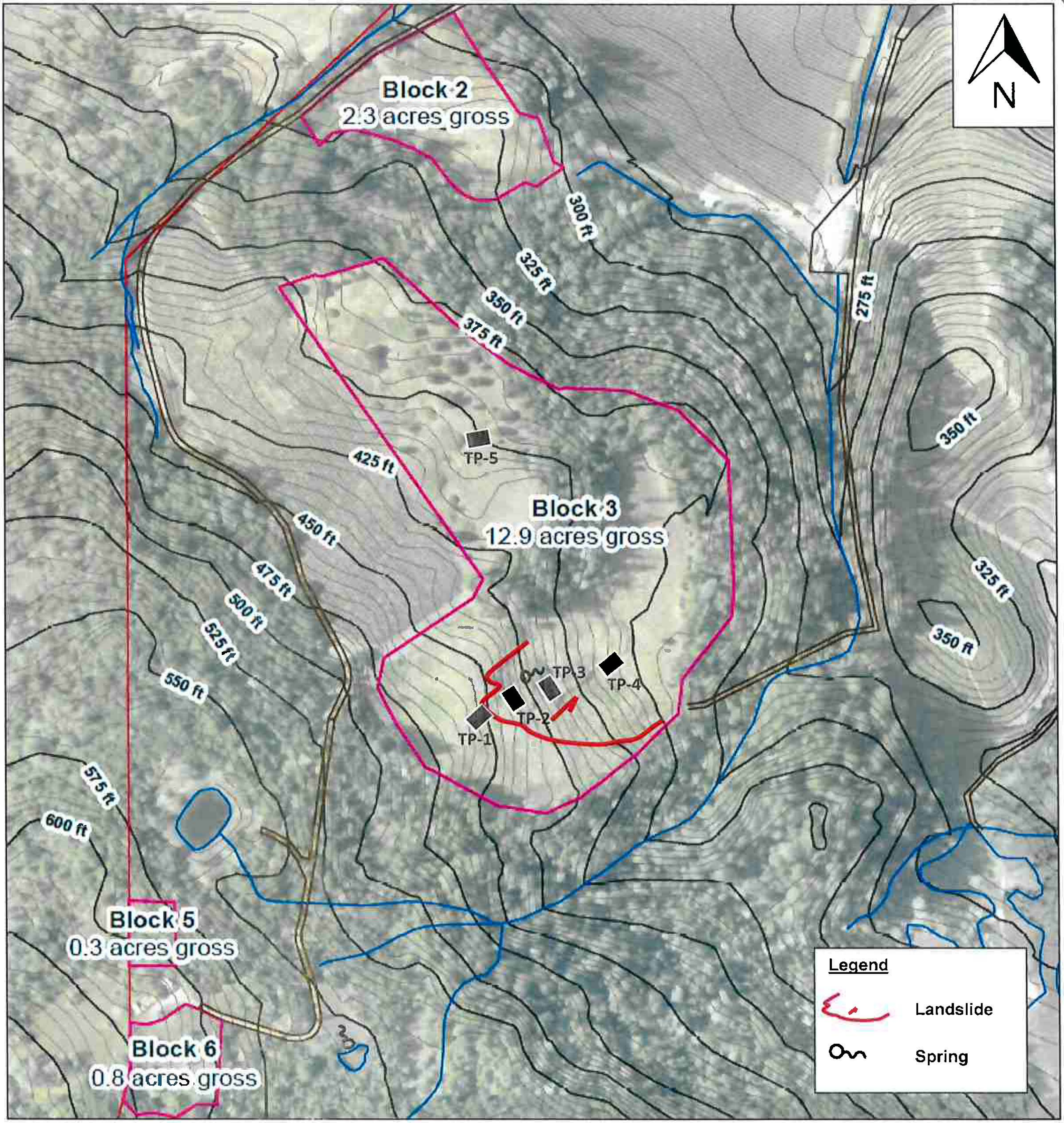
Sincerely,

PJC & ASSOCIATES, INC.

