1046 West Taylor St. Suite 209, San Jose CA, 95126
awrcorp.net

EXHIBIT 1B

August 27, 2018

Mc Morgan & Company
One Front Street, Suite 500
San Francisco, CA

Attn: Mr. Mark Taylor

Subject: Geotechnical & Liquefaction Investigation
"Parcel K" on Madrone Parkway
APN 726-35-028
Morgan Hill, California

Dear Mr. Taylor:

We are pleased to transmit herein the results of our geotechnical recommendations for the subject site "Parcel K" on Madrone Parkway, APN 726-35-028, in Morgan Hill, California. Liquefaction was not found to be an issue. Therefore the structure may be supported by a conventional foundation as indicated in this report.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Very truly yours,

Regards,

AWR ENVIRONMENTAL

REGISTERED PROFESSIONAL ENGINEER
VIEN M. VO
C 32296
EXP. 12/31/18
CIVIL
STATE OF CALIFORNIA

Kendall W. Price, CEG, REA
Regional Manager, Principal Consultant

Vien Vo, P.E.
Consultant

Geotechnical – Liquefaction Investigation

Mc Morgan & Company

August 2018

Prepared by:

AWR Environmental

1046 Taylor St. Suite 209

San Jose CA, 95126

Table of Contents

1. INTRODUCTION

Per your authorization, Applied Water Resources, Corp. (AWR) conducted a geotechnical investigation. The purpose of this geotechnical investigation was to determine the nature of the surface and subsurface soil conditions at the project site through field investigations and laboratory testing. This report presents an explanation of our investigative procedures, results of the testing program, our conclusions, and our recommendations for earthwork and foundation design to adapt the proposed improvements to the existing soil and structural conditions.

2. SITE LOCATION AND DESCRIPTION

The subject undeveloped site is located at the northern corner of Madrone Parkway in Morgan Hill. See the site plan on Figure Number 1. This undeveloped parcel consists of approximately 10 acres. There are no distinguishing features or landmarks on the parcel.

3. FIELD INVESTIGATION

After considering the nature of the proposed improvements and reviewing available data on the area, a field investigation was performed at the subject site. It included a site reconnaissance to detect any unusual surface features, and the drilling of four exploratory test borings to determine the subsurface soil characteristics. The borings were drilled on July 11 and 18, 2018. The approximate location of the borings is shown on the Site Plan (Figure 2). The borings were drilled to the depths of 16 feet and 50 feet below existing ground surface. The borings were drilled with a truck mounted drill rig using 8-inch diameter hollow stem augers. A detailed description of the liquefaction investigation and analysis is presented in a latter section of this report.

The soils encountered were logged continuously in the field during the drilling operation. Relatively undisturbed soil samples were obtained by hammering a 2-inch outside diameter (O.D.) split-tube sampler for a Standard Penetration Test (SPT), ASTM Standard D1586, into the ground at various depths. A 140- pound hammer with a free fall of 30 inches was used to drive the sampler 18 inches into the ground. Blow counts were recorded on each 6-inch increment of the sampled interval. The blows required to advance the sampler the last 12 inches of the 18 inch sampled interval were recorded on the boring logs as penetration resistance (n).

The Exploratory Boring Logs of borings B-1 and B-4, provide a graphic representation of the encountered soil profile which also shows the depths at which the relatively undisturbed soil samples were obtained. These boring logs can be found in the Appendix A of this report.

4. LABORATORY INVESTIGATION

A laboratory-testing program was performed to determine the physical and engineering properties of the soils underlying the site. Moisture content and dry density tests were performed on all of the relatively undisturbed soil samples in order to determine soil consistency and the moisture variation throughout the explored soil profile (Table I). Liquefaction analysis of the soils encountered in the 50 foot boring were performed to further evaluate the liquefaction potential of the site earth materials.

The strength parameters of the foundation soils were determined from direct shear tests that were performed on selected relatively undisturbed soil samples (Table I).

The results of the laboratory-testing program are presented in Appendix B at the end of this report.

5. SOIL CONDITIONS

The site soils have been naturally deposited in nearly horizontal layers. The site is underlain by well graded to poorly graded silty sand with minor amounts of coarse sands and gravels. These soils were found to be very dense to hard at depth. Penetration resistant blow counts are shown on the various boring logs.

6. CONCLUSIONS

The site covered by this investigation is suitable for the proposed improvements provided the recommendations set forth in this report are carefully followed.

Based on the laboratory testing results, the native surface soil at the project site has been found to have a very low expansion potential when subjected to fluctuations in moisture.

Any exterior grading at the site should permit proper drainage and diversion of water away from the building foundations.

