

DUE DILIGENCE
GEOTECHNICAL ENGINEERING EVALUATION
PROPOSED MULTI-FAMILY AND
COMMERCIAL RETAIL DEVELOPMENT
223, 225 AND 229 EAST ORANGETHORPE AVENUE
1101 AND 1111 SOUTH LEMON STREET
FULLERTON, CALIFORNIA

Prepared for:

SLR Development California, LLC

4180 La Jolla Village Drive, Suite 125
La Jolla, California 92037

Project No. 12572.002

December 9, 2019



Leighton and Associates, Inc.

A LEIGHTON GROUP COMPANY



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SLR Development California
4180 La Jolla Village Drive, Suite 125
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Attention: Mr. Adam Covington

**Subject: Due Diligence Geotechnical Engineering Evaluation
Proposed Multi-Family / Commercial Retail Development
223, 225 and 229 East Orangethorpe Avenue and
1101 and 1111 South Lemon Street
City of Fullerton, California**

In response to your request and authorization, Leighton and Associates, Inc. (Leighton) is pleased to present this due diligence geotechnical exploration report for the subject project. We understand that the proposed project is to consist of one five-story apartment building with 327 apartment units, courtyards, 8,000 square-feet of retail space and one (1) five-story parking structure. The purpose of our study was to evaluate the general geotechnical conditions of the site and provide preliminary geotechnical recommendations for project planning.

Based on our review of available data, the site is underlain by alluvium and capped by artificial fill across the site, the thickness of which is unknown at this time. No known active or potentially active faults are mapped as crossing the site and the site is **not** located within an Alquist-Priolo Special Studies Zones. However, the site **is** located within a State of California mapped *Liquefaction Hazard Zone*, which warrants an evaluation of this hazard be undertaken. As is the case for most of Southern California, strong ground shaking has and will occur at the site.

Based on the subsurface conditions encountered, the currently proposed improvements are considered feasible from a geotechnical standpoint.

Preliminary recommendations for site grading, foundations, shoring and other geotechnical aspects of the project are presented in this report. When building loads become available, they should be provided to Leighton for review. If project planning advances to design, a design-level geotechnical investigation, including additional soil borings, laboratory testing and engineering analysis will be required for the project by the reviewing agency in pursuit of building permits.

We appreciate this opportunity to submit this report and look forward to working with you on this project. If you have any questions or if we can be of further service, please contact us at **(866) LEIGHTON**; specifically, at the phone extensions or e-mail addresses listed below.



Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Jeff L. Hull, C.E.G. 2056
Associate Geologist

Ext 4265, jhull@leightongroup.com



Carl Kim, PE, GE 2620
Senior Principal Engineer

Ext. 4262; ckim@leightongroup.com

JLH/CCK/KMD/lr

Distribution: (1) Addressee

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1.0 INTRODUCTION

1.1 Site Description and Proposed Development

The project site is located at 223, 225 and 229 East Orangethorpe Avenue and 1101 and 1111 South Lemon Street, Fullerton, California. The site location (latitude N 33.8606°, longitude W117.9210°) and immediate vicinity are shown on Figure 1, *Site Location Map*.

The project site is irregular in shape and covers an area of approximately 3.747 acres. At the time of visual review of the site and field exploration, the existing development consisted of two single-story multi-tenant commercial buildings and associated asphalt concrete (AC) paved surface parking. The site is bounded on the north by a drive aisle extending from Liberty Avenue to the east, and by AC parking lots associated with multiple surrounding businesses, on the east by South Lemon Street, on the south by AC parking lots associated with a single-story retail building situated along East Orangethorpe Avenue, and on the west by South Pomona Avenue.

Review of the United States Geological Survey (USGS) 7.5-Minute Anaheim Quadrangle (USGS, 1981) indicates the site is relatively flat at approximately elevation (El.) +151 to +155 feet mean sea level (msl), and is situated northwest of the Santa Ana River.

Based on review of aerial imagery circa 1953 (NETR, 2019), the site was formerly used for an agricultural operation consisting of rows of trees; a single structure, likely a residence, existed at what appears to be just south of the southeastern corner of the project boundary. By approximately 1963, the western half of the project site was developed with multiple buildings and associated parking; the northeastern portion of the site, however, appears to have been retained for agricultural use until at least 1980. The existing commercial buildings located in the west-central and the eastern portions of the site (223, 225 and 229 East Orangethorpe Drive) are visible in 1995 imagery.

We understand that the proposed project is to consist of one (1) five-story apartment building with 327 apartment units, courtyards, 8,000 square-feet of retail space and one (1) five-story parking structure.

1.2 Purpose and Scope

The purpose of our work was to evaluate the subsurface conditions at the site relative to the proposed mixed use and retail development and provide preliminary geotechnical recommendations to aid in project planning. The scope of this evaluation included the following tasks:

- **Research:** We reviewed readily available in-house geotechnical reports, literature, aerial photographs, and maps relevant to the site. We evaluated geological hazards and potential geotechnical issues that may significantly impact the site.
- **Pre-Field Activities:** Prior to the field exploration, we marked the proposed exploration locations and notified Underground Service Alert (USA) for utility clearance.
- **Field Exploration:** Our field exploration was performed on November 20, 2019 and consisted of four (4) CPT soundings (designated CPT-1 through CPT-4) to depths of approximately 50 feet below the existing ground surface (bgs). Prior to performing each CPT sounding, each location was excavated with a hand-auger to clear for utilities. A composite bulk soil sample of the upper 5 feet was collected from each boring for laboratory testing. Upon completion, the borings were backfilled with bentonite grout and patched with cold-mix asphalt concrete (AC) at the ground surface. The approximate locations of the CPT soundings are shown on Figure 2, *Exploration Location Map*, and copies of the CPT logs are included in Appendix B, *Cone Penetrometer Test Logs*.
- **Laboratory Testing:** Laboratory tests were performed on selected soil samples obtained during our field investigation. The laboratory testing program was designed to evaluate the physical and engineering characteristics of the onsite soil. Tests performed during this investigation include:
 - In-situ Moisture Content and Dry Density (ASTM D2216 and ASTM D2937);
 - Expansion Index (ASTM D 4829);
 - Direct Shear (ASTM D 3080);
 - Maximum Dry Density (ASTM D 1557);
 - R-Value (California Test Method 301); and

- Corrosivity Suite – pH, Sulfate, Chloride, and Resistivity (California Test Methods 417, 422, and 532/643).

A complete set of our laboratory test results are presented in Appendix C, *Geotechnical Laboratory Test Results*.

- **Engineering Analyses:** The data obtained from our background review and field exploration were evaluated and analyzed to develop preliminary recommendations, as well as liquefaction analysis and seismic settlement estimates for the proposed development; Liquefaction Analysis results are presented in Appendix D.
- **Report Preparation:** This report presents our findings, conclusions and preliminary geotechnical recommendations for the proposed development.

