

Appendix F

Geotechnical Due Diligence Study



July 24, 2015

PN 15032-00

Peter Cossavella
The Picerne Group
30950 Rancho Viejo Road, Suite 200
San Juan Capistrano, California 92675

Subject: Due Diligence Study, 24000 Crenshaw Boulevard and 2445-2447 Lomita Boulevard,
Lomita, California

Dear Mr. Cossavella:

In accordance with your request and authorization, Kling Consulting Group has performed a geotechnical due diligence study for the parcel located at the northeast corner of Crenshaw and Lomita Boulevards in Lomita California. Our study included review of relevant published geologic and geotechnical literature, a brief reconnaissance of the site and the excavation of one hollow-stem auger boring to verify groundwater conditions at the site.

We appreciate this opportunity to be of service and to work with you on this project. Should you have any questions regarding this report, please do not hesitate to call.

Respectfully,

KLING CONSULTING GROUP

A handwritten signature in black ink, appearing to read "James M. Lancaster, Jr.", written over the printed name.

James M. Lancaster, Jr.
Principal Engineering Geologist
CEG 1927
Expires 6/30/16



JML:HFK:dmj

Dist.: (4) Address

A handwritten signature in blue ink, appearing to read "Henry F. Kling", written over the printed name.

Henry F. Kling
Principal Geotechnical Engineer
GE 2205
Expires 03/31/16



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ATTACHMENTS:

- Appendix A - References
- Appendix B - Subsurface Exploration
- Figure 1 - Site Location Map

1.0 INTRODUCTION

1.1 Purpose and Scope of Work

This report summarizes the results of our due diligence study for subject site located at the northeast corner of the intersection of Crenshaw Boulevard and Lomita Boulevard in Lomita California (See Figure 1). Our study was conducted to evaluate whether potential adverse geologic or geotechnical conditions exist on the property that could impact construction of future development. Our conclusions are based on review of published geologic literature, along with a brief reconnaissance of the site and the excavation of one hollow-stem auger boring to 50 feet in depth. The type, size or location of structures for the proposed development has not been provided. For the purpose of our evaluation, we assumed the site would be developed with a mid to low rise residential structures with a basement parking level.