We recommend that a reference to our report should be stated in the grading and foundation plans (this includes the Geotechnical Investigation File No. and date).

On the basis of the engineering reconnaissance and exploratory borings, it is our opinion that trenches that will be excavated to depths less than 5 feet below the existing ground surface may need shoring depending on the soil type at the location. All trenches over 5 feet will require shoring prior to workers entering the trench. AWR should inspect the trenching areas to determine the need for shoring on trenches less than 5 feet.

Specific shoring recommendations are presented in the remainder of this report.

All earthwork and grading shall be observed and inspected by a representative from AWR. These operations are not limited to testing and inspection during grading.

7. GRADING RECOMMENDATIONS

The placement of fill and control of any grading operations at the site should be performed in accordance with the recommendations of this report. These recommendations set forth the minimum standards to satisfy other requirements of this report.

a) All existing surface and subsurface structures, if any, which will not be incorporated in the final development, shall be removed from the project site prior to any grading operations. These objects should be accurately located on the grading plans to assist the field engineer in establishing proper control over their removal. All utility lines, if any, must be removed prior to any grading at the site.
b) The depressions left by the removal of subsurface structures should be cleaned of all debris, backfilled and compacted with clean, on-site soil material. This backfill must be engineered fill and should be conducted under the supervision of an AWR representative.

c) All organic surface material and debris shall be stripped prior to any other grading operations, and transported away from all areas that are to receive structures or structural fills. Soil containing organic material may be stockpiled for later use in landscaping areas only.

d) After removing all the subsurface structures, if any, and after stripping the organic material from the soil, the building pad area should be scarified by machine to a depth of 12 inches and thoroughly cleaned of vegetation and other deleterious matter.

e) After stripping, scarifying and cleaning operations, native soil should be re-compacted to not less than 90% relative maximum density using ASTM D1557-12 test procedure over the entire building pad and 5 feet beyond the perimeter foundation excavations. A geo textile filter fabric should be placed over the compacted subgrade prior to fill placement.

f) All engineered fill or imported soil should be placed in uniform horizontal lifts of not more than 6 to 8 inches in un-compacted thickness, and compacted to not less than 90% relative maximum density using ASTM D1557-12 procedure. This should extend a minimum of 5 feet beyond the perimeter of the pad. The baserock and driveway street subgrade, however, should be compacted to not less than 95% relative maximum density. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either; 1) aerating the material if it is too wet, or 2) spraying the material with water if it is too dry. Each lift shall be thoroughly mixed before compaction to assure a uniform distribution of water content.

g) When fill material includes rocks, nesting of rocks will not be allowed and all voids must be carefully filled by proper compaction. Rocks larger than 4 inches in diameter should not be used for the final 2 feet of building pad.

h) AWR should be notified at least two days prior to commencement of any grading operations so that our office may coordinate the work in the field with the contractor. All imported borrow must be approved by AWR before being brought to the site. Import soil must have a plasticity index no greater than 15 and an R-Value greater than 25.

i) We recommend that the final grading plan should be reviewed by our office prior to submitting to the appropriate local agency and/or to construction

8. LIQUEFACTION ANALYSIS

The site is located within the State of California Seismic Hazard Zone for liquefaction (CGS, 2001). Therefore, a liquefaction analysis was performed.

8.1 GROUNDWATER

Groundwater was not encountered in Boring B-4 to the maximum explored depth of 50 feet during the drilling operation. Based on the State guidelines and CGS Seismic Hazard Zone Report 096 [*Seismic Hazard Evaluation of the Morgan Hill 7.5-Minute Quadrangle, Santa Clara County, California*. *2004 (Updated 10/10/2005)*. Department Of Conservation. Division of Mines and Geology], the highest expected groundwater level is approximately 20 feet below ground elevation. Therefore, this depth of the groundwater table will be used for the liquefaction analysis.

8.2 SUSPECTED LIQUEFIABLE SOIL LAYERS

The State Guidelines (CGS Special Publication 117A, revised 2008, Southern California Earthquake Center, 1999) were followed by this study. Based on recent studies (Bray and Sancio, 2006, Boulanger and Idriss, 2004), the "Chinese Criteria", previously used as the liquefaction screening (CGS SP 117, SCEC, 1999) is no longer valid indicator of liquefaction susceptibility. The revised screening criteria clearly stated that liquefaction is the transformation of loose saturated silts, sands, and clay with a Plasticity Index (PI) < 12 and moisture content (MC) > 85% of the liquid limits are susceptible to liquefaction and 12<PI<18 and MC>80% of LL are moderately susceptible to liquefaction. This occurs under vibratory conditions such as those induced by a seismic event. To help evaluate liquefaction potential, samples of potentially liquefiable soil were obtained by hammering the split tube sampler into the ground. The number of blows required driving the sampler the last 12 inches of the 18 inch sampled interval were recorded on the log of test boring. The number of blows was recorded as a Standard Penetration Test (SPT), ASTM Standard D1586-92.