2.0 GEOTECHNICAL FINDINGS

2.1 Regional Geologic Setting

The subject site is located in the Downey Plain within the southeastern margin of the Los Angeles Basin, a large structural depression within the Peninsular Ranges geomorphic province of California. In general, the Downey Plain is bordered by the Coyote and Peralta Hills on the north, the Santa Ana Mountains and Tustin Plain to the east, the Pacific Ocean to the south and Los Angeles Coastal Plain to the west. Several broadly warped coastal mesas represent uplifted areas along the active Newport-Inglewood structural fault zone. These mesas are separated by erosional gaps which were created by historic routes of the Santa Ana River.

The site lies near the lower reaches of the Santa Ana River and associated floodplain (Figure 3, *Regional Geology Map*). The surface distribution of Holocene sediments, as recorded in early editions of regional soil survey maps (Eckmann and others, 1919), suggests that the Santa Ana River has recently wandered back and forth across the Downey Plain from Alamitos Bay to Newport Bay. Historical accounts, documents, and results of our study further support widespread sheet flooding and marine transgression as being the dominant depositional process associated with the Santa Ana River floodplain.

Generally, the near-surface Quaternary age young Holocene age (11,000 years to present) alluvial soils (Map Symbol: Qyf) are characterized as thinly bedded to massive, loose to medium dense, fine to coarse grained sands with varying proportions of silt and clay capping the site to thinly bedded, to massive, firm to stiff, laminated silt and clay with occasional thin beds of predominately fine grained sands.

2.2 Subsurface Soil Conditions

As indicated above, the project site is generally underlain by Quaternary-aged young Holocene alluvial soils (Dibblee, 1991; Yerkes and Campbell, 2005). An unknown thickness of undocumented artificial fill material associated with the existing site improvements is anticipated to overlie the native alluvial materials. Based on our observations of hand-augering of the upper 5 feet at CPT locations, existing undocumented fill appeared to range from 2 to 5 feet. The depth of existing fill needs to be verified as part of the exploration for the design geotechnical report.

Based on interpretations of the four (4) CPTs advanced at the project site, the site is underlain by earth materials consisting primarily of interbedded clay and silty sand to sandy silt, with thin interbeds of silty clay and clayey silt. Approximately 20 feet below existing ground surface (bgs), the encountered soils generally consisted of thick beds of sand to silty sand, with few thin interbeds of sandy silt, silt, clayey silt and clay. Copies of the CPT logs are included in Appendix B, *Cone Penetrometer Test Logs*.

2.3 Geologic Structure

Geologic structure of the alluvial materials is anticipated to be generally massive; however, it can be interpreted, based on a geologic depositional environment typical of flood plain deposits that cross-stratification (channel trough cross-stratification or transverse bar-tabular cross-stratification) sedimentary structure exists at depth. Relevance of these sedimentary features includes continuous to discontinuous strata with local impermeable zones with the high potential for perched groundwater development on top of less permeable clayey strata anticipated at or below 20 feet in depth.

2.4 Expansive Soil Characteristics

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Foundations constructed on these soils are subject to uplifting forces caused by the swelling. Without proper mitigation measures, heaving and cracking of both building foundations and slabs-on-grade could result. Based on our exploration, the near surface onsite soils in the upper 5 feet consist predominantly of sandy silt and silty sand, with the exception of CPT-2. The near surface onsite soils in CPT-2 consist of silty clay and clayey silt. At about 5 feet bgs, the soils transition to silty clay and clayey silt.

Expansion index testing of soils collected within the upper 5 feet of CPT-2 were tested for expansion potential and were determined to have an expansion index (EI) of 18, which is considered very low. Further testing is recommended during future subsurface exploration and upon completion of site grading to confirm the expansion potential findings presented in this report. Standard engineering and earthwork construction practices, such as proper foundation design and controlled moisture conditioning or mixing with non-expansive soils will reduce the impacts associated with expansive soils.

2.5 **Soil Corrosivity**

A representative bulk composite soil sample of the near-surface (upper 5 feet) onsite soil recovered from CPT-2 performed as a part of our subsurface exploration was tested for corrosivity to assess corrosion potential to buried concrete. The test results are included in Appendix C of this report.

The test results indicate a soluble sulfate concentration of 116 parts per million (ppm), chloride content of 50 ppm, pH value of 7.93, and minimum resistivity value of 1,980 ohm-cm.

The results of the resistivity tests indicate the underlying soil is corrosive to buried ferrous metals per ASTM STP 1013. Based on the measured water-soluble sulfate content from the soil sample, concrete in contact with the soil is expected to have negligible exposure to sulfate attack per ACI 318-14. The water-soluble chloride content of the sample indicates a low potential for corrosion of steel in concrete due to the chloride content of the soil.

2.6 **Groundwater**

Groundwater was not encountered during advancement of CPT soundings at the project site as a part of this study.

Review of the Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5 Minute Quadrangles, Orange County, California (SHZR 003) indicates the historically shallowest groundwater depth is reported to occur greater than 50 feet bgs (CGS, 2001).

Based on the available information, we recommend that a groundwater level of 50 feet bgs be assumed for preliminary design. Additional site-specific information to better characterize the groundwater levels at the site should be obtained during the design-level geotechnical investigation recommended to be performed during the design phase of the project. Additionally, fluctuations of the groundwater level, localized zones of perched water, and an increase in soil moisture should be anticipated during and following the rainy seasons or periods of locally intense rainfall or storm water runoff.

Construction dewatering is not expected for the project as currently planned.

3.0 GEOLOGIC AND SEISMIC HAZARDS EVALUATION

3.1 Surface Fault Rupture

Our review of available in-house literature indicates that no known active faults have been mapped across the site, and the site is **not** located within a designated Alquist-Priolo Earthquake Fault Zone (CGS, 2018a; Bryant and Hart, 2007). Therefore, a surface fault rupture hazard evaluation is not mandated for this site and the potential for surface fault rupture at the site is expected to be low.

The location of the closest active faults to the site was evaluated using the United States Geological Survey (USGS) Earthquake Hazards Program National Seismic Hazard Maps (USGS, 2008a). The closest active faults with surface expression to the site are the Newport-Inglewood and Whittier fault zones located approximately 12.4 miles and 5.8 miles from the site, respectively. The Puente Hills fault is a blind thrust fault that is concealed at depth, without the potential for surface fault rupture. The San Andreas fault, which is the largest active fault in California, is approximately 38 miles northeast of the site. Major regional faults with surface expression in proximity to the site are shown on Figure 4, *Regional Fault and Historical Seismicity Map*.

3.2 Seismicity and Ground Shaking

The principal seismic hazard to the site is ground shaking resulting from an earthquake occurring along any of several major active and potentially active faults in southern California (Figure 4). The intensity of ground shaking at a given location depends primarily upon the earthquake magnitude, the distance from the source, and the site response characteristics.

