

March 27, 2018

File No: 1584-54

Thomas Safran and Associates 11812 San Vicente Blvd. #600 Los Angeles, CA 90049

Subject: **RESPONSE TO CITY OF LA CORRECTION LETTER**

Correction Letter Dated May 4, 2016 Log #92628

Reference: <u>EVALUATION OF POTENTIAL FAULTING</u> New Development at Southwest Corner of Cherokee and Franklin Montecito Apartments 6650 and 6668 Franklin Avenue and 1855 N. Cherokee Avenue, Hollywood, CA 90028 By Feffer Geological Consulting, Dated March 23, 2016

Dear Mr. Frandsen:

As requested, Feffer Geological Consultants is providing this response to the referenced City of Los Angeles correction letter.

We appreciate the opportunity to be of service. Should you have any questions regarding the information contained in this report, please do not hesitate to contact us.

Sincerely,

FEFFER GEOLOGICAL CONSULTING, INC. No. 2138 Joshua R. Feffer John Helms Principal Geologist **Project Geologist** Certified Engineering C.E.G. 2138 Geologist C.E.G. 2272 No. 2272 CAL CERTIFIED ENGINEERING Distribution: Addressee–(1) GEOLOGIST 1990 S Bundy Drive, Suite 400. Los Angeles, CA 90025 o 310-207-5048 f 310-826-0182 www.feffergeo.com



September 8, 2016

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Thomas Safran and Associates 11812 San Vicente Blvd. #600 Los Angeles, CA 90049

Subject: **RESPONSE TO CITY OF LA CORRECTION LETTER**

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Sincerely,

FEFFER GEOLOGICAL CONSULTING, INC. No. 2272 CERTIFIED ENGINEERING No. 2138 GEOLOGIST Certified Joshua R. Feffer John Helms Engineering Geologist Principal Geologist Project Geologist C.E.G. 2272 C.E.G. 2138

Distribution: Addressee– (1)



Item 1

Verify and correct the current legal description and addresses for all lots part of the project site.

Response

6650 and 6668 W. Franklin Avenue; 1855 N. Cherokee Avenue

Item 2

Provide a more detailed description of the site's geomorphic setting, including a geomorphic map requested in Section 8c of P/BC 2014-129. The topographic discussion on page 10 of the report is not clear.

Response

Figure 1 in the attached Appendix A is a fault study compilation map. This map shows all of the fault traces that have been recently documented and mapped in the project site vicinity. Figure 2 in the attached Appendix A is a site specific geomorphic map that presents our interpretation of surficial conditions of our project site and vicinity. Our updated site map in Appendix B shows geologic and geomorphic relationships in detail.

The geomorphology of the project site vicinity is complex and highly variable. The project site is located across a colluvial apron derived from over steepened bedrock slopes to the north. The sequence of colluvium is late-Pleistocene in age and buries a highly degraded and incised bedrock spur ridge across the northern portion of the site. The buried bedrock spur is composed of Topanga Formation sandstone and is incised with a buried and steep walled channel incision to the east that trends north – south beneath Cherokee Avenue. The southern margin of the spur ridge is faulted against colluvium across the central portion of the project site area. To the south of the project site area, colluvial deposits are intercalated with old alluvial fans deposits at depth.

The attached site geomorphic map and updated site map show a rough alignment of steep slopes across, and south of Franklin Avenue, and across the central portion of the project site area. This wide and degraded slope inflection is related to the southern faulted margin of the bedrock spur ridge and has been shown inactive. Several additional slope inflections exist to the south of the project area. A sharp break in slope occurs about 350 feet south of the site along Argyle Street. This potential fault strand extends farther east of the State's mapped trace of the Argyle Fault strand of the Hollywood fault zone. The southern recognizable scarps or breaks in slope may suggest the location of a left-step within the Hollywood fault Zone, or presence of discontinuous parallel fault strands of the Hollywood Fault zone, south of the project site.

No other significant topographic features suggestive of surface faulting were found projecting towards or in the vicinity of the project site. The breaks in slope located south of the project site area can be observed in the field and are illustrated in the 2016 ECI report along Cherokee Avenue (Figure 6 of ECI Report). These possible strands of the Hollywood fault zone are also marked by the truncation of colluvium deposition from the

bedrock slopes to the northeast of Cherokee Avenue as shown on the attached geomorphic map.

Item 3

Where the two faults are converging toward the surface, as shown on Cross Section A-A', the overlying colluvial and alluvial units do not correlate very well as significant subsurface variations exist between ST-2, BA-6 and BA-4. Provide additional exploration and analysis to rule out the presence of active faulting at the site. It seems that extending ST-2 to the south would be very helpful.

Response

As requested a new trench was excavated in the parking lot that spanned the area between ST-2 and BA-4. The trench extended to depths of up to 22 feet in depth and exposed continuous and unfaulted soil horizons and stratigraphic markers that are older than 11,000 years in age. Geologists from the City of Los Angeles and State of California were present at the excavation and observed the exposures and agreed with our interpretation. Undulatory contacts of soil layers are due to normal scouring and depositional processes.

A new trench log for ST-3, and updated Section A-A' are included in the attached Appendix B. Additionally, copies of trench logs for ST-1 and ST-2 are also included in Appendix B.

Item 4

Discuss the significance of sandstone of the Monterey formation identified in BA-2. Correct Cross Section A-A' to show this formation.

Response

Cross section A-A' has been updated to show the bedrock. The significance of the sandstone in bucket auger BA-2 is that it shows a stratigraphically deeper exposure of faults 1 and 2 on the project site. Fault 1 is also exposed to the west in trench ST-2 and Fault 2 is also exposed in bucket auger boring BA-6. At depth the faults die out at the same elevation across the site. Within ST-2, overlying materials show these faults to be inactive. In the eastern exposure (BA-2), grading and previous development (seepage pit) has obscured the overlying materials; however in this location faults 1 and 2 appear to be converging and the amount of throw in the older alluvium against the sandstone bedrock appears greater because of the combined throw of faults 1 and 2. South of the observed faulting, the bedrock surface dives and groundwater drops. The bedrock surface and groundwater levels also drop to the east toward Cherokee Avenue. This drop in rock defines a buried erosional rill or channel which coincides with a thickening of alluvium to the east along Fault 1 as well as to the south. Fault 2 may represent a tear fault that has accommodated extension along the inactive fault 1. Fault 2 is an anastomosing and discontinuous subparallel branch of the inactive Fault 1.

In summary, Trench ST-2 is a better and more continuous view of the faulting at the site. The continuous soil observed in the trenches and borings that overlie the faults observed are older than 11,000 years. Please see Appendix C to compare all logs for geotechnical borings, bucket augers, and test pits.

Item 5

It is not clear how faulting is ruled out 50 feet north and south of the subject property along all fault orientations. It appears that further exploration is required to arrive at this conclusion.

Response

Faulting has been ruled out to the north of the site through correlations with adjacent geotechnical test pit exposures to the north. All of the test pit exposures show continuous bedrock outcrops. Please see the revised cross section A-A'-A" that has been extended to the north and the geotechnical test pit logs provided.

To the south of the site, additional subsurface exploration was performed along a transect of equally spaced and continuously cored borings (2) and CPT soundings (4). The transect was located along the west side of Cherokee Avenue and extends from the southern property boundary 50 feet to the south. Please see the attached cross section B-B' (Appendix D) which clears 50 feet to the south of the site. The continuity of the stratigraphy observed in the CPT soundings and continuous core borings in Transect B rule out active faulting 50 feet south of the site. Appendix D also includes boring photos for Continuous Core Borings 1 and 2, boring logs for the continuous core borings, and CPT sounding data for Transect B.

Item 6

It does not appear that fault trench ST-2 and bucket auger borings BA-4, BA-6 were plotted correctly on the cross section as the log contact depths do not appear to match. Provide revised cross sections and analysis of the subsurface materials accordingly.

Response

Please see the attached revised cross section A-A'-A" and updated Site Map in Appendix B. Also, please see the trench log for ST-3 which shows in detail where BA-4 and BA-6 are located with respect to the location of ST-3.

Item 7

Provide a geologic map that shows the location of the previous fault studies in the area of the site discussed in the report. Include the previous trench excavations observed by the California Geological Survey identified a "major fault break" through the north half of 1850 N. Cherokee Avenue just east of the subject lot. Note: The trench logs and report discussing fault activity were never published.