1.2 Site Location and Project Description

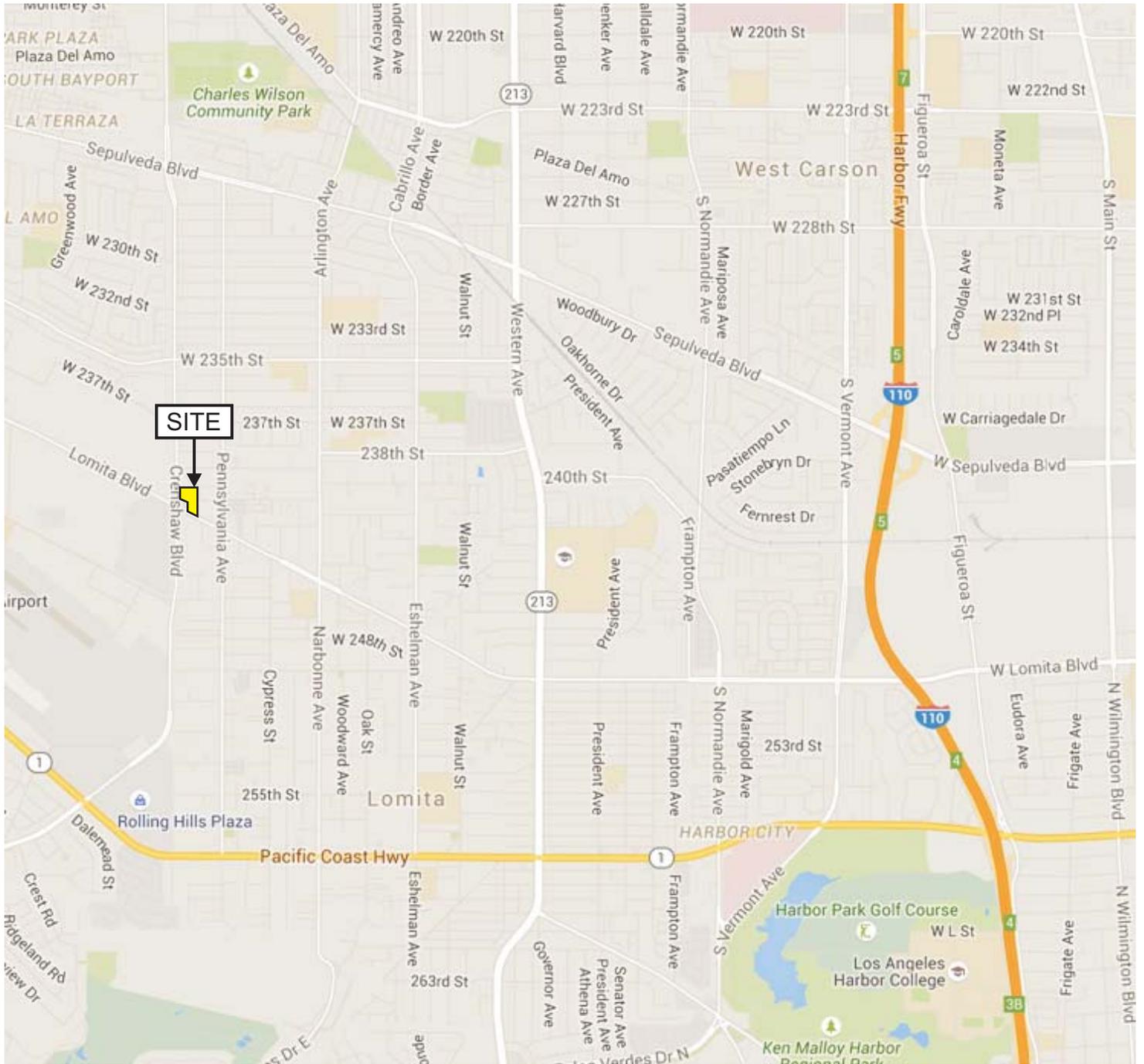
Based on the site boundary exhibit furnished to us and our site visit, the site is currently part of an older developed parcel of land occupied by an equipment rental business with trailers, a small commercial building, covered equipment storage and associated parking and equipment storage areas. The property consists of a number of contiguous parcels of land with Assessor Parcel Numbers 7374-011-032, 7374-011-034, 7374-011-036, 7374011-041, and 7374-011-037/7374-011-039.

The subject property is within a raised hill area that descends generally to the southwest stepping down from the parcels north and east of the site. The site is bounded on the north by multifamily housing and on the east by a church and single family homes. To the south and west, the site is bounded by Crenshaw and Lomita Boulevards, respectively. The property wraps around an existing Shell gasoline station at the immediate corner of Crenshaw and Lomita. The subject property is lower than the properties to the north and east with various height retaining walls making up the elevation difference. The majority of the parcel is covered with asphalt and concrete pavement of various ages and compositions.

Surface drainage appears to flow to the two entrances of the parcel on Crenshaw and Lomita by sheet flow. Various overhead and subsurface utilities exist at the site.

1.3 Previous Geotechnical Assessments

Our review did not reveal any site specific geotechnical investigation for the site or surrounding areas.



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Not To Scale



Site Location Map
 24000 Crenshaw Blvd
 2445-2457 Lomita Blvd
 Lomita, California

Figure: 1
PN: 15032-00
Date: July 2015

2.0 GEOLOGIC CONDITIONS

2.1 Geologic/Geotechnical Hazards and Conditions

Our hazard evaluation is generally based on the regional maps and reports for the general area. Based on the Dibblee Geologic Map of the Palos Verdes Peninsula and Vicinity, 1999, the subject site is underlain by older stabilized dune and drift sand deposits consisting of unconsolidated fine-grained sands. These eolian deposits cover much of the south bay area of Redondo Beach, Torrance and Lomita. As part of our hazard evaluation, one hollow-stem auger boring was excavated to a depth of 50-feet within the parking area adjacent Crenshaw Boulevard. This excavation confirmed the regional mapping by Dibblee and exposed generally fine-grained sands with minor amounts of clayey sands (See Boring Log Appendix B).