Structural design of the project should be performed in accordance with all applicable current codes and standards utilizing the appropriate seismic design parameters to reduce seismic risk as defined by California Geological Survey (CGS) Chapter 2 of Special Publication 117a (CGS, 2008). The 2016 edition of the California Building Code (CBC) is the current edition of the code. The 2019 CBC will become effective January 1, 2019. Liquefaction analyses will need to be performed again after adoption of the new building code. Through compliance with these regulatory requirements and the utilization of appropriate seismic design parameters selected by the design professionals, potential effects relating to seismic shaking can be reduced.

The following code-based seismic parameters should be considered for design under the 2016 CBC. We have included the site-specific seismic parameters per the 2019 CBC.

Seismic Design Parameters

Categorization/Coefficients	2016 CBC	2019 CBC
Site Longitude (decimal degrees) West	-117.9210	
Site Latitude (decimal degrees) North	33.8606	
Site Class	D	
Peak Ground Acceleration (PGA_M)	0.625g	0.738g
Mapped Spectral Response Acceleration at 0.2s Period, S_s	1.678g	1.572g
Mapped Spectral Response Acceleration at 1s Period, S_1	0.602g	0.544g
Short Period Site Coefficient at 0.2s Period, F_a	1.0	1.0
Long Period Site Coefficient at 1s Period, F_v	1.5	*
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS}	1.678g	1.572
Adjusted Spectral Response Acceleration at 1s Period, S_{M1}	0.903g	*
Design Spectral Response Acceleration at 0.2s Period, S_{DS}	1.119g	1.048
Design Spectral Response Acceleration at 1s Period, S_{D1}	0.602g	*

Note: * - Null - See Section 11.4.8 of ASCE 7-16

3.3 Liquefaction Potential

Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained granular soils behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density, fine, clean sandy soils; and 3) high-intensity ground motion. Studies indicate that saturated, loose and medium dense, near-surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential.

As shown on the State of California Seismic Hazard Zones map for the Anaheim Quadrangle (CGS, 2001), the project site is located within an area that has been identified by the State of California as being susceptible to liquefaction (Figure 5, *Seismic Hazard Map*). However, groundwater was not encountered in our CPT soundings advanced to a depth of approximately 50 feet below ground surface (bgs). Historic high groundwater has also been mapped below 50 feet bgs by the State of California (CGS, 2001).

Evaluation of the potential for liquefaction triggering and associated effects to occur has been conducted based on the data generated by the CPT exploration of the site. The potential for liquefaction under the design seismic event (PGA_M 0.63 and modal M_w 6.5) is deemed low and need not be considered in the design. The results of the liquefaction assessment are presented in Appendix D.

3.4 Seismically-Induced Settlement

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). These settlements occur primarily within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event.

Based on our analysis, the total seismically induced settlement is expected to be less than $\frac{1}{4}$ inch.

Following the recommended remedial earthwork at the site and in consideration of the project's conformance with standard structural design requirements from the current building code, potential impacts relating to seismically induced settlement would be reduced to less than significant.

3.5 Seismically-Induced Lateral Displacements

Lateral ground displacement due to liquefaction will include lateral spreading (for ground slope less than six percent), flow failure (for ground slope steeper than six percent), and ground oscillation. Although the subsurface soils at the site are susceptible to liquefaction, the potential for development of lateral spreading and flow failure is considered low since the site is relatively flat and constrained and groundwater was not encountered to the total depth of exploration of 50 feet bgs.

Ground oscillation is a phenomenon that forms cracks and ridges due to random vertical and lateral movements of broken blocks of non-liquefiable soils overlying liquefiable soil in response to earthquake motion. Ground oscillation usually occurs on relatively level ground surface where lateral spreading does not occur. The occurrence of ground oscillation may cause damage to pavements, walkways, pipelines, and other lightly loaded near-surface structures. Since the potential for damaging liquefaction is low, the potential for ground oscillation occurrence at the site is also considered low.

3.6 **Seismically-Induced Landsliding**

The potential for seismically-induced landsliding to occur at the site is not considered to be a hazard at the site due to the absence of slopes at the site. In addition, based on the State of California Seismic Hazard Zones Map for the Anaheim Quadrangle (CGS, 2001), the site is **not** located within an area that has been identified by the State of California as being potentially susceptible to seismically-induced landslides (Figure 5, *Seismic Hazard Map*). Proposed slopes, while not anticipated, should be engineered and constructed at a gradient of 2:1 (horizontal:vertical) or flatter.

3.7 **Earthquake Induced Flooding**

Strong seismic ground motion can cause dams and levees to fail, resulting in damage to structures and properties located downstream. The site is located within the inundation zone of Prado Dam, located approximately 17 miles upstream from the site (see Figure 6, *Flood Hazard Zone and Dam Inundation Map*). The potential for earthquake induced flooding exists if Prado Dam were to fail during a large earthquake.

3.8 **Seiches and Tsunamis**

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are waves generated in large bodies of water by fault displacement or major ground movement. Based on the inland location tsunamis are not considered to be a hazard.

The development is proposed to have a pool as part of the design. Dependent upon the magnitude and duration of an earthquake, small waves could be generated resulting in loss of water over the top of the pool during a seismic event.

4.0 PRELIMINARY RECOMMENDATIONS

It is our opinion that the currently proposed development concept for the subject site is feasible from a geotechnical standpoint.

Presented below are the preliminary geotechnical recommendations for planning purposes. A design-level geotechnical investigation that includes additional soil borings, laboratory testing and engineering analysis will be required for the project by the reviewing agency in pursuit of building permits. Design of the project in accordance with standard engineering practice, including requirements of the 2019 California Building Code, and the recommendations of the project civil and structural engineers, geotechnical consultant and others will reduce the potential for adverse geotechnical conditions impacting the proposed improvements.

4.1 Site Grading

All site grading should be performed in accordance with the applicable local codes and in accordance with the project specifications that are prepared by the appropriate design professional.

4.1.1 Site Preparation

Prior to construction, the site should be cleared of any vegetation, trash and/or debris within the area of proposed grading. These materials should be removed from the site. Any underground obstructions onsite should be removed. Efforts should be made to locate any existing utility lines to be removed or rerouted where interfering with the proposed construction. Any resulting cavities should be properly backfilled and compacted. After the site is cleared, the soils should be carefully observed for the removal of all unsuitable deposits. All unsuitable deposits should be excavated and removed from the proposed building/structure footprint prior to fill placement.

4.1.2 Overexcavation

To provide uniform foundation support and reduce the potential for excessive static and seismic settlement, all existing artificial fill materials should be removed to expose suitable native soils and replaced as engineered fill below the proposed building and other structural improvements. The depth of existing fill materials across the site is unknown at this time and should be

evaluated during future subsurface explorations. Deeper localized fill may be present at the site, particularly beneath existing site structures.