The results from our exploratory boring show that the subsurface soil material in Boring B-4 to the depth of 50.0 feet consists of medium dense to dense silty sand. The following is the determination of the liquefiable soil for each soil layer in Boring B-4.

1. The medium dense silty sand layer from the surface to the depth of 20 feet <u>is not liquefiable</u> soil because it is above the highest expected groundwater table (20 feet).
2. The medium dense to dense silty sand layer from the depths of 20 feet to the end of the boring at 50 feet <u>is not liquefiable</u> soil based on high blow counts.

In summary, there is no liquefiable soil layer underlying the subject site.

8.3 LIQUEFACTION - CONCLUSION

Since there is no liquefiable soil layer underlying the subject site, the potential for liquefaction is minimal.

9. WATER WELL RECOMMENDATIONS

Any water wells and/or monitoring wells on the site which are to be abandoned shall be capped according to the requirements of the Santa Clara Valley Water District. The final elevation of the top of the well casing must be a minimum of 3 feet below the adjacent grade prior to any grading operation.

10. FOUNDATION DESIGN CRITERIA

a) The proposed building should be supported on conventional continuous perimeter and isolated interior spread foundation. Recommendations are presented in the following paragraphs.
b) Conventional spread foundation including tie-beam should be founded at a minimum depth of 24 inches below finished subgrade elevation. Under these conditions, the recommended allowable bearing capacity is 2,800 psf.
c) The excavated footing bottoms should be compacted with a jumping jack prior to rebar placement.
d) The fore-mentioned bearing values are for dead plus live loads and may be increased by one-third for short term seismic and wind loads. The design of the structures and the foundations shall meet local building code requirements.
e) The project structural engineer responsible for the foundation design shall determine the final design of the foundations and reinforcing required. We recommend that the foundation plans be reviewed by our office prior to submitting to the appropriate local agency and/or to construction. AWR also recommends that the foundation excavations be inspected prior to the placement of additional building materials. Upon completion of our inspections, an inspection report will be prepared.

11. 2016 CBC SEISMIC VALUES

Chapter 16 of the 2016 California Building Code (CBC) outlines the procedure for seismic design. The site categorization and site coefficients are shown in the following table.

Classification/Coefficient	**Design Value**
Site Class (ASCE 7-10, Table 20.3-1; 2016 CBC, Section 1613A.3.2)	D
Risk Category	I,II,III
Site Latitude	37.154844° N.
Site Longitude	121.658169° W.
0.2-second Mapped Spectra Acceleration[1], S_S (Section 1613A.3.1)*	1.601g
1-second Mapped Spectra Acceleration[1], S_1 (Section 1613A.3.1)*	0.603g
Short-Period Site Coefficient, F_a Table 1613A.3.3(1)*	1.0
Long-Period Site Coefficient, F_V Table 1613A.3.3(2)*	1.5
0.2-second Period, Maximum considered Earthquake Spectral Response Acceleration, S_{MS} ($S_{MS} = F_aS_S$: Section 1613A.3.3)*	1.601g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration, S_{M1} ($S_{M1} = F_VS_1$: Section 1613A.3.3)*	0.904g
0.2-second Period, Designed Spectra Acceleration, S_{DS} ($S_{DS} = 2/3 S_{MS}$: Section 1613A.3.4)*	1.067g
1-second Period, Designed Spectra Acceleration, S_{D1} ($S_{D1} = 2/3 S_{M1}$: Section 1613A.3.4)*	0.603g

[1] For Site Class B, 5 percent damped.
*2016 CBC

12. RETAINING WALLS

a) Any facilities that will retain a soil mass should be designed for a lateral earth pressure (active) equivalent to 50 pounds equivalent fluid pressure, plus surcharge loads. If the retaining walls are restrained from free movement at both ends, the walls should be designed for the earth pressure resulting from 60 pounds equivalent fluid pressure, to which should be added surcharge loads.

b) In designing for allowable resistive lateral earth pressure (passive), a value of 250 pounds equivalent fluid pressure may be used with the resultant acting at the third point. The top foot of native soil should be neglected for computation of passive resistance.

c) A friction coefficient of 0.3 should be used for retaining wall design. This value may be increased by 1/3 for short-term seismic loads.