Stephen M. Schurke
Certified Engineering Geologist
CEG 2647, California

Patrick J. Conway
Certified Engineering Geologist
CEG 2452, California

PJC:tjc:sms



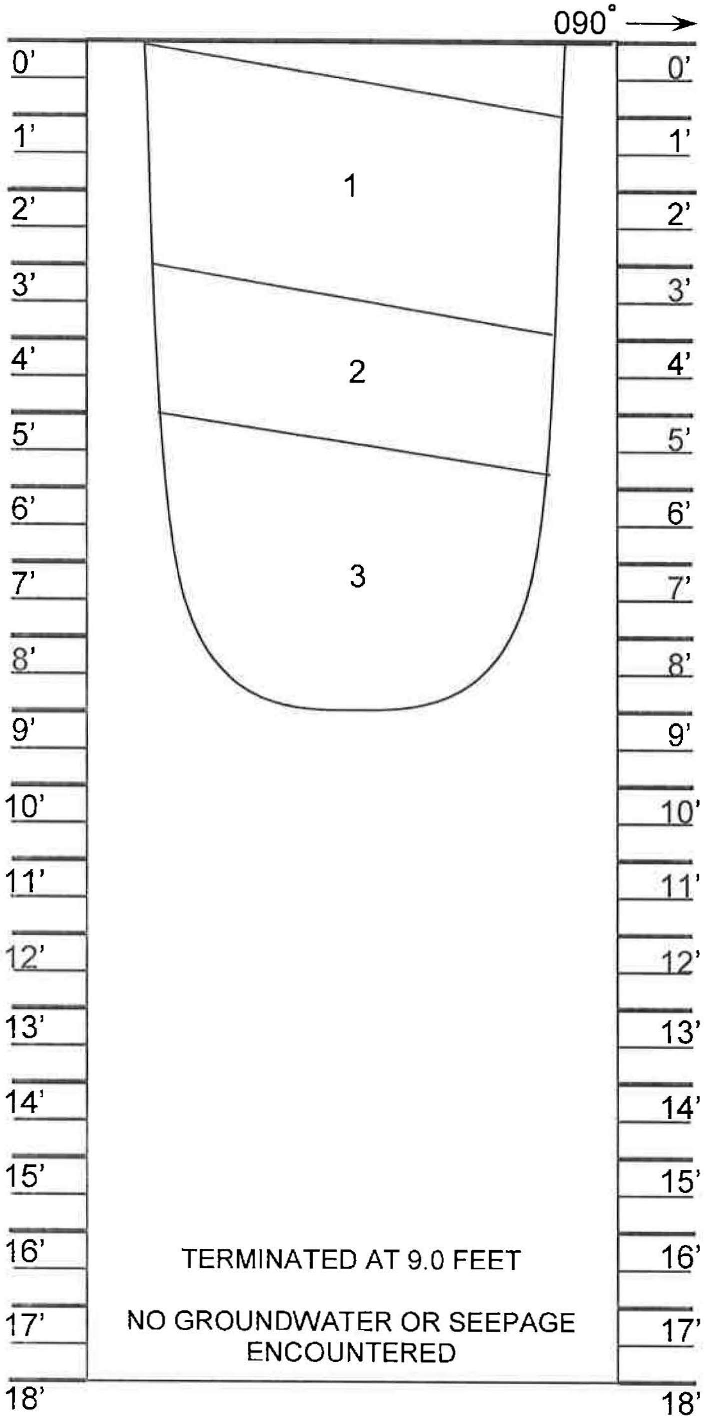
EXPLANATION

NO SCALE

TEST PIT LOCATION AND DESIGNATION

REFERENCE: SITE PLAN TITLED "KOMES RANCH, 027-100-037, WEST ZINFANDEL LANE, ST. HELENA, CA," PREPARED BY LINCOLNAE LLC, DATED OCTOBER 3, 2019.

PJC & Associates, Inc. Consulting Engineers & Geologists	TEST PIT LOCATION MAP PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST. HELENA, CALIFORNIA	PLATE 2
	Proj. No: 9479.01 Date: 12/19 App'd by: PJC	



LITHOLOGY

1) 0.0'-3.0'; SANDY CLAY (CH); grayish brown, very moist, medium stiff, high plasticity, with desiccation cracks (COLLUVIUM).

2) 3.0'-5.0'; GRAVELLY CLAY (CL); grayish green, very moist, very stiff, high plasticity, with fine to coarse subangular gravels (RESIDUAL SOIL).