Response

Please see the attached site geomorphic map (Appendix A) which shows the adjacent trenches and faulting identified at 1850 Cherokee Avenue (CGS, 2015) and data from the 1846 Cherokee Study (ECI, 2015). The materials overlying fault 1 across the project site show conclusively that Fault 1 is a major inactive fault break. Although this fault does

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have a vertical displacement of 20 plus feet on the sandstone bedrock (across Faults 1 and 2 in BA-2), it also has a significantly old (Pleistocene aged) unfaulted alluvial / colluvial cap.

Item 8

Provide detailed graphic logs similar to ST-1, ST-2 and BA-4 through BA-6 for the test pits and all bucket auger borings. Also, provide boring logs for B-1 and B-2.

Response

They are attached in Appendix C.

Item 9

Provide deeper exploration to determine the groundwater level south of fault 2. Note: The consultants did not discuss groundwater conditions in bucket augers BA-4 to BA-6 in the groundwater section of the referenced report.

Response

An important indicator for the presence or absence of faulting is the depth to groundwater. Past studies have shown that both inactive and active fault strands along the Hollywood fault zone act as groundwater barriers and produce abrupt steps in the groundwater surface. Fault 1 is the highest groundwater barrier across the project site area. Seeps were observed approximately 18.5 feet below the ground surface in trench ST-2.

Fault 2 was observed in bucket auger boring BA-6 nearest the center of the site and in boring BA-2 a few feet to the northeast. Fault 2 is a secondary fault and trends slightly oblique to the strike of Fault 1. Groundwater was only observed along Fault 2 in bucket auger boring BA-2, ponded between faults1 and 2 at a depth of 32 feet below the ground surface. In bucket auger boring BA-6, groundwater was not encountered to a depth of 45 feet below the ground surface. There is a reservoir for groundwater in between Faults 1 and 2 west of the bucket auger BA-2 exposure, but Faults 1 and 2 merge together to the west effectively closing off this reservoir. Groundwater south of Fault 2 is in excess of 50 feet below the ground surface. Determining where groundwater is south of Fault 2 would not help to assess the hazard of ground rupture from active faulting.

Along the attached updated cross section A-A'-A", seeps were encountered at the base of trenches ST-1 and 2 in the northern and central portions of the site and in the northern most bucket auger borings (BA-1, BA-2, BA-3, and BA-6). No groundwater was encountered in the southern most bucket auger borings (BA-4 and BA-5). This data generally indicates that Fault 1 is the main groundwater barrier in the project site vicinity and to the north of Fault 1. Depths to groundwater in the project site area step downward approximately 8 feet to the south across the buried zone of inactive faults identified. Groundwater was not observed south of Fault 2 at a depth of 50 feet below the ground surface which is consistent with the groundwater conditions encountered on adjacent sites.

In conclusion, groundwater barriers are sometimes associated with faulting due to the clay gouge developed within the zone of sheared materials. While groundwater barriers are a good tool to identify a fault's position, the presence of the groundwater barrier is not related to a fault's activity status. The groundwater barrier observed on the subject site is due to faulting along faults that have been conclusively shown to be inactive.

BOARD OF BUILDING AND SAFETY COMMISSIONERS

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E. FELICIA BRANNON VICE-PRESIDENT

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RAYMOND S. CHAN, C.E., S.E. GENERAL MANAGER

> FRANK BUSH EXECUTIVE OFFICER

ERIC GARCETTI MAYOR

GEOLOGY REPORT CORRECTION LETTER

May 4, 2016

LOG # 92628 SOILS/GEOLOGY FILE - 2 LIQ/AP

Thomas Safran and Associates 11812 San Vicente Boulevard, Suite 600 Los Angeles, CA 90049

TRACT:	HOLLYWOOD OCEAN VIEW TRACT (MP 1-62)
BLOCK:	2
LOTS:	11 (Arbs. 4, 3, 2 & 1) and 12 (Arb. 1)
LOCATION:	6650 & 6668 W. Franklin Avenue and 1855 N. Cherokee Avenue

CURRENT REFERENCE	REPORT	DATE OF	
REPORT/LETTER	No.	DOCUMENT	PREPARED BY
Geology Report (Fault Study)	1584-54	03/23/2016	Feffer Geological Consulting
Oversized Documents	**		**

The Grading Division of the Department of Building and Safety has reviewed the referenced report that provides a surface fault rupture hazard evaluation for the subject site. According to the report, the site is occupied by an apartment building at the northeast corner and an open space/courtyard area at the northwest corner. The southern half of the property consists of a parking lot. It is the understanding of the Department that detailed development plans have not yet been prepared.

The property is located within an Official Alquist-Priolo Earthquake Fault Zone that was established (November 6, 2014) by the California Geological Survey (CGS) for the Hollywood fault. The site is also located in a designated liquefaction hazard zone as shown on the "Seismic Hazard Zones" map issued by the CGS, however the potential liquefaction hazard would be addressed by subsequent geotechnical investigation.

The fault investigation by Feffer Geological Consulting included 3 test pits (TP-1 to TP-3), 8 bucket auger borings (B-1, B-2, BA-1 through BA-6) and 2 trenches (ST-1 and ST-2). The exploration identified artificial fill and several alluvial and colluvial units of various age on the site. Bedrock was identified at the northerly part of the site. The consultants identified two faults crossing the subject site, which they interpret as inactive.

The review of the subject report cannot be completed at this time will be continued upon submittal of an addendum to the reports which includes, but need not be limited to, the following:

(Note: P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. Verify and correct the current legal description and addresses for all lots part of the project site.

- Provide a more detailed description of the site's geomorphic setting, including a geomorphic map requested in Section 8 c of P/BC 2014-129. The topographic discussion on page 10 of the report is not clear.
- 3. Where the two faults are converging toward the surface, as shown on Cross Section A-A', the overlying colluvial and alluvial units do not correlate very well as significant subsurface variations exist between ST-2, BA-6 and BA-4. Provide additional exploration and analysis to rule out the presence of active faulting at the site. It seems that extending ST-2 to the south would be very helpful.
- 4. Discuss the significance of sandstone of the Monterey formation identified in BA-2. Correct Cross Section A-A' to show this formation.
- 5. It is not clear how faulting is ruled out 50 feet north and south of the subject property along all fault orientations. It appears that further exploration is required to arrive at this conclusion.
- 6. It does not appear that fault trench ST-2 and bucket auger borings BA-4, BA-6 were plotted correctly on the cross section as the log contact depths do not appear to match. Provide revised cross sections and analysis of the subsurface materials accordingly.
- 7. Provide a geologic map that shows the location of the previous fault studies in the area of the site discussed in the report. Include the previous trench excavations observed by the California Geological Survey identified a "major fault break" through the north half of 1850 N. Cherokee Avenue just east of the subject lot. Note: The trench logs and report discussing fault activity were never published.
- 8. Provide detailed graphic logs similar to ST-1, ST-2 and BA-4 through BA-6 for the test pits and all bucket auger borings. Also, provide boring logs for B-1 and B-2.
- 9. Provide deeper exploration to determine the groundwater level south of fault 2. Note: The consultants did not discuss groundwater conditions in bucket augers BA-4 to BA-6 in the groundwater section of the referenced report.

The geologist and soils engineer shall prepare a report containing the corrections indicated in this letter. The report shall be in the form of an itemized response. It is recommended that once all correction items have been addressed in a response report, to contact the report review engineer and/or geologist to schedule a verification appointment to demonstrate compliance with all the corrections. Do not schedule an appointment until all corrections have been addressed. Bring three copies of the response report, including one unbound wet-signed original for microfilming in the event that the report is found to be acceptable.

CASEY LEE JENSEN Engineering Geologist Associate II

CLJ/DCS:clj/dcs Log No. 92628 213-482-0480

DANIEL C. SCHNEIDEREIT Engineering Geologist II

cc: Feffer Geological Consulting, Project Consultant LA District Office

APPENDIX 'A'

Figures 1 & 2



FAULT INVESTIGATION STUDIES



FEFFER GEO, 2015, 2016 (this study)

FAULTS

Hoots (1930)

Solid line where accurately located, dashed where approximately located, dotted where concealed.

Hill et al. (1978, 1979) Dotted where buried, queried where speculated.

Dibblee (1991a, 1991b) Dashed where indefinite or inferred, dotted where concealed, queried where existence is doubtful.

Crook and Proctor (1992) Active and potentially active fault.

Lang and Dressen (1975) Trace of Santa Monica fault at depth, ~2700 m (~8850 ft) below sea level.