4.1.3 Subgrade Preparation

After excavating as recommended, the moisture content of the soils should be determined, and the soils slowly and uniformly moistened (or dried) as necessary to bring the soils to a uniform moist condition. The moisture content of the clayey soils should be brought to about 4 percent over optimum moisture content to a depth of 18 inches. The moisture content of any relatively non-expansive and predominantly granular soils should be brought to about 2 percent over optimum moisture content to a depth of 18 inches. The moisture content of the subgrade should be checked and approved by Leighton prior to placing the required fill.

4.1.4 Fill Materials

The onsite soil, free of organic material, cobbles, boulders, rubble, and rock less than 8 inches in largest dimension, is generally considered suitable to be used as fill from a geotechnical perspective. The on-site soils in the upper approximately 20 feet bgs may be potentially expansive. If on-site soils are used as fill, care must be used during grading and construction to not allow the soils to become dry or desiccated. Soils that become dry should be removed and replaced with compacted fill or properly moisture conditioned. Any imported fill soil should be approved by the geotechnical engineer prior to placement as fill.

4.1.5 Fill Placement and Compaction

Fill soils should be placed in loose lifts not exceeding 8 inches, moisture-conditioned to at least 2 percent above optimum moisture content for sandy soils and at least 4 percent above optimum moisture content for clayey soils, and compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM Test Method D 1557. Aggregate base should be compacted to a minimum of 95 percent relative compaction.

4.2 Preliminary Foundation Design

Conventional spread footings established in engineered fill or undisturbed natural soils may be used to support the proposed structures.

4.2.1 Conventional Spread Footings

Footings should be embedded a minimum 18 inches below the lowest adjacent grade. An allowable soil bearing pressure of 3,000 pounds per square foot (psf) may be used for footings with a minimum width of 18 inches for continuous footings and 24 inches for isolated footings. A one-third increase in the bearing value for short duration loading, such as wind or seismic forces may be used. The ultimate bearing capacity can be taken as 9,000 psf, which does not incorporate a factor of safety. A resistance factor of 0.5 should be used for initial bearing capacity evaluation with factored loads.

Differential settlement can be taken as half the total settlement over a horizontal distance of 30 feet. Since settlement is a function of footing size and contact bearing pressure, differential settlement can be expected between adjacent columns or walls where a large differential loading condition exists. Leighton should review the settlement estimates when final foundation plans and loads for the proposed structures become available.

Resistance to lateral loads will be provided by a combination of friction between the soil and structure interface and passive pressure acting against the vertical portion of the footings structures. For calculating lateral resistance, a passive pressure of 250 psf per foot of depth to a maximum of 2,500 psf and a frictional coefficient of 0.30 may be used.

Note that the passive and frictional coefficients do not include a factor of safety. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

4.3 Slabs-on-Grade

Concrete slabs may be designed using a modulus of subgrade reaction of 100 pci provided the subgrade is prepared as described in Section 4.1. From a geotechnical standpoint, we recommend slab-on-grade be a minimum 6 inches thick with No. 3 rebar placed at the center of the slab at 24 inches on center in each direction. The structural engineer should design the actual thickness and reinforcement based on anticipated loading conditions. Where moisture-sensitive floor coverings or equipment is planned, the slabs should be protected by a

minimum 10-mil-thick vapor barrier between the slab and subgrade. A coefficient of friction of 0.35 can be used between the floor slab and the vapor barrier.

Minor cracking of concrete after curing due to drying and shrinkage is normal and should be expected; however, concrete is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking. Additionally, our experience indicates that the use of reinforcement in slabs and foundations can generally reduce the potential but not eliminate for concrete cracking.

To reduce the potential for excessive cracking, concrete slabs-on-grade should be provided with construction or weakened plane joints at frequent intervals. Joints should be laid out to form approximately square panels.

4.4 Temporary Excavation and Shoring Design

All temporary excavations, including utility trenches, retaining wall excavations and foundation excavations should be performed in accordance with project plans, specifications, and all OSHA requirements. Excavations 5 feet or deeper should be laid back or shored in accordance with OSHA requirements before personnel are allowed to enter.

No surcharge loads should be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater from the top of the cut, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundation should be properly shored to maintain support of the adjacent structure.

Typical cantilever shoring should be designed based on the active fluid pressure of 35 pcf. If excavations are braced at the top and at specific design intervals, the active pressure may then be approximated by a rectangular soil pressure distribution with the pressure per foot of width equal to $25H$, where H is equal to the depth of the excavation being shored.

Adjacent to existing buildings, shoring should be designed to accommodate the surcharge pressure from existing foundations. A uniform horizontal pressure equal to $\frac{1}{2}$ of the foundation bearing pressure may be assumed for preliminary design.

4.5 Drainage and Landscaping

Building walls below grade should be waterproofed or at least dampproofed, depending upon the degree of moisture protection desired. Surface drainage should be designed to direct water away from foundations and toward approved drainage devices. Irrigation of landscaping should be controlled to maintain, as much as possible, consistent moisture content sufficient to provide healthy plant growth without overwatering.

4.6 Future Geotechnical Exploration

Geotechnical recommendations presented in this report are preliminary and based on the information gained from our limited subsurface exploration, review of available documents and our understanding of the currently proposed development concept. A design-level geotechnical investigation, including additional soil borings, laboratory testing and engineering analysis should be performed to develop specific geotechnical recommendations with respect to the site grading, foundation design, ground improvement or deep foundations and other geotechnical aspects of a proposed project. This additional geotechnical investigation will be required for the project by the reviewing agency in pursuit of building permits.