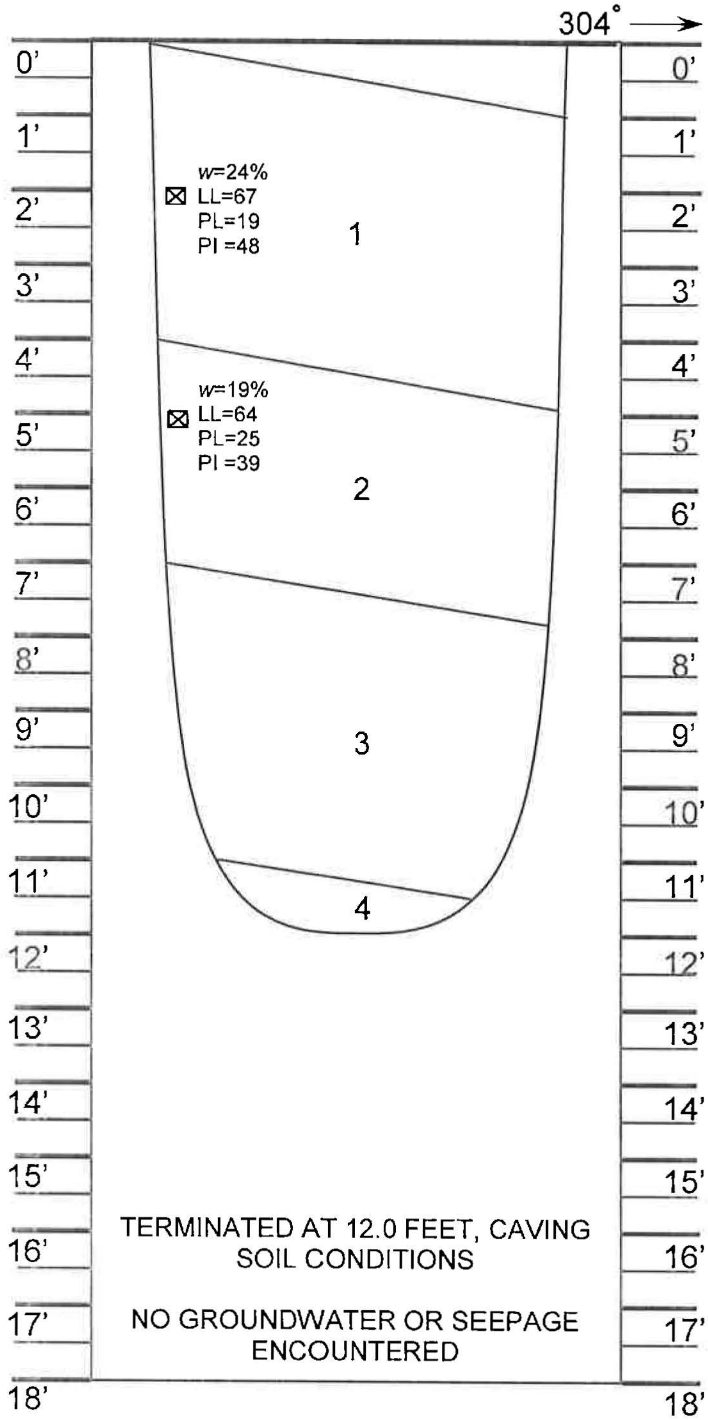
3) 5.0'-9.0'; CLAYEY GRAVEL (GC); grayish green, very moist, dense, fine to coarse subangular serpentinite cobbles in clay matrix (RESIDUAL SOIL).

PJC & Associates, Inc.
Consulting Engineers & Geologists

LOG OF TEST PIT 1
PROPOSED VINEYARD
1889 WEST ZINFANDEL LANE
ST HELENA, CALIFORNIA

PLATE 3

Proj. No: 9479.01 Date: 11/19 App'd by: PJC



LITHOLOGY

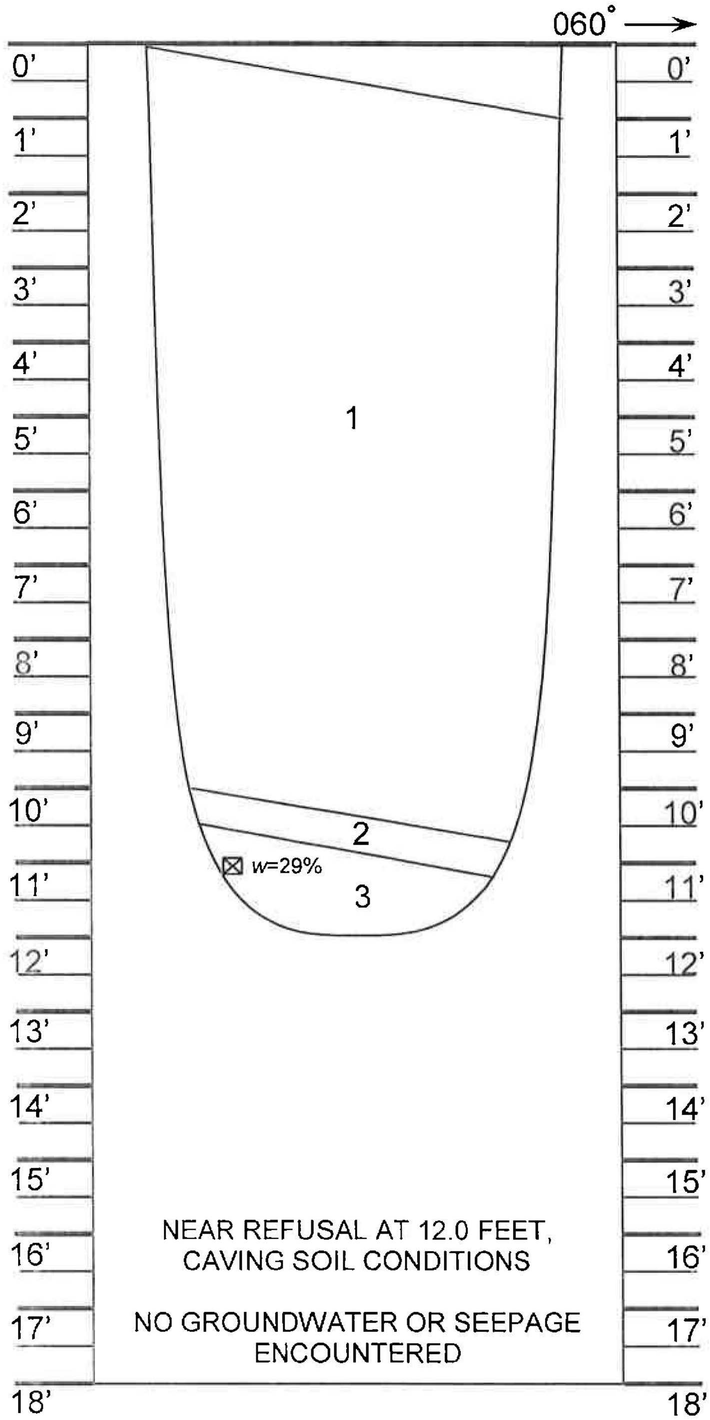
1) 0.0'-4.0'; SANDY CLAY (CH); dark gray, very moist, medium stiff, high plasticity, with boulders (LANDSLIDE DEPOSIT).