d) The above values assume a drained condition and a moisture content compatible with those encountered during our investigation.

e) Drainage shall be provided behind the retaining wall. The drainage system shall consist of perforated (subdrain) pipe placed at the base of the retaining wall and surrounded by ¾ inch drain rock wrapped in a filter fabric. The drain rock wrapped in fabric should be at least 12 inches wide and extend from the base of the wall to within 1.5 feet of the ground surface. The upper 1.5 feet of backfill shall consist of compacted native soil. The retaining wall drainage system shall be sloped to an appropriate discharge facility.

f) As an alternative to the drain rock and fabric, Miradrain 2000 or approved drain mat equivalent may be used behind the retaining wall. The drain mat shall extend from the base of the wall to within two feet of the ground surface. A perforated pipe (subdrain system) shall be placed at the base of the wall in direct contact with the drain mat. The pipe should be sloped to an appropriate discharge facility.

g) Any retaining walls associated with the building should be waterproofed such as elevator pit walls.

h) We recommend a thorough review by our office of all designs pertaining to facilities retaining a soil mass.

13. CONCRETE SLAB CONSTRUCTION

a) Based on the laboratory testing results of the near-surface soil, the subgrade surface soil at the project site has been found to have a low expansion potential when subjected to fluctuations in moisture. The building pad subgrade should be prepared based on the Grading Section (Page 15) of this report. The subgrade soil should be compacted to at least 95% relative maximum density.

b) A minimum of 6 inches of ¾ inch crushed rock or Class II Baserock (recycled crushed asphalt concrete is not acceptable) and vapor barrier membrane (Stego 15 mil) should be placed between the finished grade and the concrete slab. The vapor barrier should be taped at the seams and/or mastic sealed at the protrusions. The Class II Baserock should be compacted to at least 95%.

c) Use of a vapor barrier membrane under the concrete slab is required if a floor covering would be applied. If the slab would not receive a floor covering, the vapor barrier membrane can be eliminated.

d) Prior to placing the vapor membrane and/or pouring concrete, the slab grade shall be moistened with water to reduce the swell potential, if deemed necessary, by the field engineer at the time of construction.

e) The concrete slab-on-grade should have a minimum thickness of 5 inches reinforced with No. 4 rebar at maximum spacing of 18 inches on-center both ways.
f) The project structural engineer responsible for the foundation design shall determine the final design of the foundations including concrete slab-on-grade and mat slab.

14. EXCAVATION

a) No difficulties due to soil conditions are anticipated in excavating the on-site material. Conventional earth moving equipment will be adequate for this project.
b) Any vertical cuts deeper than 5 feet must be properly shored. The minimum cut slope for excavation to the desired elevation is one horizontal to one vertical (1:1). The cut slope should be increased to 2:1 if the excavation is conducted during the rainy season or when the soil is highly saturated with water.

15. DRAINAGE

a) It is considered essential that positive drainage be provided during construction and be maintained throughout the life of the structure.
b) The final exterior grade adjacent to the structure should be such that the surface drainage will flow away from the structure. Rainwater discharge at downspouts should be directed onto pavement sections, splash blocks, or other acceptable facilities, which will prevent water from collecting in the soil adjacent to the foundations.
c) Utility lines that cross under or through perimeter footings should be completely sealed to prevent moisture intrusion into the areas under the slab and/or footings. The utility trench backfill should be of impervious material and this material should be placed at least 4 feet on either side of the exterior footings.
d) Consideration should be given to collection and diversion of roof runoff and the elimination of planted areas or other surfaces which could retain water in areas adjoining the building. The grade adjacent to the foundation should be sloped away from the structure at a minimum of 2 percent.
e) If the subgrade in the landscaping area is moderately to highly expansive, proper drainage should be provided in the landscaping area adjacent to the building foundation. A drip irrigation system is preferable. If the sprinkler system is located adjacent to the building foundation or concrete walkway, a moisture cut-off barrier should be provided.
f) Based on laboratory test results of the near surface soil at the subject site, we estimated that the infiltration rate is approximately 1 inch per hour (K_{SAT} = $7x10^{-4}$ cm/sec). This rate can be used in the design of the bioretention system for on-site storm drainage.

g) The bioretention system should be at least 5 feet from the building foundation. The grading and drainage plans should be reviewed by our office prior to submitting to the appropriate local agency and/or to construction.