2.1.1 Expansive Soils

Due to the sandy nature of the subsurface soils it is unlikely that expansive soils will be encountered at the subject site during construction.

2.1.2 Groundwater

Based on a review of the Seismic Hazards Evaluation report for the Torrance Quadrangle groundwater is below 10 feet. One hollow-stem auger boring to a depth of 50 feet was excavated adjacent Crenshaw Boulevard to determine more concise groundwater conditions at the site. Groundwater was not encountered to the depth explored.

2.1.3 Faulting and Seismicity

No known active, potentially active, or inactive faults are located at the site. The closest active fault near the site is the Palos Verdes Fault approximately one mile southwest of the subject site. A review of the state of California Alquist-Priolo Earthquake Fault Zone map for the area does not illustrate the area as part of a zoned hazard area.

2.1.4 Landslides

Based on a review of aerial photographs and available geotechnical reports, no landslides are present at the property or at a location that could impact the subject site.

2.1.5 Liquefaction

The subject site is not located within a State of California liquefaction hazard zone. Although the site is underlain by potentially liquefiable sediments, groundwater was not encountered during our site exploration; therefore, it is our opinion that the potential for liquefaction to occur is considered remote, but can not be ruled out. A liquefaction study

to determine the actual potential for liquefaction should be performed during further investigative studies.

2.1.6 Slope Stability

No significant slopes are indicated in the subject report and are not considered applicable.

2.1.7 Seismically Induced Settlement

Seismically induced differential settlement is associated with liquefaction and/or seismic ground shaking. Dry settlement potential due to seismic activity may be considered low to moderate based on the overall sandy nature of the soil. Once remedial grading is completed dry settlement may be consider low.

2.1.8 Lateral Spreading

Due to the absence of nearby unsupported excavations such as deep drainage channels, it is our opinion that the potential for lateral spreading at the site is low.

2.1.9 Seismically Induced Landsliding

Seismically induced landsliding is not expected as the site is relatively flat along with the absence of slopes near the site.

2.1.10 Seismic Code Provisions

Presented below are the site seismic parameters utilizing generic geologic, seismic and geotechnical data gathered for the site. All structures should be designed for earthquake induced strong ground motions in accordance with the 2013 CBC procedures utilizing the following parameters:

Seismic Design Parameters	
Site Class (Soil Profile)	D
Latitude, Longitude	33.8065, -118.327
Short Period Spectral Acceleration, S_s :	1.693g
1-Second Period Spectral Acceleration, S_1 :	0.653g
Site Coefficient, F_a :	1.0
Site Coefficient, F_v :	1.5
Maximum Considered Earthquake Spectral Response Acceleration, S_{MS} :	1.693g
Maximum Considered Earthquake Spectral Response Acceleration, S_{M1} :	0.980g
Design Spectral Response Acceleration, S_{DS} :	1.129g
Design Spectral Response Acceleration, S_{D1} :	0.653g
Occupancy Category	II
Seismic Design Category	D

2.1.11 Settlement/collapsible Soils

Based on a review of the potential site uses, the flatness of the overall site and lack of anticipated changes in grades, historic high groundwater; the potential for settlement due to increased loads is likely limited to normal settlement associated with the anticipated structures and improvements once remedial grading is completed. A thorough evaluation of the potential impacts to the site from settlement should be evaluated in a geotechnical investigation.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on information obtained from a review of geologic literature, our brief site visit and site exploration, the subject site does not possess adverse geotechnical or geological constraints that typically could not be mitigated through remedial measures or that would preclude practical development of the property. The following site constraints should be incorporated into future site development.