2) 4.0'-7.0'; SANDY CLAY (CH); greenish orange, moist to very moist, stiff to very stiff, high plasticity, polished surfaces at 5-6'- steeply dipping downslope (LANDSLIDE DEPOSIT).

3) 7.0'-11.0'; SANDY CLAY (CH); greenish orange, very moist, very stiff, high plasticity, few subangular gravels (RESIDUAL SOIL).

4) 11.0'-12.0'; SILTY CLAY (CH), light gray, moist, very stiff, high plasticity (RESIDUAL SOIL).

PJC & Associates, Inc. Consulting Engineers & Geologists	LOG OF TEST PIT 2 PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST HELENA, CALIFORNIA	PLATE 4
	Proj. No: 9479.01 Date: 11/19 App'd by: PJC	



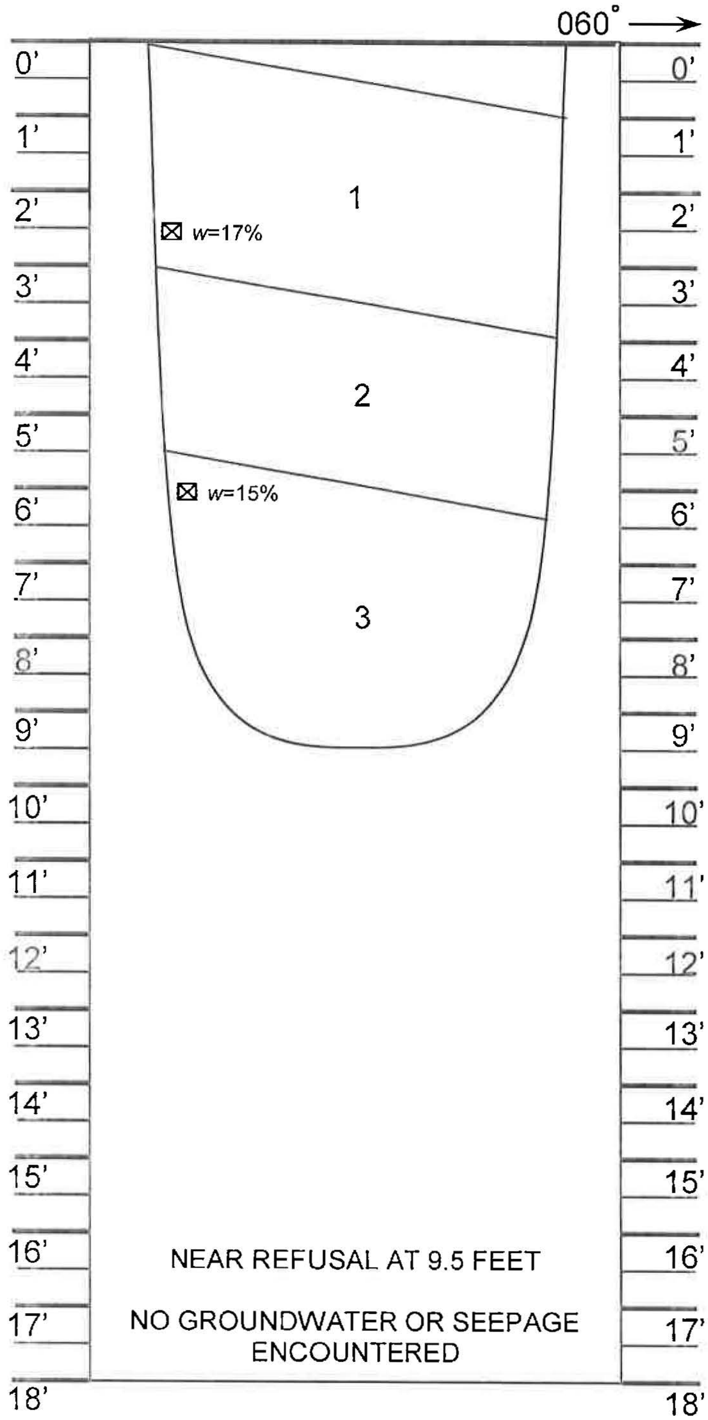
LITHOLOGY

1) 0.0'-10.0'; SANDY CLAY (CH); grayish brown, very moist, medium stiff, high plasticity, with subangular gravels (LANDSLIDE DEPOSIT).