16. ON-SITE UTILITY TRENCHING

a) All on-site utility trenches must be backfilled with native on-site material or import fill and compacted to at least 95% relative maximum density. Backfill should be placed in 6 to 8 inch lifts and compacted. Jetting of trench backfill is not recommended. An engineer from our firm should be notified at least 48 hours before the start of any utility trench backfilling operations.
b) The utility trenches running parallel to the building foundation should not be located in an influence zone that will undermine the stability of the foundation. The influence zone is defined as the imaginary line extending at the outer edge of the footing at a downward slope of 1:1 (one unit horizontal distance to one unit vertical distance). If the utility trenches were encroaching the influence zone, the encroached area should be stabilized with cement sand slurry with minimum compression strength of 75 psi.
c) If utility trench excavation is to encounter groundwater, our office should be notified for dewatering recommendations.

17. PAVEMENT DESIGN

a) Due to the uniformity of the near-surface soil at the site, one R-Value Test was performed on a representative bulk sample. The result of the R-Value test is enclosed in this report. The following alternate sections are based on our laboratory resistance R-Value test of near-surface soil sample and traffic indices (T.I.) of 4.5 for parking stalls and 5.5 for driveway and emergency vehicle access, if any. Alternate asphalt pavement section designs, which satisfy the State of California Standard Design Criteria, and above traffic indices, are presented in Table II. Concrete and paver pavement section designs are presented in Table III and IV.

18. LIMITATIONS AND UNIFORMITY OF CONDITIONS

a) The recommendations presented herein are based on the soil conditions revealed by our test borings and evaluated for the proposed construction planned at the present time. If any unusual soil conditions are encountered during the construction, or if the proposed construction will differ from that planned at the present time, Applied Water Resources (AWR) should be notified for supplemental recommendations.

b) This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the necessary steps are taken to see that the contractor carries out the recommendations of this report in the field.

c) The findings of this report are valid, as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes, works of man, from legislation or the broadening of knowledge. Therefore, this report is subjected to review and should not be relied upon after a period of three years.

d) The conclusions and recommendations presented in this report are professional opinions derived from current standards of geotechnical practice and no warranty is intended, expressed, or implied, is made or should be inferred.

e) The area of the borings is very small compared to the site area. As a result, buried structures such as septic tanks, storage tanks, abandoned utilities, or etc. may not be revealed in the borings during our field investigation. Therefore, if buried structures are encountered during grading or construction, our office should be notified immediately for proper disposal recommendations.

f) Standard maintenance should be expected after the initial construction has been completed. Should ownership of this property change hands, the prospective owner should be informed of this report and recommendations so as not to change the grading or block drainage facilities of this subject site.

g) This report has been prepared solely for the purpose of geotechnical investigation and does not include investigations for toxic contamination studies of soil or groundwater of any type. If there are any environmental concerns, our firm can provide additional studies.