5.0 LIMITATIONS

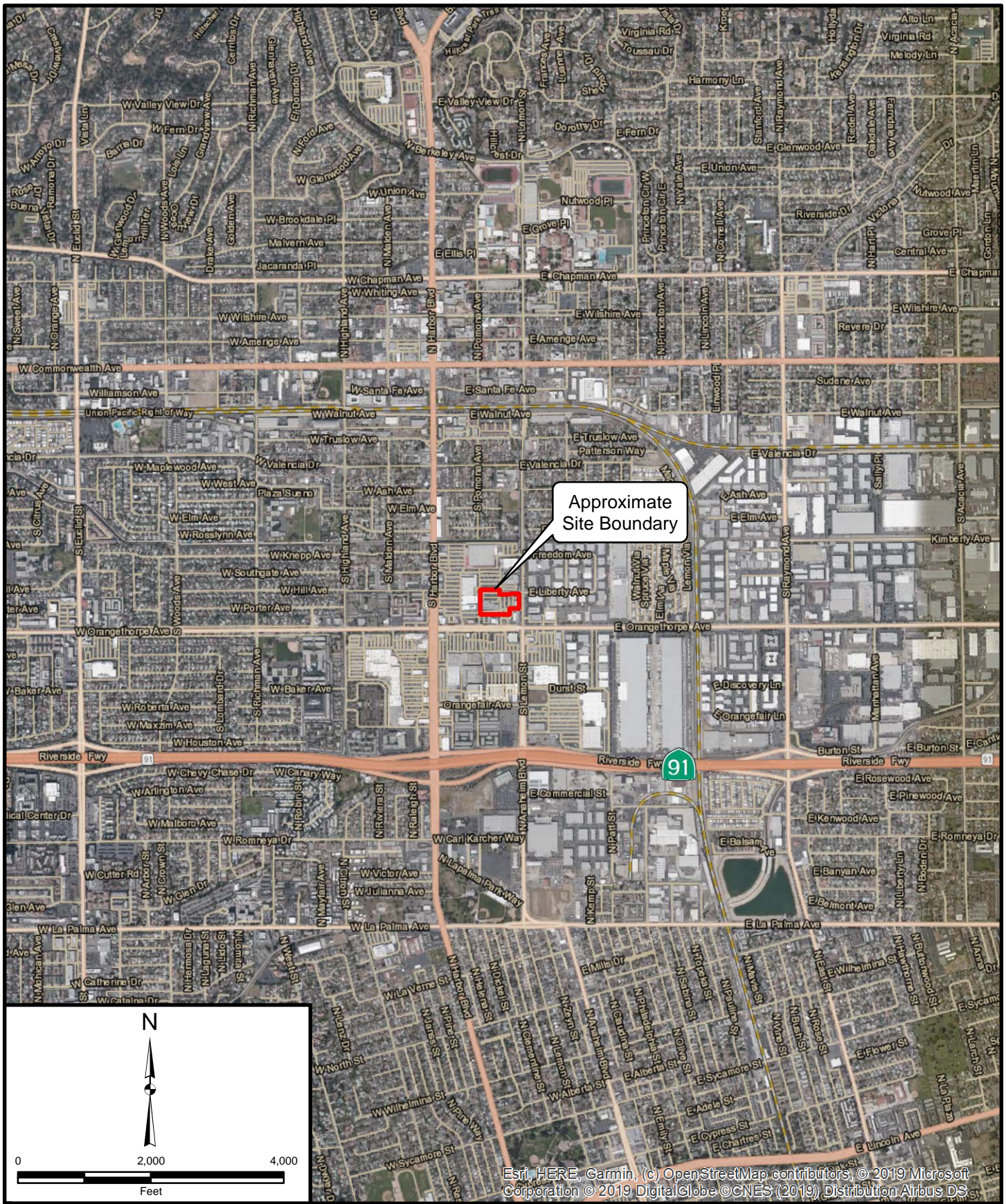
Leighton and Associates, Inc.'s work was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in California at this time. No other warranty, express or implied, is made as to the conclusions and professional opinions included in this report.

This report is issued with the understanding that it is the responsibility of the owner or a duly authorized agent acting on behalf of the owner, to ensure that information and recommendations contained herein are brought to the attention of the necessary design consultants for this project and incorporated into plans and specifications.

The findings of this report are considered valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the work of man on the subject or adjacent properties. In addition, changes in standards of practice may occur from legislation or the broadening of knowledge. Accordingly, the findings of this report may at some future time be invalidated wholly or partially by changes outside Leighton's control. Conditions revealed in construction excavations may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by Leighton and Associates, Inc. and additional recommendations may be warranted based on additional observations and findings.

The conclusions and preliminary recommendations in this report are based in part upon data that were obtained from a necessarily limited number of observations, site visits, excavations, samples and tests. Such information can be obtained only with respect to the specific locations explored, and therefore may not completely define all subsurface conditions throughout the site. The nature of many sites is that differing geotechnical and/or geological conditions can occur within small distances and under varying climatic conditions. Furthermore, changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report should be considered preliminary if unanticipated conditions are encountered and additional explorations, testing and analyses may be necessary to develop alternative recommendations.

Any persons using this report for bidding or construction purposes should perform such independent investigations as they deem necessary to satisfy themselves as to the surface and/or subsurface conditions to be encountered and the procedures to be used in the performance of work on the subject site.



Project: 12572.002	Eng/Geol: JLH
Scale: 1" = 2,000'	Date: November 2019
Base Map: ESRI ArcGIS Online 2019	
Thematic Information: Leighton	
Author: Leighton Geomatics (btran)	

SITE LOCATION MAP
 Proposed Multi-family/Commercial Retail Development
 E. Orangethorpe Avenue and S. Lemon Street,
 Fullerton, California

Figure 1

Leighton

Figure 2

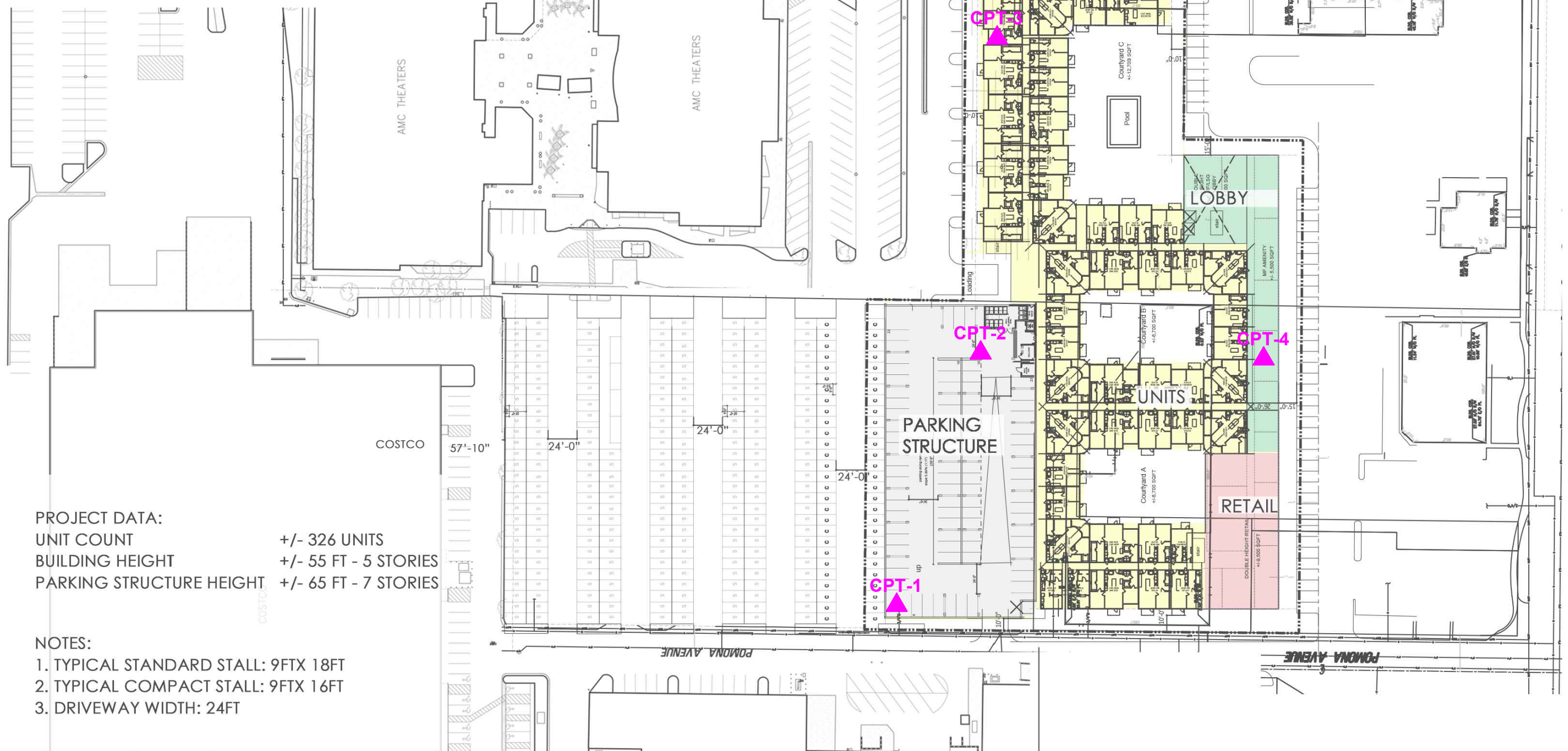
EXPLORATION LOCATION MAP
 Proposed Multi-family/Commercial Retail Development
 E. Orangethorpe Avenue and S. Lemon Street,
 Fullerton, California