2) 10.0'-10.5'; SANDY CLAY (CL); yellowish orange, very moist, stiff, high plasticity, slickensides (LANDSLIDE PLANE).

3) 10.5'-12.0'; SERPENTINITE (sp); yellowish orange, moderately hard, weak, highly weathered (BEDROCK).

PJC & Associates, Inc. Consulting Engineers & Geologists	LOG OF TEST PIT 3 PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST HELENA, CALIFORNIA	PLATE **5**
	Proj. No: 9479.01 Date: 11/19 App'd by: PJC	



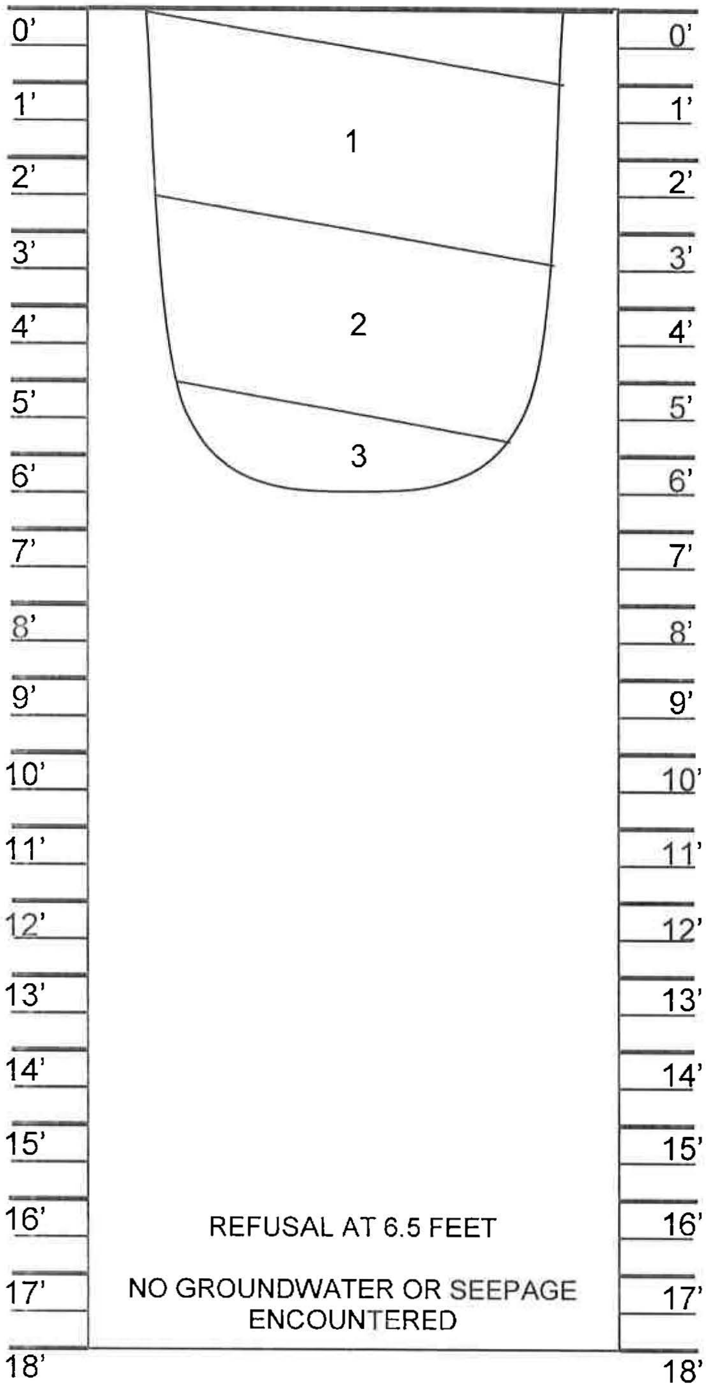
LITHOLOGY

1) 0.0'-3.0'; SANDY CLAY (CH); dark black, moist, medium stiff, high plasticity, organic-rich (LANDSLIDE DEPOSIT).

2) 3.0'-5.5'; SANDY CLAY (CH); yellowish brown, very moist, stiff, high plasticity, with rock fragments (LANDSLIDE DEPOSIT).

3) 5.5'-9.5'; SERPENTINITE (sp); yellowish orange, moderately hard, weak, highly weathered (BEDROCK).

PJC & Associates, Inc. Consulting Engineers & Geologists	LOG OF TEST PIT 4 PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST HELENA, CALIFORNIA	PLATE 6
	Proj. No: 9479.01 Date: 11/19 App'd by: PJC	



LITHOLOGY

1) 0.0'-2.5'; SANDY CLAY (CH); dark brown, very moist, stiff, high plasticity, organic-rich (COLLUVIUM).

2) 2.5'-5.0'; SANDY CLAY (CH); moderate brown, very moist, very stiff, high plasticity (COLLUVIUM).