ECI, 2016

MAPPED SCARPS & FOLDS



Dolan and Sieh (1992, 1997) Geomorphic scarps interpeted as fault- or fold-controlled. In areas of young alluvium where there are no scarps, dots are used to infer where faults extend below alluvium.

PRELIMINARY ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE



Proposed Earthquake Fault Zone Boundaries delineated as straight line segments that connect encircled turning points so as to define speical studies zone segments (CGS, 2014)

Faults considered to have been active during Holocene time, solid where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed (CGS, 2014)

Figure 1. Mapped faults in the vicinity of this study. Modified from Figure 2 of ECI, 2016 fault investigation report for 1846 N. Cherokee Avenue.







FEFFER GEOLOGICAL CONSULTING CROSS SECT
JB: 1584-54 NAME: MONTECITO APAR
UPDATED 9/14/16 by PB DATE: 7/16/15 SCALE: 1"=10'SITE:
REF: TOPOGRAPHY FROM FIELD MAPPIN



Af-Artificial Fill, surficial layer, dark brown, silty SAND, with concrete debris,

Qc-Holocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 4/4m), silty SAND with clay, massive, slightly hard, moderately sticky, slightly plastic, friable, coarse-grained poorly sorted sand, slight organics, with common fine and medium slate and sandstone sub angular gravel, few fine and medium pores, few fine and medium roots, clear smooth lower boundary to unit Qoa1 across entire trench exposure.

Qoc1-Late Pleistocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 5/4m), clayey SAND, crudely stratified to massive, hard, moderately sticky, moderately plastic, friable to firm, coarse-grained poorly sorted sand, slightly well oxidized, with common to many fine and medium sandstone sub angular gravel, clear wavy lower boundary to unit Tt across northern half of trench, and gradational smooth lower boundary to

Tt-Tertiary Topanga Formation, Sandstone (yellowish brown) with interbedded Shale (gray), continuous across northern half of trench exposure. Highly weathered, weak to moderately strong rock strength, blocky rock structure, highly fractured (randomly orientated, tight to slightly open, and discontinuous), localized mottling, abrupt faulted southern boundary to unit Qoc3, and undetermined lower boundary across northern half of trench.

APPENDIX 'B'

Site Map Cross Section A-A'-A" Trench Logs



Af-Artificial Fill, surficial layer, dark brown, silty SAND, with concrete debris,

Qc-Holocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 4/4m), silty SAND with clay, massive, slightly hard, moderately sticky, slightly plastic, friable, coarse-grained poorly sorted sand, slight organics, with common fine and medium slate and sandstone sub angular gravel, few fine and medium pores, few fine and medium roots, clear smooth lower boundary to unit Qoa1 across entire trench exposure.

Qoa1-Late Pleistocene Alluvium, sheet wash / channel scour deposit, continuous across entire trench exposure. Strong brown (7.5YR 5/4m), silty SAND, stratified, slightly hard, slightly sticky, slightly plastic, friable, medium-to coarse-grained poorly sorted sand, slightly well oxidized, with localized beds of common to many fine and medium sub angular gravel, abrupt smooth lower

Qoc1-Late Pleistocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 5/4m), clayey SAND, crudely stratified to massive, hard, moderately sticky, moderately plastic, friable to firm, coarse-grained poorly sorted sand, slightly well oxidized, with common to many fine and medium sandstone sub angular gravel, clear wavy lower boundary to unit Tt across northern half of trench, and gradational smooth lower boundary to

Qoa2-Late Pleistocene Alluvium, channel scour deposit, continuous across southern half of trench exposure. Strong Brown (7.5YR 5/6m), sandy CLAY, crudely stratified to massive, hard, moderately to very sticky, moderately plastic, friable to firm, coarse-grained poorly sorted sand, moderately well oxidized, with common fine and medium highly weathered sandstone sub angular gravel, clear wavy lower boundary to unit Tt to unit Qoc3 across southern half of trench.

Qoc2-Pleistocene Colluvium, colluvial apron deposit, continuous across southern half of trench exposure. Strong Brown (7.5YR 5/8m), sandy CLAY, massive, hard, very sticky, very plastic, firm, coarse-grained poorly sorted sand, moderately well oxidized, with common fine and medium highly weathered sandstone sub angular gravel, abrupt faulted northern boundary to unit Tt, and

interbedded Shale (gray), continuous across northern half of trench exposure. Highly weathered, weak to moderately strong rock strength, blocky rock structure, highly fractured (randomly orientated, tight to slightly open, and discontinuous), localized mottling, abrupt faulted southern boundary to unit Qoc3, and undetermined lower boundary across northern half of trench.



Af-Artificial Fill, surficial layer, dark brown, silty SAND, with concrete debris,

Qal1-Quaternary Alluvium, sheet wash/channel deposit, sandy silt to silty sand, olive brown, soft, massive, friable, coarse grained, poorly sorted, with

Qc1-Holocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 4/4m), silty SAND with clay, massive, slightly hard, moderately sticky, slightly plastic, friable, coarse-grained poorly sorted sand, slight organics, with common fine and medium slate and sandstone sub angular gravel, few fine and medium pores, few fine and medium roots, clear smooth lower boundary to unit Qoa1 across entire trench exposure.

Qal2-Quaternary Alluvium, sheet wash/channel deposit, silty sand with gravel yellowish brown, crudely stratified, localized, coarse grained, common fine and

Qoa1-Late Pleistocene Alluvium, sheet wash / channel scour deposit, continuous across entire trench exposure. Strong brown (7.5YR 5/4m), silty SAND, stratified, slightly hard, slightly sticky, slightly plastic, friable, medium-to coarse-grained poorly sorted sand, slightly well oxidized, with localized beds of common to many fine and medium sub angular gravel, abrupt smooth lower

Qoc1-Late Pleistocene Colluvium, colluvial apron deposit, continuous across entire trench exposure. Brown (7.5YR 5/4m), clayey SAND, crudely stratified to massive, hard, moderately sticky, moderately plastic, friable to firm, coarse-grained poorly sorted sand, slightly well oxidized, with common to many fine and medium sandstone sub angular gravel, clear wavy lower boundary to unit Tt across northern half of trench, and gradational smooth lower boundary to

Qoa2-Late Pleistocene Alluvium, sheet wash/channel deposit, silty sand with gravel, brown, massive to crudely stratified, with common highly weathered gravel and localized sand lenses, irregular wavy lower boundary to unit Qoc2.

Qoc2-Late Pleistocene Colluvium, colluvial apron deposit, continuous across southern half of trench exposure. Strong Brown (7.5YR 5/6m), sandy CLAY, crudely stratified to massive, hard, moderately to very sticky, moderately plastic, friable to firm, coarse-grained poorly sorted sand, moderately well oxidized, with common fine and medium highly weathered sandstone sub angular gravel, clear wavy lower boundary to unit Tt to unit Qoc3 across southern half of trench.

APPENDIX 'C'

Geotechnical Boring Logs Bucket Auger Logs Test Pit Logs

Sheet 1 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 7/10/15 Logged By: RM

Geotechnical Boring No: 1 Boring Location: see site map

		Sam	iple				
Depth in Feet	Blows per 6"	Undisturbed	Bulk	Bedrock/ Soil Description	Color	Density	Moisture
0				4" Asphalt, 3" Base	Medium brown	Medium dense	Moist
	10/5/6		SPT			Medium dense	IVIOISI
	3/4/5		SPT	Fill (Af): Silty sand	Mottled brown	Medium dense	Moist
7.5	5/7/9		SPT	Alluvium (Qa): Clayey sandy silt	Tan, Light Brown	Medium dense	Moist
- 10 -	7/7/7		SPT				
12.5	7 7 7		SPT				
- 15 -	5/6/7		SPT				
 - 17.5 -	5/7/7		SPT				
- 20 - - 20 -	5/5/7		SPT	Sandy silty clay, contains scattered bedrock fragments	Tan to Mottled Brown, Orange-	Medium dense	Moist
22.5	7/12/13		SPT		Brown		
 - 25 -	7/11/11		SPT				
27.5	3/4/7		SPT	Clayey sandy silt	Mottled Brown	Medium dense	Moist
 - 30 -	3/3/3		SPT	Water At 30'			
32.5	3/3/6		SPT				
- 35 - - 35 -	4/5/7		SPT	Silty clay	Red Brown	Stiff	Moist
- 37.5 	5/7/9		SPT				
- 40 -	4/5/6		SPT				Figure
				Feffer Geological Consulting			iguio