Proj: 12572.002	Eng/Geol: JLH
Scale: As Shown	Date: November 2019

V:\DRAFTING\12572002\CAD\2019-11-06\12572-002_FIG2_ELIM_2019-11-06.DWG (11-06-19 10:55:01AM) Plotted by: sean

LEGEND

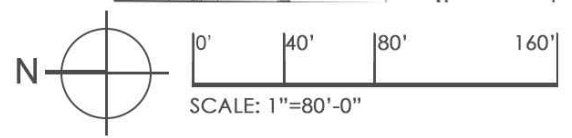
CPT-4 ▲ APPROXIMATE LOCATION OF CPT



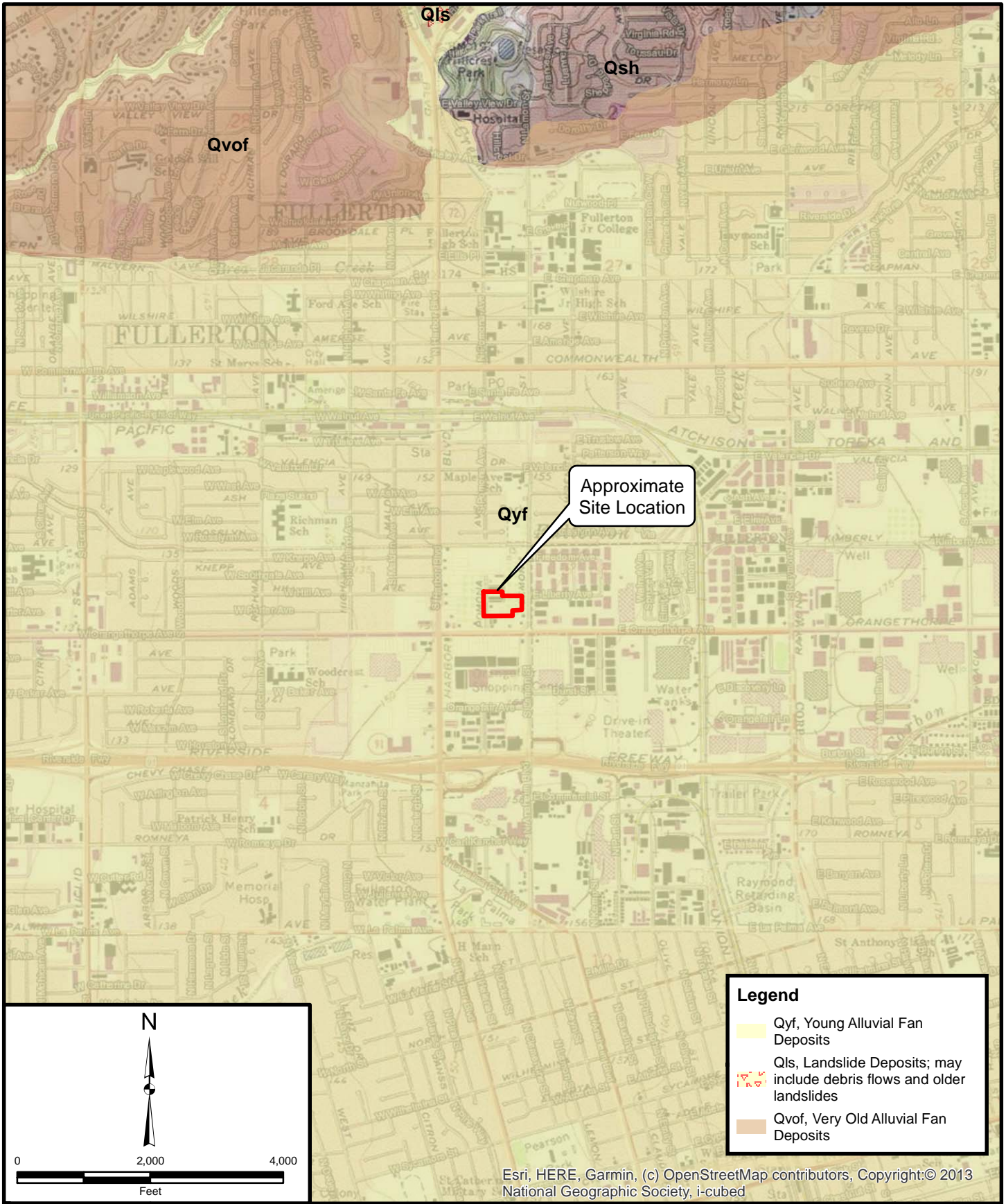
PROJECT DATA:
 UNIT COUNT +/- 326 UNITS
 BUILDING HEIGHT +/- 55 FT - 5 STORIES
 PARKING STRUCTURE HEIGHT +/- 65 FT - 7 STORIES

- NOTES:**
1. TYPICAL STANDARD STALL: 9FTX 18FT
 2. TYPICAL COMPACT STALL: 9FTX 16FT
 3. DRIVEWAY WIDTH: 24FT

ORANGETHORPE AND LEMON FULLERTON, CA
 STREETLIGHTS RESIDENTIAL



CONCEPTUAL SITE PLAN
ARCHITECTS ORANGE
 144 NORTH ORANGE ST. ORANGE, CA 92866 714.639.9860
 #2018-534 WWW.ARCHITECTSORANGE.COM 03-01-2019