3) 5.0'-6.5'; SERPENTINITE BOULDERS IN CLAY (CL); greenish gray, moist, dense, fine to coarse subangular serpentinite boulders (RESIDUAL SOIL).

PJC & Associates, Inc. Consulting Engineers & Geologists	LOG OF TEST PIT 5 PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST HELENA, CALIFORNIA	PLATE 7
	Proj. No: 9479.01 Date: 11/19 App'd by: PJC	

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (More than half is larger than #200 sieve)	GRAVELS (more than half coarse fraction is larger than no. 4 sieve size)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
	SANDS (more than half coarse fraction is smaller than no. 4 sieve size)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVEL-SAND MIXTURES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS (More than half is smaller than #200 sieve)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)		ML	INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, VERY FINE SANDS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS OR LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

LL — Liquid Limit (in %)
PL — Plastic Limit (in %)
G — Specific Gravity
SA — Sieve Analysis
Consol — Consolidation
■ "Undisturbed" Sample
⊠ Bulk or Disturbed Sample
□ No Sample Recovery

	Shear Strength, psf	Confining Pressure, psf	
*Tx	320	(2600)	Unconsolidated Undrained Triaxial
Tx CU	320	(2600)	Consolidated Undrained Triaxial
DS	2750	(2000)	Consolidated Drained Direct Shear
FVS	470		Field Vane Shear
*UC	2000		Unconfined Compression
LVS	700		Laboratory Vane Shear

Notes: (1) All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated
(2) * Indicates 1.4" diameter sample

ROCK TYPES

Conglomerate	Shale	Metamorphic Rocks Hydrothermally Altered Rocks
Sandstone	Sheared Shale Melange	Igneous Rocks
Meta-Sandstone	Chert	

Bedding Thickness		Joint, Fracture or Shear Spacing	
Massive	Greater than 6 feet	Very Widely Spaced	Greater than 6 feet
Thickly Bedded	2 to 6 feet	Widely Spaced	2 to 6 feet
Medium Bedded	8 to 24 inches	Moderately Widely Spaced	8 to 24 inches
Thinly Bedded	2-1/2 to 8 inches	Closely Spaced	2-1/2 inches
Very Thinly Bedded	3/4 to 2-1/2 inches	Very Closely Spaced	3/4 to 2-1/2 inches
Closely Laminated	1/4 to 3/4 inches	Extremely Closely Spaced	Less than 3/4 Inch
Very Closely Laminated	Less than 1/4 inch		

HARDNESS

Soft - Pliable, can be dug by hand

Slightly Hard - Can be gouged deeply or carved with a pocket knife

Moderately Hard - Can be readily scratched by a knife Blade; Scratch leaves heavy trace of dust and is readily visible after the powder has been blown away

Hard - Can be scratched with difficulty; scratch produced little powder and is faintly visible

Very Hard - cannot be scratched with pocket knife, leaves metallic streak

STRENGTH

Plastic- Capable of being molded by hand

Friable - Crumbles by rubbing with fingers

Weak - an unfractured specimen of such material will crumble under light hammer blows

Moderately Strong - Specimen will withstand a few heavy hammer blows before breaking

Strong - Specimen will withstand a few heaving ringing hammer blows and usually yields large fragments

Very Strong - Rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

DEGREE OF WEATHERING

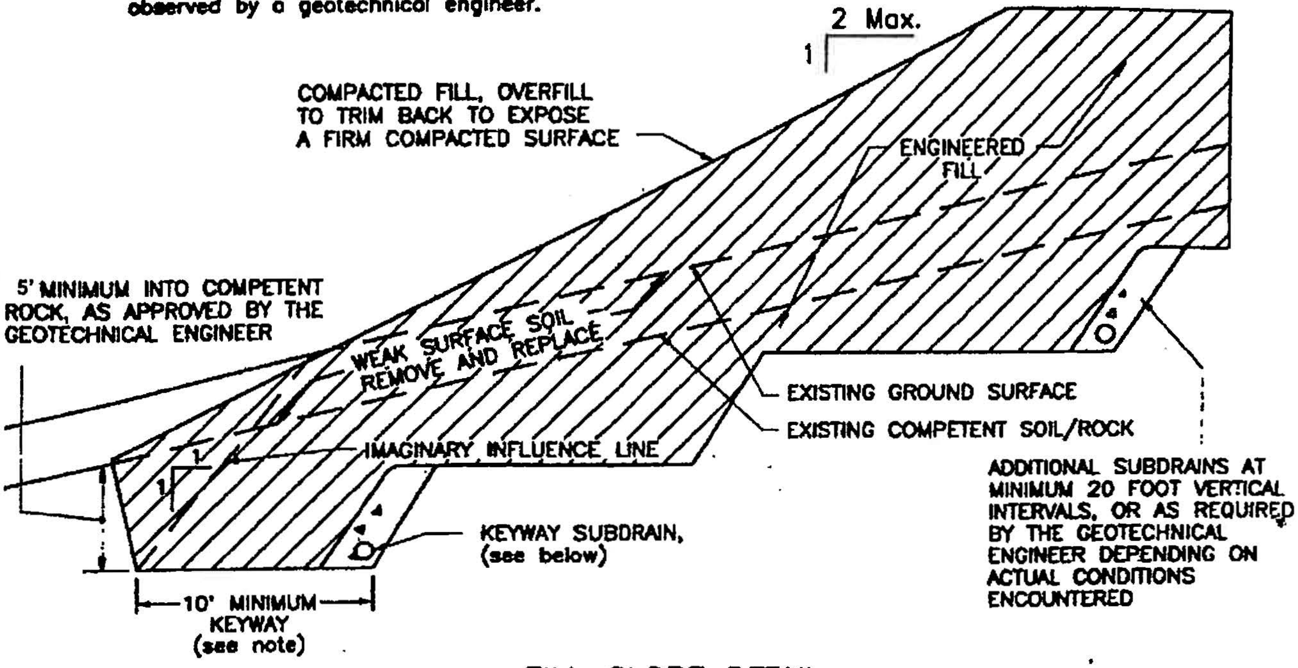
Highly Weathered - Abundant fractures coated with oxides, carbonates, sulphates, mud, etc., through discoloration, rock disintegration, mineral decomposition