Sheet 2 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 7/10/15 Logged By: RM Geotechnical Boring No: 1 Boring Location: see site map

		San Ty	nple pe				
Depth in Feet	Blows per 6"	Undisturbed	Bulk	Bedrock/ Soil Description	Color	Density	Moisture
- 40 -	4/5/6		SPT	Silty clay	Red Brown	Stiff	Moist
42.5	7/9/11		SPT				
- 45 - 	5/6/7		SPT				
47.5	9/11/13		SPT				
- 50 -	7/11/15		SPT	No Recovery			
52.5 	7/11/13		SPT				
- 55 - 	6/4/13		SPT				
_ ^{55.5} _	9/11/23		SPT				
- 60 - 	7/9/11		SPT	End At 60', Fill To 6', Water At 30' & 35', No Caving			
- 65 - 	-						
- 70 - - 70 - 							
- 75 - - 75 - 							
- 80 -				Eoffer Coolegical Consulting			Figure

Sheet 1 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 7/10/15 Logged By: RM

Geotechnical Boring No: 2 Boring Location: see site map

		Sam Typ	iple be				
Depth in Feet	Blows per 6"	Undisturbed	Bulk	Bedrock/ Soil Description	Color	Density	Moisture
0				4" Asphalt, 5" Base			
 	5/5	R		Fill (Af): Sandy silt	Dark Brown	Dense	Moist
 	11/11	R		Alluvium (Qa): Sandy silt	Dark Brown	Medium dense	Moist
 	9/10	P		Only 5 rings collected in sample			
- 15 - 	8/10	к		Only 5 migs collected in sample			
- 20 - 	8/11	R		Gravelly silty sand Only 5 rings collected in sample	Tan to Mottled Brown	Medium dense	Moist
- 25 - 	13/17	R		Clayey sandy silt	Tan to Mottled Brown	Medium dense	Moist
- 30 - - 30 - 	12/10 7/12/13	R		Silty clay	Red Brown, Mottled Brown, Brown	Stiff	Moist
 - 35 -	7/9	R					
- 37.5 	9/11/16	R					
40 -	10/11			Feffer Geological Consulting	1		Figure

Sheet 2 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 7/10/15 Logged By: RM

Geotechnical Boring No: 2 Boring Location: see site map

		Sam	nple				
Depth in Feet	Blows per 6"	Undisturbed	Bulk	Bedrock/ Soil Description	Color	Density	Moisture
- 40 -	15/17		R	Silty clay, contains scattered bedrock fragments	Red Brown,	Stiff	Moist
 - 42.5 	7/10/15		R		Mottled Brown, Brown		
- 45 -	9/19		R				
47.5	5/9/15		R				
- 50 - - 50 -	9/11		R	End At 50', Fill To 6', No Water, No Caving			
 - 55 -							
- 60 - - 60 -							
 - 65 - 							
- 70 -							
- 75 -							
- 80 -							Figure
				Feffer Geological Consulting			Figure

Sheet 1 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 11/3/15 Logged By: JH Boring No: BA-1 Boring Location: Groundwater Level: 32.0' Drill Type: Bucket Auger

Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type
	00000	0 - 0.5': Asphalt and base			
 - 2.5 -	Af 000	Artifical (Af): Mixed soil and debris. Silty SAND, dry. Note: slight organics.		Hard	Af
 - 5 -		Colluvium (Qc): Surface soil. Silty SAND with clay, massive, medium to coarse grained poorly sorted sand with few fine and medium subangular gravel Note: organic rich. Gradational smooth lower boundary.	Brown 10YR 4/3d, 3/2m	Hard	Qc (AB)
 - 7.5 - 	° X ° '	Colluvium (Qc): Weak subsoil. Silty SAND with gravel, massive, friable, coarse grained poorly sorted sand with common to many fine, medium, and large subangular and angular gravel, slightly moist. Clear smooth gently north dipping boundary.	Brown Slightly oxidized 10YR 5/4d, 4/3m	Slightly Hard	Qc (Btj/BC)
- 10 - - 10 - 	° , °	Old Alluvium (Qoa ,): Terrace deposits, truncated. Silty SAND to silty sand with gravel, fined upwards, stratified, slightly hard- hard, medium to coarse grained moderately-well to poorly sorted sand with many fine and medium gravels at base.	Yellowish Brown 10YR 6/4d, 5/3m	Slightly Hard to Hard	Qoa,1 (Qt)(2C)
 - 15 - 	(f (f (f (f (f (f (f (f (f (f	Old Colluvium (Qoc,): Old colluvium, truncated argillic. Silty SAND with clay, massive, coarse grained poorly sorted sand with few to common subangular gravel, few to common fine clay films, slightly moist.	Brown Moderately well oxidized 10YR 4/4d, 3/3m	Hard	Qoc₁ (3Btjb)
 - 17.5 - 	× , , , , , , , , , , , , , , , , , , ,				
- 20 -		Feffer Geological Consulting	I		Figure

LOG OF EXPLORATORY BORING Sheet						
Job N Projec Date F Logge	umber: 1584 st: Montecito / Performed: 1 [°] d By: JH	- 54 Apartments 1/3/15	Boring No: BA-1 Boring Location: Groundwater Leve Drill Type: Bucket	el: 32.0' Auger		
Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type	
- 22.5 - 22.5 - 25 - - 27.5 		Wavy gradational lower boundary. Old Colluvium (Qoc2): Stacked subsoil, weak argillic. Silty SAND with clay and gravel, massive, coarse grained poorly sorted sand with common to many fine, medium, and large subangular and angular gravel-sandstone, moist. Note: gradational loss of clay with depth. Clear Planar south dipping contact. Old Colluvium (Qoc3): Stacked, truncated argillic. Silty SAND with gravel, massive, friable, common fine, medium, and large subangular gravel, highly weathered Groundwater encountered at 32'. END at 35', Fill to 3', Water at 32', No Caving. 31.5' - 35' not logged.	Yellowish Brown Slightly oxidized 10YR 6/4d, 4/3m Strong Brown 7.5YR 4/6d, 3/4m	Hard	Qoc ₂ (4BCb) Qoc ₃ (5Btjb)	
- 40 -		Feffer Geological Consulting	<u>I</u>		Figure	

LOG OF EXPLORATORY BORING Sheet					
Job N Projec Date I Logge	umber: 1584 ct: Montecito Performed: 1 ed By: JH	- 54 Apartments 1/3/15	Boring No: BA-2 Boring Location: Groundwater Leve Drill Type: Bucket	əl: 32.0' Auger	
Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type
		Artificial Fill (Af): West and South walls contain mixed soil and brick debris. Silty SAND. Note: slight organics. North and East walls contain bricked wall no mortar. Filled with soil debris, dry to slightly moist.	Not Recorded	Hard	Af +Wall
 - 20 -	<u> </u>	Feffer Geological Consulting			Figure

Sheet 2 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 11/3/15 Logged By: JH Boring No: BA-2 Boring Location: Groundwater Level: 32.0' Drill Type: Bucket Auger

Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type
- 22.5		 Artificial Fill (Af): Described above. Abrupt planar boundary Old Alluvium (Qoa1): Truncated argillic, Clayey SAND, massive, slightly moist, basal contact north dipping and clear and irregular. Note: slight organics. Old Colluvium (Qoc.): Stacked soil. Silty SAND with gravel, massive, coarse grained poorly sorted sand with gravel, fine to large subangular, moist to wet, exposed on North and West wall. Old Colluvium (Qoc.): Truncated argillic. Sandy CLAY with gravel, massive, coarse grained poorly sorted sand with common highly weathered subangular gravel exposed on North and West walls, faulted to South and East against – Topanga Formation (Tt): Sandstone Bedrock, medium grained, locally mottled, highly weathered, intensely fractured, weak to moderately strong rock strength, massive rock structure, wet. Groundwater encountered at 32' @ Fault ~1" thick, white clay gouge zone, plaster, N32°W, 69°S? @ Fault 2 - ~0.25 to 1" thick, white clay gouge zone and shear wavy and bifurcated, N73°E, 80°N-90° END at 35', Fill to 21.5', Water at 32', No Caving. 33' - 35' not logged. 	Brown 10YR 4/3d, 3/3m Brown 10YR 5/4d, 4/3m Strong Brown Moderately well oxidized 7.5YR 4/6d, 3/4m Tan	Slightly Hard toHard Very Hard	Qoa ₁ (Bt) Qoc ₂ (BC) Tt Qoc ₃ (2Btb)
		Feffer Geological Consulting			Figure