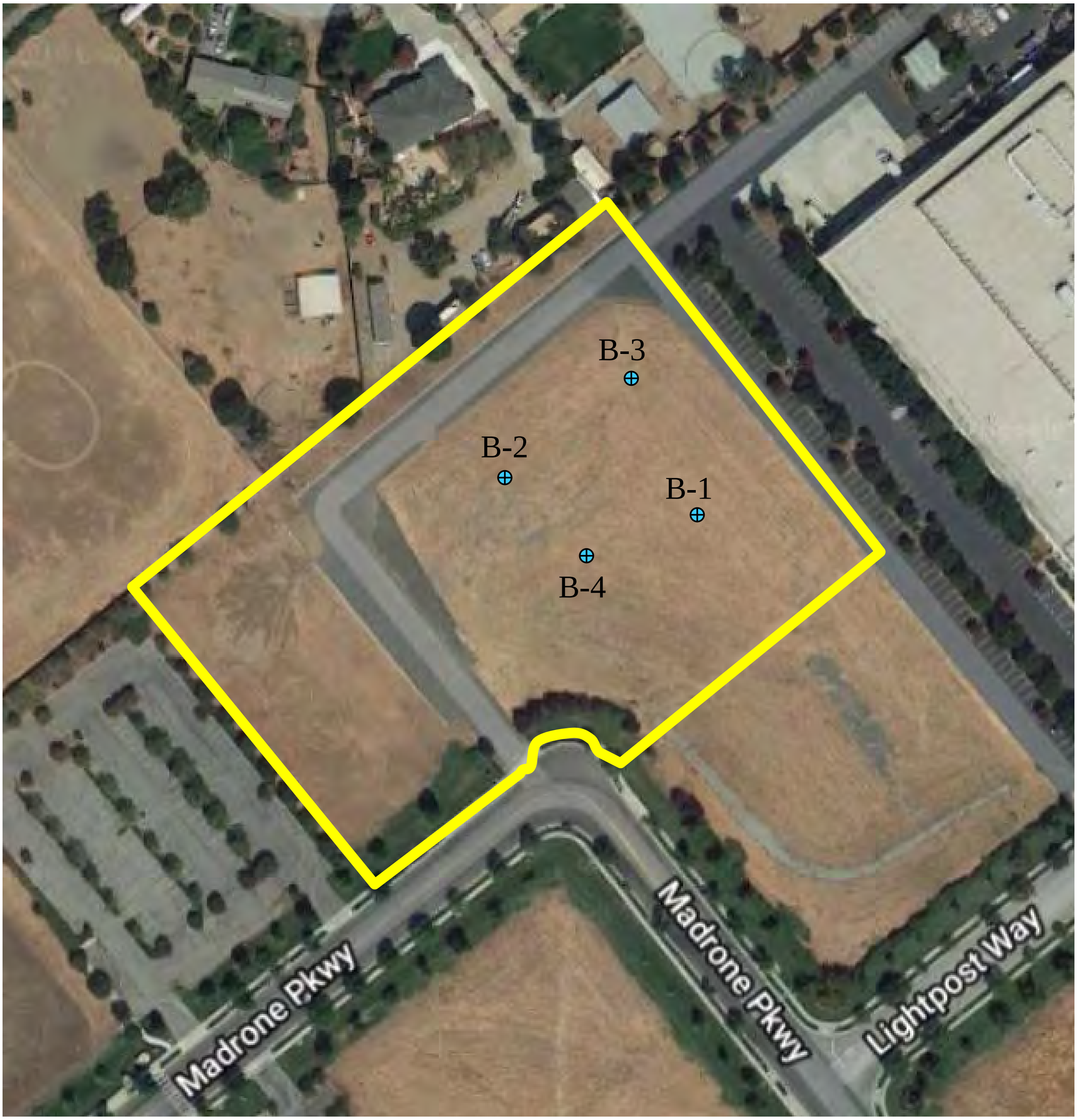
h) Any work related to grading and/or foundation operations during construction performed without direct observation from AWR personnel will invalidate the recommendations of this report and, furthermore, if we are not retained for observation services during construction, AWR will cease to be the Geotechnical Engineer of Record for this subject site.

19. REFERENCES

USGS (December 01, 2016), U.S. Seismic Design Maps http://earthquake.usgs.gov/designmaps/us/application.php

2016 (CBC) California Building Code, Title 24, Part 2.

FIGURES
Figure 1 – Boring Locations



NOTE: Base map from Google Maps.

FIGURE 1 – Geotechnical/Liquifaction Assesment Boring Locations

"Parcel K"
APN 726-35-028
Morgan Hill, California

APPLIED WATER RESOURCES

Appendix A – Soil Boring Logs

APPLIED WATER RESOURCES

GEOTECHNICAL BORING LOG

REPORT OF BORING: **B-1**

PAGE 1 **OF** 1

CLIENT:		**Boring Location:**	B-1
PROJECT LOCATION:	Madrone Parkway	**Drilling equip.:**	**8" Hollow Stem Auger**
FILE NO.:	Madrone	**Sampling Equip.:**	**CA Modified**
		Hammer:	**Auto**
		Weight: 140 lbs	**Fall: 30 inches**
BORING COMPANY:	EnProbe	**Start Date:**	7/11/2018
FOREMAN:	Josh	**Completion Date:**	7/11/2018
AWR SCIENTIST:	J. Amendola	**Backfill Material:**	soil cuttings

DEPTH TO GROUNDWATER (DTGW): not encountered

Sample Depths: see below

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
0							
1							
2							
3					Medium brown, poorly grraded silty SAND with some coarse sand to fine gravel	SM	
4							
		2					
5		7					
		11	11				B1-1
6							
7							
8							
9					Medium brown well graded silty SAND, with dark grey clayey sand, moist , trace coarse sand to fine gravel		
		9				SM	
10		19					
		15	21				B1-2
11							
12							
13							
14							
15		12			Medium brown well graded silty SAND, with dark grey to black broken rock	SM	
		20					B1-3
16		30	32				
					Refusal at 16 feet - End of Boring		
17							
18							
19							
20							
21							
22							

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

APPLIED WATER RESOURCES

GEOTECHNICAL BORING LOG

REPORT OF BORING: B-2

Boring Location: B-2
Drilling equip.: 8" Hollow Stem Auger
Sampling Equip.: CA Modified
Hammer: Auto
Weight: 140 lbs **Fall: 30 inches**