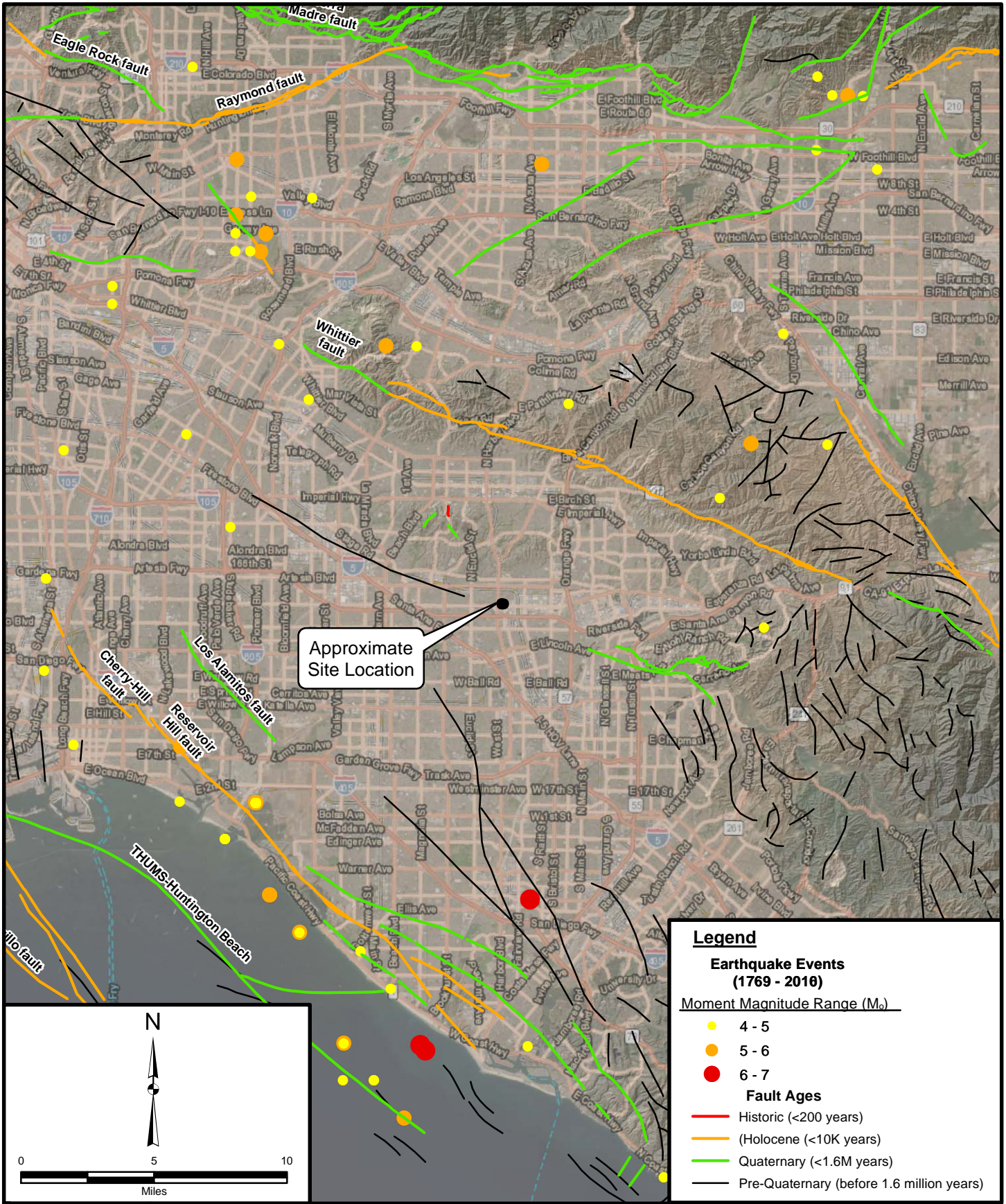
Project: 12572.002	Eng/Geol: JLH
Scale: 1" = 2,000'	Date: November 2019
Base Map: ESRI ArcGIS Online 2019 Thematic Information: Leighton, USGS Author: Leighton Geomatics (btran)	

REGIONAL GEOLOGY MAP

Proposed Multi-family/Commercial Retail Development
E. Orangethorpe Avenue and S. Lemon Street,
Fullerton, California

Figure 3

Leighton



Legend

Earthquake Events (1769 - 2010)

Moment Magnitude Range (M_o)

- 4 - 5
- 5 - 6
- 6 - 7

Fault Ages

- Historic (<200 years)
- (Holocene (<10K years)
- Quaternary (<1.6M years)
- Pre-Quaternary (before 1.6 million years)

Project: 12572.002 Eng/Geol: JLH

Scale: 1" = 5 miles Date: November 2019

Base Map: ESRI ArcGIS Online 2019
 Thematic Information: Leighton, Bryant, W. A. (compiler), 2005, Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, version 2.0: CGS, USGS, SCEC.
 Author: Leighton Geomatics (btran)



REGIONAL FAULT AND HISTORICAL SEISMICITY MAP

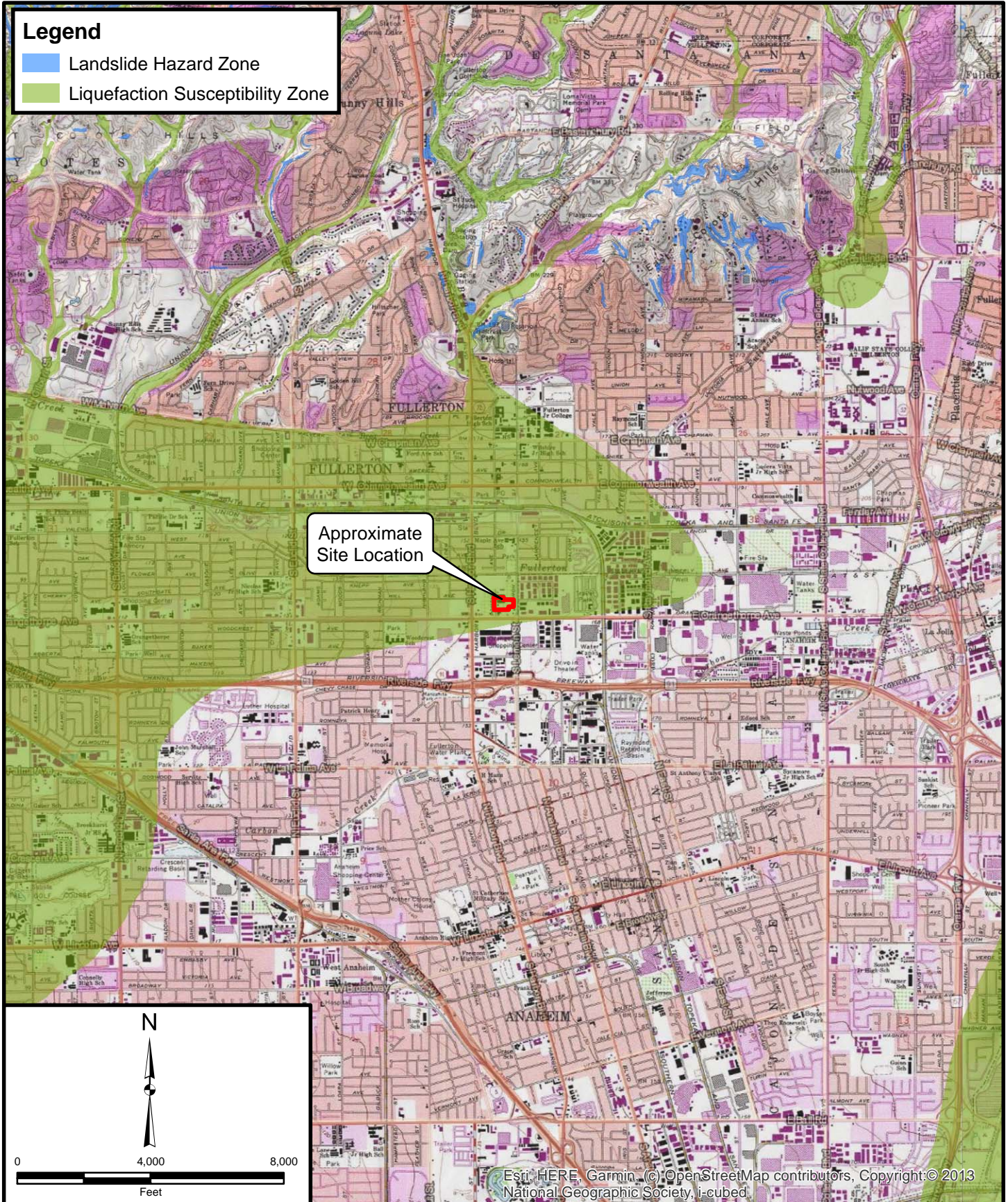
Proposed Multi-family/Commercial Retail Development
 E. Orangethorpe Avenue and S. Lemon Street,
 Fullerton, California