LOG OF	EXPL	ORATC	DRY B	ORING
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Sheet 1 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 11/3/15 Logged By: JH Boring No: BA-3 Boring Location: Groundwater Level: 30.0' Drill Type: Bucket Auger

Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type
	0 0 0 0 0	Asphalt and Base			
 - 2.5 -		Artificial Fill (Af): Mixed soil, rock, concrete, and brick. Massive, slightly moist. Note: slight organics.			Af
		Colluvial Top Soil (Qc): Silty SAND, massive, friable, medium to coarse grained poorly sorted sand with few pores and roots, few fine subangular gravel. Note: organic rich.	Dark Brown 10YR 3/3d, 2/2m	Slightly Hard	Qcs (AB)
- 7.5 - - 10 -		Colluvium (Qc): Weak subsoil. Silty SAND with gravel, massive, friable, medium to coarse grained poorly sorted sand with common to many fine, medium, and large subangular and angular gravel, poorly sorted sand, few roots, slightly moist.	Brown Slightly oxidized 10YR 4/4d, 3/2m	Slightly Hard to Hard	QC (Btj/BC)
		Old Alluvium (Qoa1): Terrace deposit. Silty SAND with gravel, stratified, fined upwards, medium to coarse grained poorly sorted sand with common small subangular gravel at base, sl. moist.	Yellowish Brown , Slightly oxidized 10YR 6/4d, 4/3m	Slightly Hard	Qoa1 (2c)
		Old Colluvium (Qoc ₁): Truncated argillic. Silty SAND with clay, massive, medium to coarse grained poorly sorted sand with few and fine subangular gravel, few to common fine clay films on red faces with weak subangular block structure, slightly moist.	Brown, slightly oxidized 10YR 4/4d, 3/3m	Hard	Qoc1 (3Btjb)
 	P D'	Old Colluvium (Qoc ₁): Stacked soil. Silty SAND with gravel, massive, coarse grained poorly sorted sand with many fine, medium, and large subangular and angular gravel sandstone, moist to wet.	Brown 10YR 5/4d, 4/3m	Slightly Hard to Hard	Qoc, (3BCb)
20	<u> </u>	Feffer Geological Consulting			Figure

Sheet 2 of 2

Job Number: 1584 - 54 Project: Montecito Apartments Date Performed: 11/3/15 Logged By: JH Boring No: BA-3 Boring Location: Groundwater Level: 30.0' Drill Type: Bucket Auger

Depth in Feet	Graphic Log	Bedrock/ Soil Description	Color	Density	Soil Type
		Old Colluvium (Qoc1): Described above.	Brown 10YR 5/4d, 4/3m	Slightly Hard to Hard	Qoc1 (3BCb)
- 22.5- - 25 - 	on the transformer of the second seco	 Old Colluvium (Qoc₂): Truncated and Faulted, argillic. Sandy CLAY with gravel, massive, coarse grained poorly sorted sand with common subangular highly weathered sandstone, fine, medium, and large gravel. Old Colluvium (Qoc₃): Silty SAND with gravel, coarse grained, poorly sorted sand, many subangular fine, medium, and large sandstone gravel, massive, wet 	Strong Brown Moderately well oxidized 7.5YR, 4/6d, 3/4m Brown 10YR, 5/4d, 4/3m	Hard to Very Hard Slightly Hard to Hard	Qoc ₃ (5Btb) (4BCb)
- 30 - - 30 - - 32.5- - 35 - - 37.5 - 		NOTE: Fault- 0.25 TO 0.50" thick white gouge, wavy N65°- 73°W,90° ~4" vertical seperation on unit Qoc ₂ Groundwater encountered at 30'. END at 30', Fill to 3', Water at 30', No Caving. 27' - 30' not logged.			
- 40 -		Feffer Geological Consulting			Figure

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-4 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type
- 0 -					
- 1 - - 1 - - 2 -	• Af •	Artificial Fill (Af) : Clayey sand with gravel, massive with concrete and construction debris, abrupt planer lower boundary	Brown		Af
- 3 -	~ · · · ·				
 - 4 - 		(Qal) Alluvium , sheet wash deposit, massive, silty sand,very friable, coarse grained, poorly sorted sand, slightly oxidized, with few fine gravel, clear smooth lower boundary.	Yellowish brown	Loose	Qal
- 6 - - 6 - - 7 -		Qc (AB) Colluvium , truncated AB soil horizon, silty sand with clay, organic rich, massive, medium grained moderately well sorted sand with few fine and medium subrounded gravel, gradational wavy lower boundary.	Brown	Slightly hard	Qc (AB)
- 8 - - 8 - - 9 - - 10 -	°, , , , , , , , , , , , , , , , , , ,	Qc (Bt) Colluvium (Base) , argilic horizon, silty sand, massive to crudely stratified, slightly well oxidized, gradational loss of clay with depth, coarse grained, poorly sorted sand with common fine, medium and large gravel, abrupt planar lower boundary	Yellowish brown	Slightly hard	Qc (Bt)
	' X , °				
- 11 - - 12 -	, 0 , 0	Qoa1 Old Alluvium , thin sheet wash deposit, crudely stratified, sand with silt, friable, medium grained, moderately well sorted sand with few common fine and medium gravel, clear planer lower boundary	Light brown	Soft	Qoa1
- 13 -	° X	Qoc1 (Bt) Old Colluvium , truncated argillic soil horizon, silty sand with clay, massive, moderately well oxidized, plugged with clay, coarse grained		Hard	Qoc1 (Bt)
- 14 - 15 -	í V	poorly sorted sand with common fine and medium gravel, slightly moist, abrupt wavy lower boundary	Reddish brown	. laid	
	' °				
- 10 -	× ` `				
- 17 - 					
- 18 - 	0 . 0 ° (Qoa2 (BC) Old Alluvium , well stratified beds of silty sand and sand with silt and gravel, very friable, abrupt wavy lower boundary	Yellowish brown	Soft	Qoa2 (BC)
- 19 - 					
- 20 -					Figure
		Feffer Geological Consulting			- iguic

Sheet 2 of 3

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-4 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type
- 20 -	•••••				
- 21 -		Qoc2 (Bt) Old Colluvium , truncated argillic horizon, massive, silty sand with clay to clayey	Proum		
- 23 -	$\begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$	sand, medium grained moderately well sorted sand with few fine and medium completely weathered gravel, plugged with clay, gradational	BIOWII	Hard	QUUZ (DI)
- 24 -	° X	wavy lower boundary			
 - 25 -	X ``				
- 26 -		Occ3 (Bt) Old Colluvium argille subsurface soil			
- 27 -		horizon massive, clayey sand, , medium grained	Yellow brown	Hard	Qoc3 (Bt)
- 28 -		completely weathered fine and medium gravel, gradational increase in clay with depth. clear way		TIATU	
- 29 - - 29 -	$\langle \rangle$	lower boundary			
- 30 - 					
- 31 -					
- 32 - 					
- 33 -					
- 34 -					
- 35 -					
- 36 -					
- 37 -					
- 38 -	, —				
- 39 -					
- 40 -					-
		Feffer Geological Consulting			Figure

LOG OF EXPLORATORY BORING Sheet								
Job N Projec Date F	umber: 1584 ct: Montecito Performed: 1,	-54 Apartments /27/16	Boring No: BA-4 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger					
Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type			
-40 -41 -41 -43 -43 -43 -44 -44 -44 -44 -44 -44 -47 -48 -47 -48 -47 -51		Bedrock/ Soil Description Qoa3 (Bt) Old Alluvium, truncated mature argillic, sandy clay, massive, , plugged with clay, well oxidized, strong soil structure, undetermined lower boundary Logged To 50', Drilled To 55', No Water, No Caving.	Reddish brown	Very hard, firm	Qoa3 (Bt)			
 - 60 -								
		Feffer Geological Consulting			Figure			