- Structures should be designed in accordance with seismic design criteria of the 2013 CBC and/or local ordinances.
- It is anticipated that conventional spread footings may be used in the construction of the proposed development.
- It is not anticipated that expansive soils will be encountered at the site.
- The site is not located within an Alquist-Priolo Earthquake Fault Zone. No known active, potentially active, or inactive faults are located at the site. Therefore the potential for surface fault rupture at the site is considered remote.
- Groundwater was not encountered to the depths explored. Although not anticipated, due to seasonal groundwater fluctuations, a rise in groundwater or the encountering of seasonal perched groundwater cannot be ruled out. As such, the potential for excavations for basements or deep utility installation have the potential to encounter perched groundwater conditions during construction activities; therefore, local minor dewatering may be required. Basement perimeter drains may be an option depending on the actual conditions encountered during construction.
- The site is not located within a mapped seismic hazard zone and groundwater was not encountered to the depth explored (50 feet); therefore, the potential for liquefaction to occur at the site is considered low. Due to the sandy nature of the site materials encountered during this phase of investigation, the resulting seismic settlement due to a seismic event should not be ruled out. Therefore, it could become necessary to employ more resistant foundations such as a mat foundation, post tensioned slabs and/or deep foundations such as CFA shafts or driven piles. Flexible piping for utilities may also be required. A screening liquefaction evaluation should be performed during the site geotechnical investigation. Additional site exploration may include

deep hollow stem borings and cone penetration testing to depths approximately 50 feet below the ground surface along with laboratory testing and engineering analysis.

- Based on a review of the site conditions it is anticipated that cut excavations will be used to develop the site. This will require export of materials from the site. In addition, existing site perimeter retaining walls will require setbacks or additional mitigation.

Our due diligence study does not cover environmental assessment of the site, the client should have the site evaluated with an environmental assessment.

A geotechnical investigation of the site would be required in order to develop site specific recommendations for the development of the site. This would generally be completed once proposed building types are known and located.

4.0 PROFESSIONAL LIMITATIONS

The scope of our services for this due diligence geotechnical review has been limited to a brief site visit and a review of the referenced documents as referenced herein. Our review should not be considered as an approval or acceptance of the site for development, without further site specific geotechnical investigations

Geotechnical services are provided by Kling Consulting Group in accordance with generally accepted professional engineering and geologic practice in the area where these services are rendered. Client acknowledges that the present standard in the engineering and geologic and environmental profession does not include a guarantee of perfection and, except as expressly set forth in the conditions above, no warranty, expressed or implied, is extended by KCG.

All excavations used for subsurface exploration were backfilled prior to leaving the site. As with any backfill, consolidation and subsidence may result in depression of the excavation area and a potentially hazardous condition. The client and/or owner of the property are hereby advised to periodically examine the excavation areas, and if necessary backfill any resulting depressions. KCG shall not be responsible for injury or damage resulting from subsidence of backfill.

APPENDIX A
REFERENCES

APPENDIX A

REFERENCES

1. California Division of Mines and Geology, Seismic Hazard Evaluation of the Torrance 7.5-Minute Quadrangle, Open File Report 98-26, Los Angeles County, California, 1998
2. State of California, Special Studies Zones Map, Torrance Quadrangle, July 1, 1986
3. State of California, Seismic Hazard Zones Map, Torrance Quadrangle, March 25, 1999
4. Dibblee Foundation, Geologic Map of the Palos Verdes Peninsula and Vicinity, Redondo Beach, Torrance, and San Pedro Quadrangles, Los Angeles County, California, Map DF-70, 1999