Moderately Weathered - Some fracture coating, moderate or localized discoloration, little to no effect on cementation, slight mineral decomposition

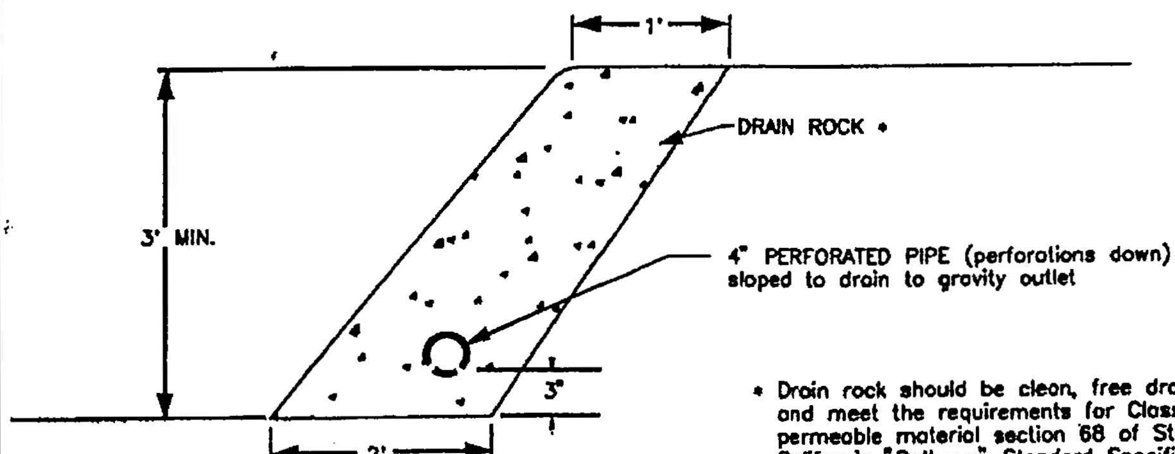
Slightly Weathered - A few stained fractures, slight discoloration, little to no effect on cementation, no mineral decomposition

Fresh - Unaffected by weathering agents, no appreciable change with depth

Notes:
1. Keyway excavation and subdrain installation should be observed by the Geotechnical Engineer.
2. Where existing slope exceeds 6:1 excavate series of benches in competent soil/rock.
3. All subdrains should have cleanouts at a minimum of 400 foot intervals and at upslope end.
4. Installation of all subdrains should be observed by a geotechnical engineer.



FILL SLOPE DETAIL
not to scale



* Drain rock should be clean, free draining and meet the requirements for Class 2 permeable material section 68 of State of California "Caltrans" Standard Specifications. As an alternative, non-woven filter fabric (Mirafi 140N or equivalent) wrapped around 3/4" – 1-1/2" drain rock may be used, depending on actual conditions encountered.

SUBDRAIN DETAIL
not to scale

PJC & Associates, Inc. Consulting Engineers & Geologists	KEYWAY/ FILL SLOPE DETAIL PROPOSED VINEYARD 1889 WEST ZINFANDEL LANE ST HELENA, CALIFORNIA	PLATE 10
	Proj. No: 9479.01 Date: 12/19 App'd by: PJC	

APPENDIX A
FIELD INVESTIGATION

1. INTRODUCTION

The field program performed for this study consisted of excavating five exploratory test pits (TP-1 through TP-5) at the project site. The exploration was completed on October 16, 2019. The test pit locations are shown on Plate 2. Descriptive logs of the test pits are presented in this appendix as Plates 3 through 7. PJC also performed a surficial reconnaissance of all of the vineyard blocks.