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-5 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet Soil Type Soil Type Density Color Bedrock/ Soil Description 0 Artificial Fill (Af) silty sand with gravel and Brown Af concrete debris, massive 1 2 3 Qal (Btj / BC) Alluvium, sheet wash/channel deposit, juvenile argillic to transitional soil horizon, silty sand to sandy silt, 4 massive, friable, coarse grained poorly sorted sand with Olive brown Soft Qal (Btj / BC) common fine slate and sandstone gravel, abrupt smooth lower boundary 5 6 Qc (AB) Colluvium, near surface truncated and buried Qc (AB) Dark brown Soft to slightly transitional soil horizon, silty sand, massive, organic rich, 7 0 hard coarse grained poorly sorted sand with few to common fine and medium subangular gravel, gradational wavy lower boundary 8 9 Qc (Bt /BC) Colluvium, argillic to transitional soil Qc Slightly hard Yellowish brown horizon, silty sand, massive, slight organics, coarse (Bt /BC) 10 grained poorly sorted sand, with few fine sub angular gravel, clear smooth lower boundary 11 Qoa1 (Bt) Old Alluvium, sheet wash/channel deposit, crudely stratified, fining upwards, silty sand to sandy with silt and gravel, 12 Light yellowish brown Qoa1 (Bt) soft, fine to coarse grained well to poorly sorted and with few to common fine medium sub rounded gravel, abrupt smooth lower 13 boundary 14 Qoc1 (Bt) Old Colluvium, truncated argillic soil horizon, massive, silty sand with clay, slightly well 15 Brown oxidized, coarse grained poorly sorted sand with Hard Qoc1 (Bt) few fine and medium sub angular gravel, clear 16 smooth lower boundary 17 Qoa2 (Bt) Old Alluvium, sheet wash / channel deposit, 18 massive to crudely stratified, silty sand with gravel, coarse grained poorly sorted sand with common fine and Yellowish brown medium sub angular highly weathered gravel, slightly Qoa2 (Bt) 19 Slightly hard moist, localized sand lenses, gradational boundary to; 20 Figure Feffer Geological Consulting

Sheet 2 of 3

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-5 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type
- 20 -	0,0°°°°				
- 21 -		Qoa2 (BC) Old Alluvium, channel deposit, well stratified, silty sand to sandy silt, fine grained well sorted sand, localized pocket scours with many small and medium sub rounded gravel, few common wavy CaCo3 lined fractures (randomly orientated and discontinuous), clear wavy lower boundary	Yellowish brown		Qoa2 (BC)
- 23 - 		Qoc2 (Bt1) Old Colluvium. truncated argillic soil			
- 24 -	í o`	horizon, massive, clayey sand to sandy clay, coarse grained poorly sorted sand with few fine	Strong brown	Hard	Qoc2 (Bt1)
- 25 -	° X	and medium highly weathered gravel, slightly well oxidized, few CaC03 lined fractures on NW wall	Strong brown	Tara	
- 26 -	`× ، °`	(discontinuous and wavy to planer), gradational lower boundary			
- 27 -	, o _, o				
- 28 -	 ○ ○	Qoc3 (Bt2) Old Colluvium , argillic subsurface soil horizon, silty sand with clay, massive, coarse	Duraum	Slightly hard to	
- 29 -	· · · · · · · · · · · · · · · · · · ·	grained poorly sorted sand with few fine and medium highly weathered sub angular gravel,	Brown	hard	Qoc3 (Bt2)
- 30 -	´0`。´°`	gravel), gradational lower boundary			
- 31 -	0				
- 32 -	, o \				
- 33 -	`				
- 34 - 	∕ °́				
- 35 - -	、				
- 36 - -	, o				
- 37 -	0 , 0 ° (Qoc3 (BC) Old Colluvium , transitional soil horizon, silty sand with clay, massive, coarse			
- 38 -	~ 0 , 0 —	grained poorly sorted sand common fine and medium sub angular highly weathered gravel,	Dark yellowish brown	Slightly hard	Qoc3 (BC)
 - 39 -		clear smooth lower boundary			
- 40 -					
		Feffer Geological Consulting			Figure

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-5 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type
- 40 -	(0(ff (
 - 41 - 	, <i>,</i> , , , , , , , , , , , , , , , , ,	Qoc4 (Bt) Old Colluvium , truncated and stacked strong argillic horizon, massive, clayey sand, hard, coarse grains poorly sorted sand with few fine and	Brown	Hard	Qoc4 (Bt) Old
- 42 -	× °, °, °, °, °, °, °, °, °, °, °, °, °,	medium completely weathered gravel, abrupt wavy lower boundary			Condvidin
- 43 -	((Qoa3 (Bt) Old Alluvium, truncated strongly developed		Verv hard	00a3 (Bt)
- 44 -		argillic soil, massive, well oxidized, plugged with clay, , sandy clay, , coarse grained poorly sorted sand, undetermined lower boundary		vory hard	QUUU (DI)
- 45 -	· · · · ·				
- 46 -	\s/				
- 47 -					
- 48 -	U	Sluff			
- 49 - 	H				
- 50 -	·				
 - 51 -		Caving.			
- 52 -					
- 53 -					
 - 54 -					
- 55 -					
 - 56 -					
- 57 -					
 - 58 -					
 - 59 -					
 - 60 -	· · · · · · · · · · · · · · · · · · ·				
		Feffer Geological Consulting			Figure

Job Number: 1584-54 Project: Montecito Apartments

Boring No: BA-6 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Date Performed: 1/27/16

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type				
0 -	o , ' \ o`	Artificial Fill (Af), silty sand with gravel and	Dark brown		Af				
	, 0 0	construction debris, massive, abrupt wavy lower							
	´∘ Af ° ´	boundary							
- 2 -									
	- , o -								
- 3 -									
		Qal1 -Alluvium, channel scour deposit, silty sand with gravel, massive,							
- 4 -	• • • •	coarse grained and poorly sorted sand with common fine sub rounded gravel, irregular south dipping lower boundary	Olive brown	Slightly hard	Qal1				
- 5 -									
	6666	Qc (AB) Colluvium, truncated transitional soil horizon,		Oliophthy bound to					
- 6 -		silty sand, massive, slight organics, coarse grained poorly	Dark brown	hard to	Qc (AB)				
- 7 -	0.000	wavy lower boundary							
		Cc (Bt//BC) Colluvium, juvenile arginic soil horizon, silty sand, massive, coarse			Qc (Bti/BC)				
- 8 -	, <u>,</u> , _ , _ ,	boundary.							
	۰ ۰ ۰ ۰ ۰	silty sand with gravel, coarse grained poorly sorted sand, common to many fine and medium sub angular gravel, clear wavy south dipping lower boundary	Yellowish brown		Qc (Bt)				
		Qoa1 (Btj) Old Alluvium, truncated juvenile argillic soil horizon, sheet							
- 10 -		wash/channel deposit, sand with silt and gravel, massive,triable, many fine and medium sub rounded gravel, abrupt wavy lower boundary	Light brown	Loose	Qoa1 (Btj)				
		~							
- 11 -	° • ° ° (Qoa1 (BC) Old Alluvium, transitional soil horizon, channel deposit, silty sand, well-stratified, few fine and medium sub rounded gravel, medium grained moderately	Light brown	Soft	Qoa1 (BC)				
	, °``'`, ' °,	Qoa1 (BC) Old Alluvium, transitional soil horizon, channel deposit, silty sand, well-	Light brown		00a1 (BC)				
	°, ``,	stratified, soft, few fine and medium sub rounded gravel, medium grained moderately well sorted sand, abrupt smooth lower boundary	Light brown						
- 13 -	$\left\{ \right\}$	Qoc1 (Bt) Old Colluvium, truncated argillic							
	١	Horizon, silty sand with clay, slight organics, slightly	Brown		Qoc1 (Bt)				
- 14 - 	$^{\circ}$ \times	oxidized, massive, coarse grained poorly sorted							
- 15 -	́ 0 `	wavy, north dipping lower boundary							
	ó X								
- 16 -									
- 17 -	Χ.,								
	, ° , °	~							
- 18 -	(-, -)	Qoa2 (BC) Old Alluvium, transitional soil horizon, silty sand, slightly medium grained moderately well sorted sand, massive, clear wavy west	Light brown		Qoa2 (BC)				
		sloping lower boundary		Slightly hard					
- 19 -	$\left(\left(\left(\left(\left(\circ \right) \right)^{2} \right)^{2} \right)^{2} \right)^{2} \right)$								
- 20 -									
		Feffer Geological Consulting			Figure				
	Feffer Geological Consulting								

Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-6 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet Soil Type Soil Type Density Color Bedrock/ Soil Description 20 Qoc2 (BC) Old Colluvium, transitional soil 21 horizon, silty sand, medium grained moderately Light brown Qoc2 (BC) Slightly hard well sorted sand, massive, clear wavy west sloping lower boundary 22 23 24 25 Qda3 26 Qoc3 (Bt) Old colluvium, truncated, strong argillic horizon, , clayey sand with gravel, massive, slightly 27 Strong brown Hard Qoc3 (Bt) well oxidized, coarse grained poorly sorted sand with common fine and medium highly weathered 28 0 gravel 29 Fault-Thin wavy shear N75E 63S irregular west Qoa₂ dipping contact 30 31 32 Qoa3 (Bt1) Old Alluvium, stacked and truncated argillic soil horizon, , sandy clay, , massive, Qoa3 Very hard Reddish brown 33 (Bt1) moderately well oxidized coarse grained poorly sorted sand with few fine highly weathered gravel 34 Fault on west wall, thin wavy shear N85W, 65S 35 36 Qoa3 Qoa3 (Bt2 gley) Old alluvium, argillic subsurface Hard Partially gleyed (Bt2 gley) С soil horizon, clayey sand with gravel, massive, 37 gray, pale brown coarse grained with few fine medium and large 38 completely weathered gravel, wet, clear wavy north sloping boundary; 39 40 Figure Feffer Geological Consulting

LOG OF	EXPLORATOR	Y BORING
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Job Number: 1584-54 Project: Montecito Apartments

Date Performed: 1/27/16

Boring No: BA-6 Boring Location: See Site Map Groundwater Level: N/A Drill Type: Bucket Auger

Depth in Feet	Soil Type	Bedrock/ Soil Description	Color	Density	Soil Type
- 40 -					
- 41 -	S/	Qoa3 (Bt3) Old alluvium , argillic subsurface soil horizon, sandy clay, massive, plugged with clay.	Reddish brown	Very hard	Qoa3
- 42 -		well oxidized, medium grained moderately well sorted sand with few pea gravel, wet,			(BI3)
- 43 -	с G ц	undetermined lower boundary			
- 44 - 					
- 45 - 		Drilled to 45', No Water, No Caving.			
- 46 -					
- 47 -					
- 48 -					
- 49 -					
- 50 -					
- 51 -					
- 52 -					
- 53 -					
- 54 -					
 - 55 -					
- 56 -					
- 57 -					
 - 58 -					
 - 59 -					
 - 60 -					
		Feffer Geological Consulting			Figure

					APPROXIMATE SCALE : 1"=5' TES				EST EXCAVATION : 1			
G				J	DATE L	OGGED : 7/10,	15	BY : RAM	ADD	RESS:	6650 W. Franklin	Avenue
	5 -											
	0 -			 		 			 			
DEPTH	5-			 		Af	usi					
1	10-			r								
ŋ	×	SAMPLE	sw	LOCAT	ION : Se	e Site Map						
<u>I</u> N	L R	DEPTH	B	DESCR	RIPTION:	Classification	(USC	S), color, mo	oisture, co	onsisten	cy etc.	
		- 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12		0-3' Clay roots 3-5' Topa mois @4' End	Fill (Af) rey san s and ro Bedroc anga Fo st, hard Beddir At 4', F): dy silt, tan, ock fragme k (Ttusi): ormation sil ng Observe Fill To 1', No	yellov hts stone d N24 Wate	v brown, n e, orange t W 42NE er, No Cav	noist, d	ense, c gray, m	contains scatte	ered rootlets,
	J	FEFFER C	GEO) CON	SULTI	NG	F.N	. 1584-54		Montecit	o Apartments (TSA)	PLATE

					APPROXIMATE SCALE : 1"=5' TES				TES	FEST EXCAVATION : 2		
			_0	G	DATE L	OGGEI	D : 7/10/1	5 BY : RAM	ADD	RESS:	6650 W. Franklin	Avenue
	5											
				- 					 			
DEPTH	0						Af					
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	10			 		 			 			
				 					1 1 1 1 1 1 1 1 1			
ВN	צ =	SAMPLE	SWO	LOCAT	ION : Se	e Site	Мар	(11000)	• •	• •		
		- 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14	B	 DESCRIPTION: Classification (USCS), color, moisture, consistency etc. 0-6' Fill (Af): 0-2' Sandy silt, dark brown, moist, dense, contains scattered roots, rock fragments and debris 2-4' Silty sand, mottled brown, yellow brown, moist, dense, contains scatter rootlets, roots, rock fragments and concrete debris 4-6' Silty sand, mottled brown, dark brown, moist, medium dense, contains scattered rootlets and rock fragments 6-7' Quaternary Soil (Qs): Sandy silt, dark brown, mottled brown, moist, medium dense 7-9' Bedrock (Ttusi): Topanga Formation siltstone, yellow brown, tan, moist, hard, weathered End At 9', Fill To 6', No Water, No Caving 								s, rock ns scattered contains hered
]	FEFFER C	GE	O CON	SULTI	NG		F.N. 1584-54		Montecit	o Apartments (TSA)	PLATE

							SCALE	: 1"=5'	EST EXCAVATION : 3			
Ċ	חנ		_0	G	DATE L	OGGED):7/10/1	5 BY : RAM	ADD	RESS: 6	650 W. Franklin	Avenue
	10											
ЭЕРТН	0						Af					
	10			- - - - - - - - - - - - - - - - - - -			Qa \Ttu		- - - - - - - - - - - - - - - - - - -			
	20			r								
ŊĠ	1	SAMPLE	SWO	LOCAT	ION : Se	e Site N	Мар	(1000)				
	Ē	■ DEPTH — 2 — 4 — 6 — 8 — 10 — 12 — 14 — 16 — 20 — 18 — 22 — 24 — 26 — 29	8	0-6' 0-2' roots 2-6' roots 6-19 @6' @13 @16 scat Bed Topa mott End	Fill (Af) Silty sa s and c Silty sa lets and alets and and s Silty s S' Alluvin Sandy s S' Alluvin Sandy s S' Alluvin Sandy s Canga Fo anga Fo anga Fo anga Fo At 19',	Classif ind, da oncret and, or d debr um (Q silt, cla and, y elly silt ock fra tusi): ormation wn, m Fill To	ark bro te deb range is ayey s vellow ty sand agmen on inte ioist, v	(USCS), color, mo own, brown, mo ris brown, yellow k brown, tan, mo d, tan, yellow b ts erbedded siltsto ery hard, highly o Water, No Ca	bist, der bist, der brown, bist, der brown, r brown, r brown, r	moist, co moist, co mottled nottled	tone, yellow b	rootletts, ns scattered t, dense contains prown, tan,
		FEFFER C	GEO	O CON	SULTI	NG		F.N. 1584-54		Montecito	Apartments (TSA)	PLATE



APPENDIX 'D'

Cross-Section B-B' Continuous Core Boring Logs Continuous Core Boring Photos CPT Report

Sheet 1 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 1 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run#	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit																				
- 0 -				Asphalt, concrete, and base, not cored.	N / A	N / A	Af																				
	1	3/5		Artificial Fill (Af): Not described																							
				Quaternary Older Colluvium (Qoc ₁): Clayey SILT w/ gravel, organic rich, massive, slightly well oxidized, c. gr. poorly sorted sand, hard, clay films common on ped faces, few fine subangular gravel, moderately to very plastic, friable to firm, grades to	7.5 YR 3/2 m D. Brown	Hard	Qoc ₁ Abt ₁																				
				Silty CLAY, slight organics, massive, moderately well oxidized, c. gr. poorly sorted sand, very sticky, very plastic, firm, moderately thick clay films common, grades to	7.5 YR 4/4 m Brown	Hard	Qoc ₁ Abt ₂																				
	2	5/5		Sandy CLAY, massive, moderately well oxidized, fine grained well sorted sand, very sticky, very plastic, very firm, moderately thick clay films, grades to	7.5 YR 4/4 Brown	Hard	Qoc ₁ Bt ₃ /BC ₁																				
- 10 -				Silty SAND, crudely stratified, few fine gravel, fine grained well sorted sand, moderately sticky, slightly plastic, scour deposit, base of Qoc1, clear boundary to	10 YR 4/4 D. Yellow Brown	Soft (scour)	Qoc1 BC2																				
	3	5/5																				5	5	Silty CLAY, massive, moderately well oxidized, fine grained well sorted sand, very sticky, very plastic, firm, common f+m pores, slight organics, common fine clay films, grades to	7.5 YR 4/6 m Strong Brown	Slightly Hard	Qoc ₂ 2ABt ₁
										Sandy CLAY to CLAY, massive, moderately well oxidized, very fine grained, very well sorted sand, very sticky, very plastic, very firm, common moderately thick clay films, clear boundary to base of Qoc2 - stacked	7.5 YR 5/6 Strong Brown	Slightly Hard to Hard	Qoc ₂ 2Bt ₁														
				CLAY, massive, moderately well oxidized, very fine grained, very well sorted SAND, very sticky, very plastic, very fine, common moderately thick clay films and common CaCO3 nodules and veinlets, grades to	7.5 YR 4/4 Brown	Hard to Very Hard	Qof 1 3Btk1																				
	4	5/5		Silty CLAY, massive, moderately well oxidized, very fine grained very well sorted sand, very sticky, very plastic, very firm, common fine clay films, many CaCO3 nodules and veinlets, clear boundary to;	7.5 YR 6/6 Reddish Yellow	Hard	Qof 1 3Btk ₂																				
- 20 -							Eiguro																				
				Feπer Geological Consulting			Figure																				