PAGE 1 **OF** 1

DEPTH TO GROUNDWATER (DTGW): not encountered

CLIENT:
PROJECT LOCATION: Madrone Parkway
FILE NO.: Madrone
BORING COMPANY: EnProbe
FOREMAN: Josh
AWR SCIENTIST: J. Amendola

Start Date: 7/11/2018
Completion Date: 7/11/2018
Backfill Material: soil cuttings

Sample Depths: see below

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
0							
1							
2							B2-1
					Medium brown, poorly grraded silty SAND with some coarse sand to fine gravel		(cuttings)
3						SM	
4							
		12					
5		17					
		19	23				B2-2
6							
7							
8							
9							
		16			Medium brown well graded silty SAND, with dark grey clayey sand, moist , trace coarse sand to fine gravel	SM	
10		16					
		21	23				B2-3
11							
12							
13							
14							
15		10			Medium brown well graded silty SAND, with dark grey to black broken rock	SM	
		16					B2-4
16		17	21				
					Refusal at 16 feet - End of Boring		
17							
18							
19							
20							
21							
22							

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

APPLIED WATER RESOURCES

GEOTECHNICAL BORING LOG

REPORT OF BORING: B-3

CLIENT:
PROJECT LOCATION: Madrone Parkway
FILE NO.: Madrone
BORING COMPANY: EnProbe
FOREMAN: Josh
AWR SCIENTIST: J. Amendola

Boring Location: B-3
Drilling equip.: 8" Hollow Stem Auger
Sampling Equip.: CA Modified
Hammer: Auto
Weight: 140 lbs **Fall: 30 inches**
Start Date: 7/11/2018
Completion Date: 7/11/2018
Backfill Material: soil cuttings

PAGE 1 **OF** 1
DEPTH TO GROUNDWATER (DTGW): not encountered
Sample Depths: see below

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
0					Medium brown, poorly grraded silty SAND with some coarse sand to fine gravel	SM	B3-1 (cuttings)
1							
2							
3							
4							
	■	5					
5	■	4					
	■	7	7				B3-2
6							
7					Medium brown well graded silty SAND, with dark grey clayey sand, moist , trace coarse sand to fine gravel	SM	
8							
9							
	■	7					
10	■	12					
	■	14	16				B3-3
11							
12							
13					Medium brown well graded silty SAND, with dark grey to black broken rock	SM	
14							
15	■	18					
	■	22					B3-4
16	■	36	37				
					Refusal at 16 feet - End of Boring		
17							
18							
19							
20							
21							
22							

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

APPLIED WATER RESOURCES

GEOTECHNICAL BORING LOG

REPORT OF BORING: B-4

Boring Location:	B-4	**PAGE** 1 **OF** 3	
Drilling equip.:	8" Hollow Stem Auger	**DEPTH TO GROUNDWATER**	
Sampling Equip.:	CA Modified	**(DTGW):**	not encountered
Hammer:	Auto		
Weight: 140 lbs	**Fall: 30 inches**		

CLIENT:	
PROJECT LOCATION:	Madrone Parkway
FILE NO.:	Madrone
BORING COMPANY:	Cascade Drilling
FOREMAN:	
AWR SCIENTIST:	J. Amendola

Start Date:	7/18/2018
Completion Date:	7/18/2018
Backfill Material:	bentonite grout
Sample Depths:	see below

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
0							
1							
2							
3					Medium brown, poorly grraded silty SAND with some coarse sand to fine gravel	SM	
4							
5							
6							
7							
8							
9							
	■	22			Medium brown well graded silty SAND, with dark grey clayey sand, moist , trace coarse sand to fine gravel	SM	
10	■	36					
	■	37	46				B4-1
11							
12							
13							
14							
15	■	10			Medium brown well graded silty SAND, with dark grey to black broken rock, some clay	SM	
	■	21					
16	■	24	28				B4-2
17							
18							
19							
	■	33			Medium brown sandy silt with small to large gravel	ML	
20	■	50 for 3"	50 for 3"				B4-3
21							
22					(continued on next page)		

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

APPLIED WATER RESOURCES	GEOTECHNICAL BORING LOG	REPORT OF BORING: B-4
CLIENT:	**Boring Location:** B-4	PAGE 2 OF 3
PROJECT LOCATION: Madrone Parkway	**Drilling equip.:** 8" Hollow Stem Auger	DEPTH TO GROUNDWATER
FILE NO.: Madrone	**Sampling Equip.:** CA Modified	(DTGW): not encountered
	Hammer: Auto	
	Weight: 140 lbs **Fall:** 30 inches	
BORING COMPANY: Cascade Drilling	**Start Date:** 7/18/2018	**Sample Depths:** see below
FOREMAN:	**Completion Date:** 7/18/2018	
AWR SCIENTIST: J. Amendola	**Backfill Material:** bentonite grout	