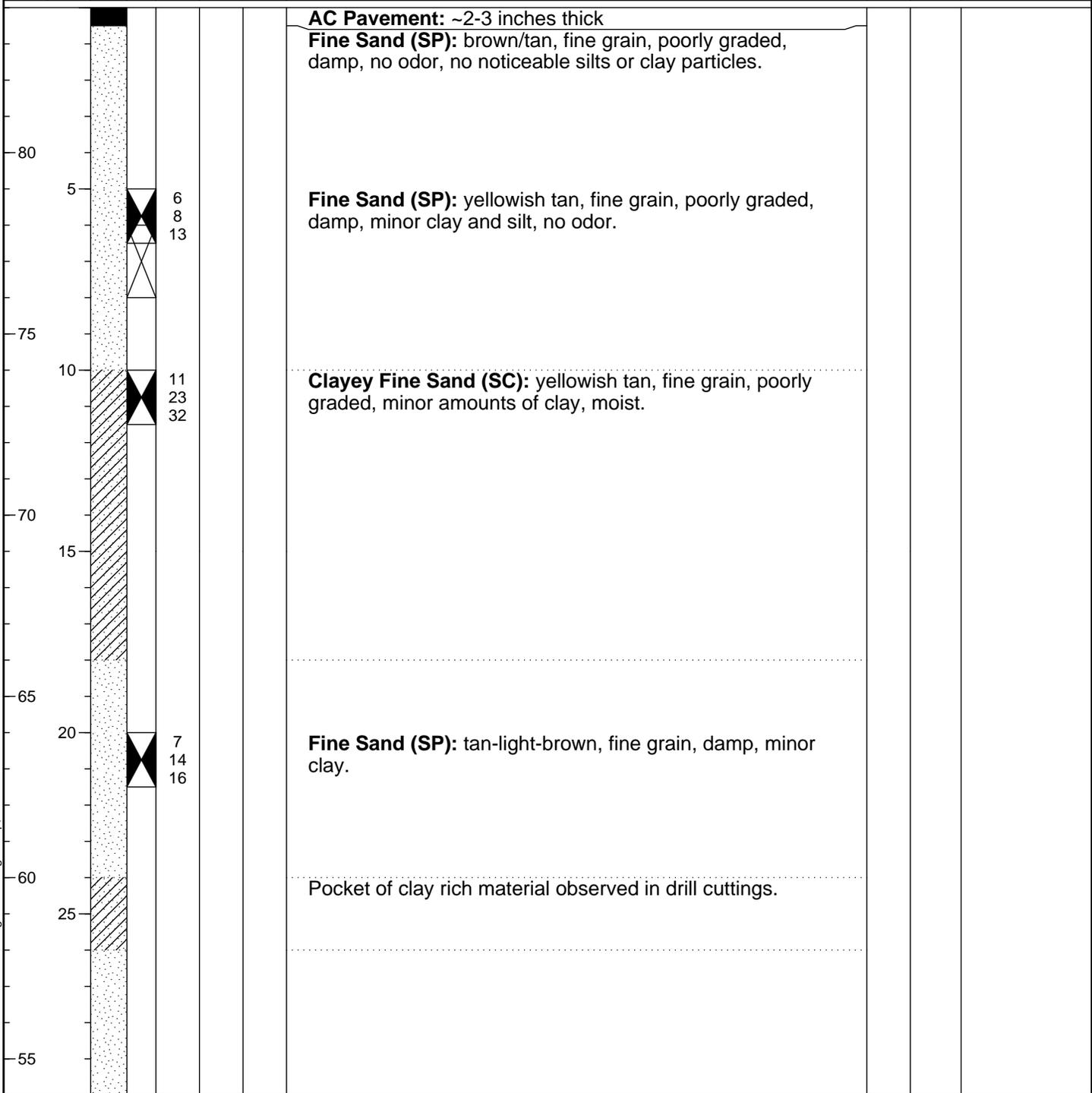
APPENDIX B
SUBSURFACE EXPLORATION

LOG OF EXPLORATORY BORING

Project: **Picerne_Lomita**
 Project Number: **15032-00**
 Date Drilled: **7/22/15**
 Logged By: **KW**

Boring No.: **KHS-1**
 Driller: **JET Drilling Inc.**
 Drill Type: **Hollow Stem**
 Hammer Wt. / Drop: **140lb / 30in**
 Ground Elev. [ft]: **84.0**

Elevation [ft]	Depth [ft]	Graphic Log	Sample Type	Blows/6"	Moisture Content [%]	Dry Density, [pcf]	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p> Standard Split Spoon</p> <p> California</p> </div> <div style="width: 45%;"> <p> Shelby Tube</p> <p> Bulk Sample</p> </div> </div>	<div style="display: flex; flex-direction: column; justify-content: space-around;"> <p> Water Level ATD</p> <p> Static Water Table</p> </div>	Pocket Pen. [tsf]	Lab Tests	Remarks
SOIL DESCRIPTION and CLASSIFICATION (USCS)											