Sheet 2 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 1 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run#	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit
- 20 -				Sandy CLAV magazing madagately well suiting a first suiting t		Slightly Hard	Qof
	5	3.6 /5		Sandy CLAY, massive, moderately well oxidized, fine grained well sorted SAND, very sticky, moderately to very plastic, firm, common moderately thick clay films, few fine CaCO3 nodules and veinlets, grades to	Brown	Siignuy Hard	4Btk ₁
25							
- 20 -							
	6	4/5		Clayey SAND, massive, moderately well oxidized, fine grained well sorted sand, moderately sticky, moderately plastic, firm, common fine clay films, faint CaCO3 coating ped faces - grades to	7.5 YR 5/6 Strong Brown	Hard	Qof 2 4Btk2
				Clayey SAND with gravel, crudely stratified, fine grained well sorted sand, moderately sticky, moderately plastic, common highly weathered gravel clear boundary to	7.5 YR 5/6 Strong Brown	Hard to Very Hard	Qof 2 4Bt 3
	7	3.4 /5		Sandy CLAY, crudely stratified, medium grained moderately well sorted SAND, very sticky, moderately plastic, medium grained moderately well sorted sand with few - common highly weathered gravel at base, common moderately thick clay films, clear boundary to	10 YR 5/6	Very Hard	Qof 3 5Bt
- 35 -							
	8	2.1 /5		Silty CLAY, massive, well oxidized, medium grained moderately well sorted sand, very sticky, very plastic, common thick clay films, undetermined lower boundary	5 YR 4/6 Yellowish Red	Hard	Qof 4 6Bt
- 40 -							
				Feffer Geological Consulting		<u> </u>	Figure

Sheet 3 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 1 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run #	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit
- 40 -				@40' Drill hit very hard material (Refusal in Rock?)			
				End Drilling at 40', Fill to 3.2', No water, No caving			
- 45 -							
- 50 -							
55 -							
- 60 -							
				Feffer Geological Consulting			Figure

Sheet 1 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 2 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run#	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit
- 0 -				Asphalt, concrete, and base, not cored. Artificial Fill (Af): Not described	N/A	N / A	Af
	1	4.1 /5		Quaternary Alluvium (Qal / Abt ₁): Silty SAND w/ clay, massive, sl. organics, slightly oxidized, friable, common fine and medium gravel, slightly to moderately sticky, slightly plastic, few fine clay films and common clay stains c. gr. poorly sorted sand, clear boundary to	10 YR 5/4 Yellowish Brown	Soft	QalAbt1
- 5 -				Clayey SILT, massive, organic rich, sl. well oxidized, firm, very fine grained, well sorted SAND, very sticky, very plastic, common fine clay films, common fine pores, grades to	10 - 7.5 YR 3/2 Dark Brown	Slightly Hard	Qoc ₁ 2Abt ₁
	2	5/5		Silty CLAY, massive, slight organics, moderately well oxidized, firm, very fine grained, very well sorted sand, very sticky, very plastic, firm, common moderately thick clay films, grades to	7.5 YR 4/4 Brown	Slightly Hard	Qoc ₁ 2Abt ₂
				Sandy CLAY, massive, moderately well oxidized, firm, very sticky, fine grained moderately plastic, fine to medium grained, moderately well sorted sand, common fine and few moderately thick clay films, undetermined boundary to	7.5 YR 5/4 Brown	Hard	Qoc ₁ 2Bt ₃
	0						
	3						
- 15 - 	Λ	4.2		Silty CLAY with gravel, massive, organic rich, slightly well oxidized, friable - firm, modeerately sticky, moderately plastic, medium grained moderately well sorted sand, common moderately thick clay films, grades to	10 YR 4/4 D. Yellow Brown	Slightly Hard	Qoc ₂ 3ABt ₁
	+	/5		Clayey SAND with gravel, massive, moderately well oxidized, friable, moderately sticky, slightly plastic, medium grained, moderately well sorted SAND, common fine clay films, clear boundary to;	7.5 YR 5/4 Brown	Slightly Hard	Qoc ₂ 3Bt ₂ /3BC
				Feffer Geological Consulting		·	Figure

Sheet 2 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 2 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run#	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit
- 20 -				Clayey SAND - SANDY CLAY, massive, moderately well	7.5 YR 5/6	Hard	Qof _
				oxidized, few fine pores, slight organics, firm, very fine grained, very well sorted sand, common fine and few medium clay films grades to	Strong Brown		4Bt ₁
	5	5/5					
- 25 -				Clayey SAND, massive, moderately well oxidized, friable - firm, fine grained well sorted sand, common fine clay films, moderately sticky, moderately plastic, few fine gravel, clear boundary to	7.5 YR 6/6 Reddish Yellow	Hard	Qof 1 4Bt ₂
	6	5/5					
- 30 -							
	7	5/5		Clayey SILT, massive, slight organics, moderately well oxidized, firm, very fine grained, very well sorted SAND, very sticky, very plastic, common fine pores, many fine and	7.5 YR 4/6 Strong Brown	Very Hard to Hard	Qof 2 5Bt1
	1	5/5		commonly thick clay films, grades to			
- 35 -							
				Sandy CLAY - clay, massive, moderately well oxidized,	7.5 YR 5/4	Very Hard	Qof ,
	8	5/5		very firm, very fine grained, very well sorted sand, very sticky, very plastic, many moderately thick clay films	Brown	-	o 6Bt ₁
- 40 -				Feffer Geological Consulting			Figure
							5

Sheet 3 of 3

Job Number: 1584 - 54 Project: Montecito Apartments

Boring No: 2 Boring Location: See Site Map

Date Performed: 6/24/16

Depth in Feet	Run #	Recovery Ratio	Recovery Graphic	Bedrock/ Soil Description	Color	Density	Strat/ Soil Unit
- 40 - 	9	5/5		Silty CLAY, massive, organic-rich, firm, very sticky, very plastic, very fine grained, very well-sorted SAND, plugged with clay moderately well oxidized, irregular boundary to	7.5 YR 4/3 Brown	Hard to Very Hard	Qof 4 7Bt 1
- 45 - 	10	5/5		CLAY, massive, moderately well oxidized, very firm, very sticky, very plastic, very fine grained, very well sorted SAND, plugged with clay, undetermined lower boundary	7.5 YR 4/4 Brown	Very Hard	Qof 4 7Bt 2
- 50 - - 55 - 				End Drilling at 50', Fill to 1.5', No water, No caving			
				Feffer Geological Consulting			Figure

FEFFER BORING 1



0 - 20 feet below ground surface (bgs)



20 - 40 feet bgs

FEFFER BORING 2



0 - 20 feet below ground surface (bgs)



20 - 40 feet bgs



40 - 50 feet bgs

File No. 1584-54 Boring Photos Page 2





e Earth	Project	Montecito Apartments	Operator	DG-RC	Filename	SDF(585).cpt
TING INC.	Job Number	1584-54	Cone Number	DDG1366	GPS	
	Hole Number	CPT-01	Date and Time	6/24/2016 10:36:12 AM	Maximum Depth	50.36 ft
	EST GW Depth Du	Iring Test	>50.00 ft			



e Earth	Project	Montecito Apartments	Operator	DG-RC	Filename	SDF(586).cpt
STING INC.	Job Number	1584-54	Cone Number	DDG1366	GPS	
	Hole Number	CPT-02	Date and Time	6/24/2016 11:26:48 AM	Maximum Depth	50.36 ft
	EST GW Depth Du	ring Test	>50.00 ft			











Classification Data: Robertson and Campanella UBC-1983