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
22							
23							
24							
	■	13					
25	■	27			Light brown, moist, silty sand with dark brown coarse sand to fine gravel	SM	
	■	28	35				B4-4
26							
27							
28							
29							
	■	11					
30	■	28					
	■	37	41				B4-5
31							
32							
33							
34							
	■	16					
35	■	31			Medium brown, moist, silty sand, some dark reddish brown to black coarse sand to fine gravel	SM	
	■	35	42				B4-6
36							
37							
38							
39							
	■	14					
40	■	50 for 6"	> 50		Medium brown, dry, sand with some silt and increasing reddish brown to black gravel	SW	B4-7
41							
42							
43							
44					(continued on next page)		

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

APPLIED WATER RESOURCES

GEOTECHNICAL BORING LOG

REPORT OF BORING: B-4

CLIENT:		**Boring Location:**	B-4
PROJECT LOCATION:	Madrone Parkway	**Drilling equip.:**	8" Hollow Stem Auger
FILE NO.:	Madrone	**Sampling Equip.:**	CA Modified
		Hammer:	Auto
		Weight: 140 lbs	**Fall: 30 inches**
BORING COMPANY:	Cascade Drilling	**Start Date:**	7/18/2018
FOREMAN:		**Completion Date:**	7/18/2018
AWR SCIENTIST:	J. Amendola	**Backfill Material:**	bentonite grout

PAGE 3 **OF** 3

DEPTH TO GROUNDWATER (DTGW): not encountered

Sample Depths: see below

DEPTH BELOW GRADE (feet)	SAMPLE INTERVAL (feet)	BLOWS /6"	"N" VALUE	Dry Density	SAMPLE DESCRIPTION	UNIFIED SOIL CLASSIF. SYSTEM	SAMPLE ID
44							
	■	26					
45	■	37			Medium brown, dry, sand with some silt and increasing reddish brown to black gravel		
	■	49	54			SW	B4-8
46							
47							
48							
49							
	■	18					
50	■	25					
	■	50 for 6"	> 50				B4-9
51					End of Boring at 51 feet - no refusal		

Notes: Blow counts obtained from Modified California sampler converted to N value using conversion factor of 0.63.

Geologist Signature:

Appendix B – Laboratory Testing Report

SILICON VALLEY SOIL ENGINEERING
GEOTECHNICAL CONSULTANTS

File No. SV1600C
August 13, 2018

AWR Corp.
2363 Mariner Square Drive, Suite 245
Alameda, CA 94501

Attention: Mr. Ken Price

Subject: Proposed Industrial Building
18635 Madrone Parkway
Morgan Hill, California
LABORATORY TESTING

Dear Mr. Price:

Pursuant to your request, we have performed eleven laboratory moisture/density tests and one direct shear test for the subject site.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Very truly yours,

SILICON VALLEY SOIL ENGINEERING

Vien Vo, P.E.

SV1600C.LAB2/Copies: 3 to ERS Corp.

2391 ZANKER ROAD, SUITE 350 • SAN JOSE, CALIFORNIA 95131 • (408) 324-1400

TABLE I

SUMMARY OF MOISTURE/DENSITY AND DIRECT SHEAR TEST RESULTS

Sample No.	Depth Ft.	In-Place Conditions		Direct Shear Testing	
		Dry Density p.c.f.	Moisture Content % Dry Wt.	Angle of Internal Friction Degrees	Unit Cohesion k.s.f.
B1-1		97.4	7.5	33	0
B1-2		113.3	9.6		
B1-3		131.3	7.3		
B2-1		90.5	6.0		
B2-2		114.3	8.1		
B2-3		108.5	8.5		
B2-4		122.9	11.7		
B3-1		56.9	7.3		
B3-2		97.7	7.3		
B3-3		115.9	10.3		
B3-4		112.7	9.6		

TABLE I

SUMMARY OF MOISTURE/DENSITY AND DIRECT SHEAR TEST RESULTS

Sample No.	Depth Ft.	In-Place Conditions		Direct Shear Testing	
		Dry Density p.c.f.	Moisture Content % Dry Wt.	Angle of Internal Friction Degrees	Unit Cohesion k.s.f.
B4-1		115.8	7.3		
B4-2		123.4	10.4		
B4-3		112.6	7.2		
B4-4		135.7	9.8		
B4-5		131.8	11.1		
B4-6		128.8	11.3		
B4-7		120.8	9.3		
B4-8		126.2	10.5		
B4-9		129.1	11.6		