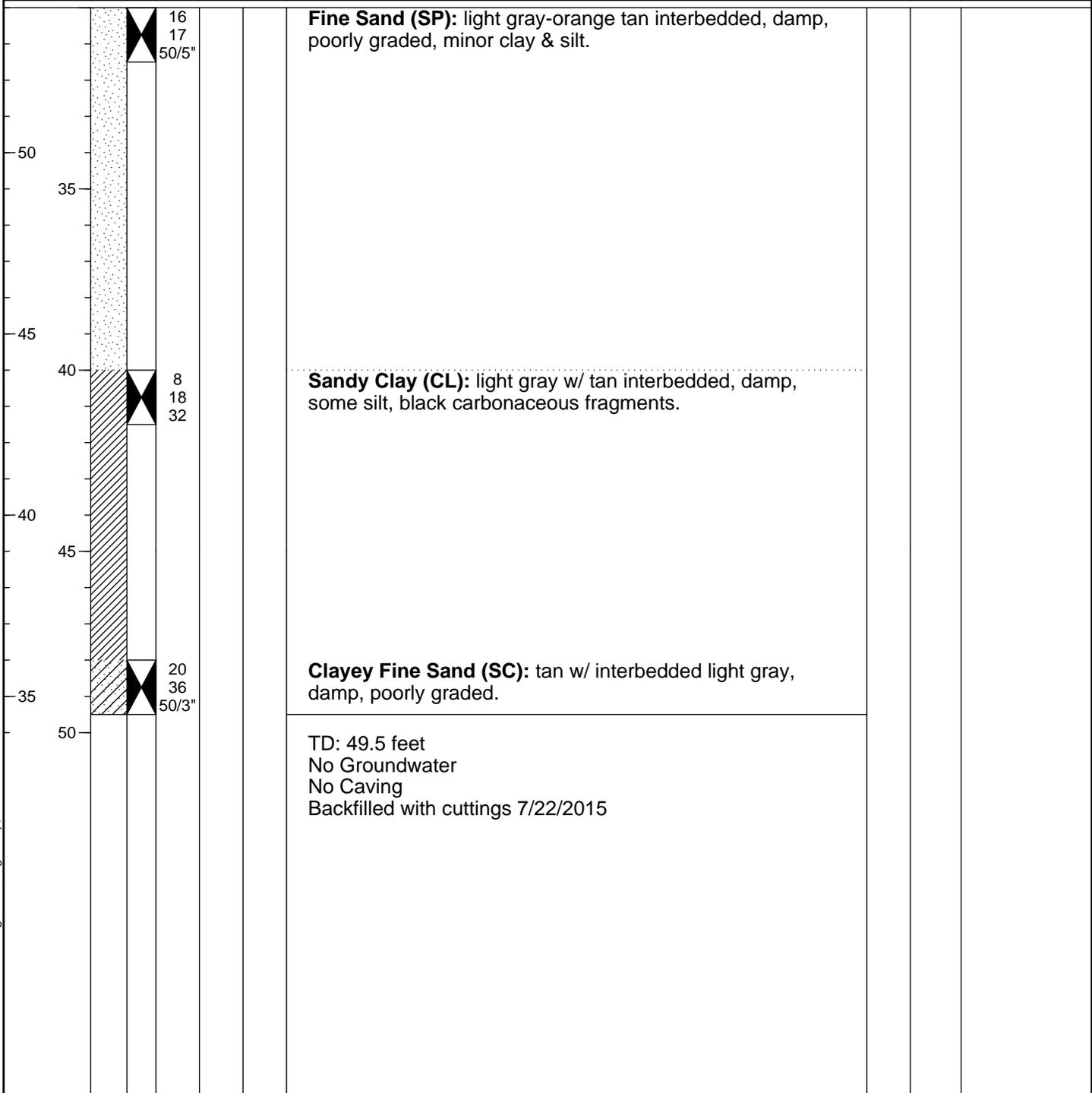
HS BA TP 15032-00.GPJ Kling Consulting Group, Inc. 7/24/15

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HS BA TP 15032-00.GPJ Kling Consulting Group, Inc. 7/24/15