2. TEST PITS

The test pits were excavated with a full-size track-mounted excavator equipped with a 36-inch bucket. The excavation was performed under the observation of a certified engineering geologist of PJC who maintained a continuous log of soil and bedrock conditions and obtained samples suitable for laboratory testing. The soils were classified according to Plate 8. The bedrock was classified according to Plate 9.

Disturbed samples used in the laboratory investigation were obtained from various locations during the course of the field investigation, as discussed in Appendix A of this report. Identification of each sample is by pit number, sample number and depth. All of the various laboratory tests performed during the course of the investigation are described in Appendix B.

APPENDIX B
LABORATORY INVESTIGATION

1. INTRODUCTION

This appendix includes a discussion of test procedures and results of the laboratory investigation performed for the proposed project. The investigation program was carried out by employing currently accepted test procedures of the American Society of Testing and Materials (ASTM). Disturbed samples used in the laboratory investigation were obtained during the course of the field investigation as described in this report.

2. INDEX PROPERTY TESTING

In the field of soil mechanics and geotechnical engineering design, it is advantageous to have a standard method of identifying soils and classifying them into categories or groups that have similar distinct engineering properties. The most commonly used method of identifying and classifying soils according to their engineering properties is the Unified Soil Classification System described by ASTM D-2487-83. The index properties test discussed in this report include natural water content and Atterberg limits tests.

a. Natural Water Content. Natural water content of the soils were determined on selected samples. The samples were extruded, visually classified, and accurately measured to obtain wet weight. The samples were then dried, in accordance with ASTM D-2216-80, for a period of 24 hours in an oven maintained at a temperature of 100° C. After drying, the weight of each sample was determined and the moisture content calculated.

b. Atterberg Limits. Liquid and plastic limits were determined on selected samples in accordance with ASTM D4318-83.

3. ENGINEERING PROPERTIES

The engineering properties testing consisted of moisture density and direct shear testing.

a. Moisture-Density (Compaction Curve). Moisture-density tests were performed on a bulk sample of the native soils according to ASTM D1557-91 Method A.

b. Direct Shear Test. Direct shear testing was performed on selected undisturbed samples. After the initial weight and volume measurements were determined, the samples were placed in the direct shear machine. The designated normal load was applied and the sample was saturated with water and allowed to consolidate.

The sample was then sheared horizontally at a rate of strain of 0.025 inches per minute. Shear stress and sample deformation were monitored throughout the test.

APPENDIX C
REFERENCES

1. USGS Rutherford, California Quadrangle 7.5-Minute Topographic Map, dated 1973.

2. Geologic Map of the Rutherford Quadrangle, 7.5 Minute, prepared by the California Geological Survey, Version 1.0, compiled by David L. Wagner, Kevin B. Clahan, Stephen P. Bezore, Janet M. Sowers, and Robert C. Witter, 2005.

3. Site plan titled "Komes Ranch, 027-100-037, West Zinfandel Lane, St. Helena, CA", by Lincoln AE, LLC., Inc., dated October 3, 2019.

4. Slope Stability Map- Regional Slope Stability Map of the Northeastern San Francisco Bay Region, CA, Plate 2, prepared by the US Geological Survey, dated 1975.

5. USGS National Seismic Hazard Maps, 2008.

PJC & Associates, Inc.
Consulting Engineers & Geologists

Revised November 23, 2020
November 19, 2020

Job No. 9479.02

Cathiard Florence
c/o: Ben Morken
b.morken@cathiardfamilyestate.com

Subject: Engineering Geology Review of the Civil Engineering Plans
Landslide Repair Project
1978 West Zinfandel Lane
St. Helena, California

References: Report titled, "Stability Report & Landslide Repair, Proposed Vineyard, 1889 West Zinfandel Lane, St. Helena, California," prepared by PJC & Associates, Inc., dated December 12, 2019.

Civil Engineering Plans titled, "Cathiard Family Estate – Landslide Repair Site Improvement Plans," Sheets C1 through C4, prepared by Applied Civil Engineering, dated August 28, 2020.

Dear Cathiard:

PJC & Associates, Inc. (PJC) is pleased to submit this letter which presents the results of our engineering geology review of the civil engineering plans for the landslide repair project located at 1978 West Zinfandel Lane, St. Helena, California. PJC previously prepared a report presenting landslide repair recommendations, dated December 12, 2019. At the time of our report the property was notated as 1889 West Zinfandel Lane. The purpose of our plan review was to confirm that the recommendations of our report were incorporated into the above referenced plans.

Based on the results of our plan review, the above referenced project plans conform to the recommendations of our engineering geology report. However, we have the following comments:

1. Following completion of the repair, we anticipate that the landslide repair area will be developed into a vineyard block. To minimize disturbance to the repaired landslide and potential renewed movements, we recommend a maximum ripping depth of three feet below the finished ground surface grades.

2. PJC should observe all aspects of site grading, approve the keyway bottom, test compaction, observe benching, and approve the installation of the subdrains, and observe the ripping depth.

We trust that this is the information you require at this time. If you have any questions concerning the content of this letter, please call.

Sincerely,

PJC & ASSOCIATES, INC.

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