Figure 4

Leighton

Legend

-  Landslide Hazard Zone
-  Liquefaction Susceptibility Zone



Esri, HERE, Garmin, © OpenStreetMap contributors, Copyright © 2013 National Geographic Society, i-cubed


Project: 12572.002	Eng/Geol: JLH
Scale: 1" = 4,000'	Date: November 2019
Base Map: ESRI ArcGIS Online 2019 Thematic Information: Leighton, CGS Author: Leighton Geomatics (btran)	

SEISMIC HAZARD MAP

Proposed Multi-family/Commercial Retail Development

E. Orangethorpe Avenue and S. Lemon Street, Fullerton, California

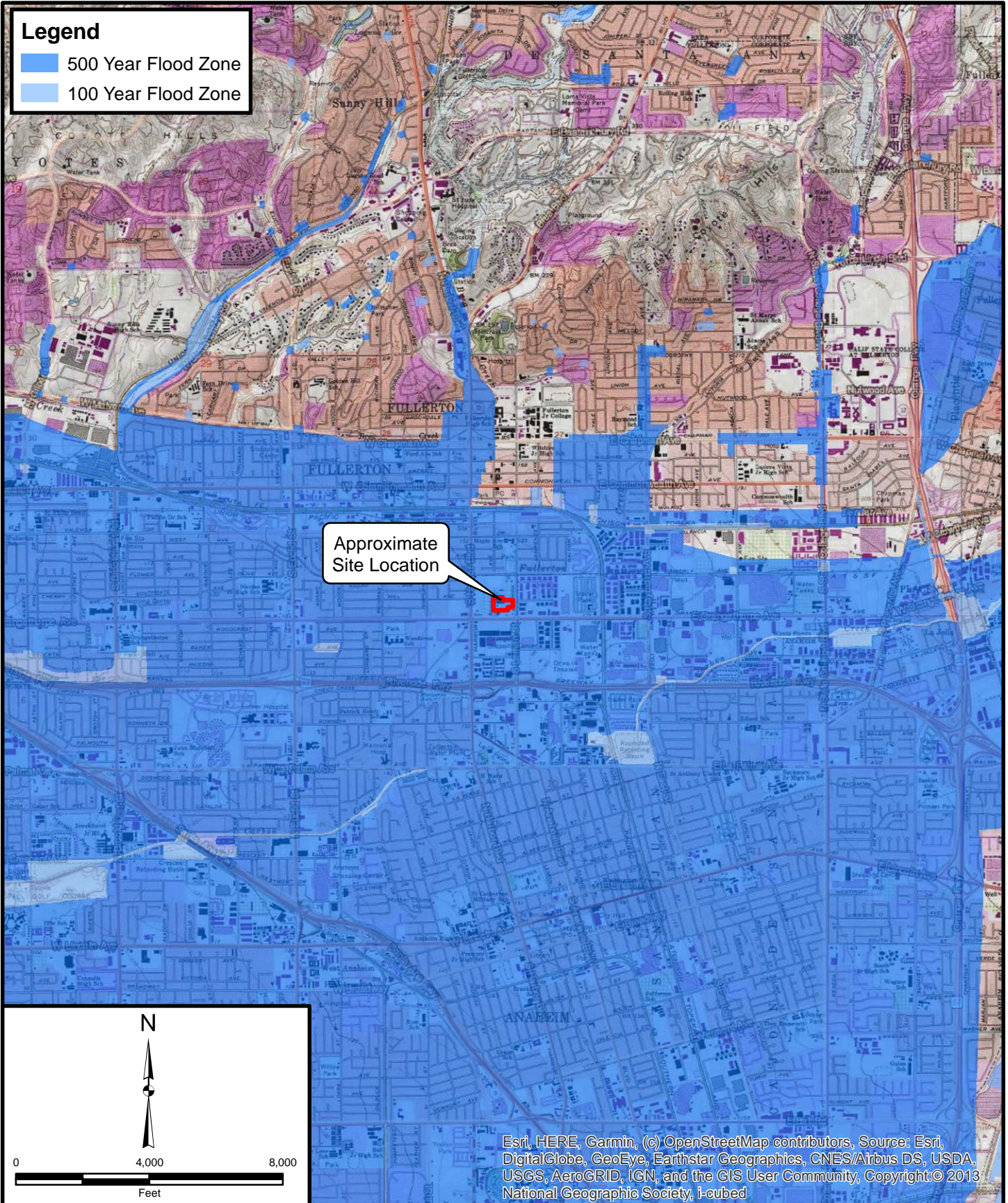
Figure 5



Leighton

Legend

- 500 Year Flood Zone
- 100 Year Flood Zone



Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Copyright: © 2013 National Geographic Society, i-cubed

Project: 12572.002	Eng/Geol: JLH
Scale: 1" = 4,000'	Date: November 2019
Base Map: ESRI ArcGIS Online 2019 Thematic Information: Leighton, CA DWR, FEMA Author: Leighton Geomatics (btran)	

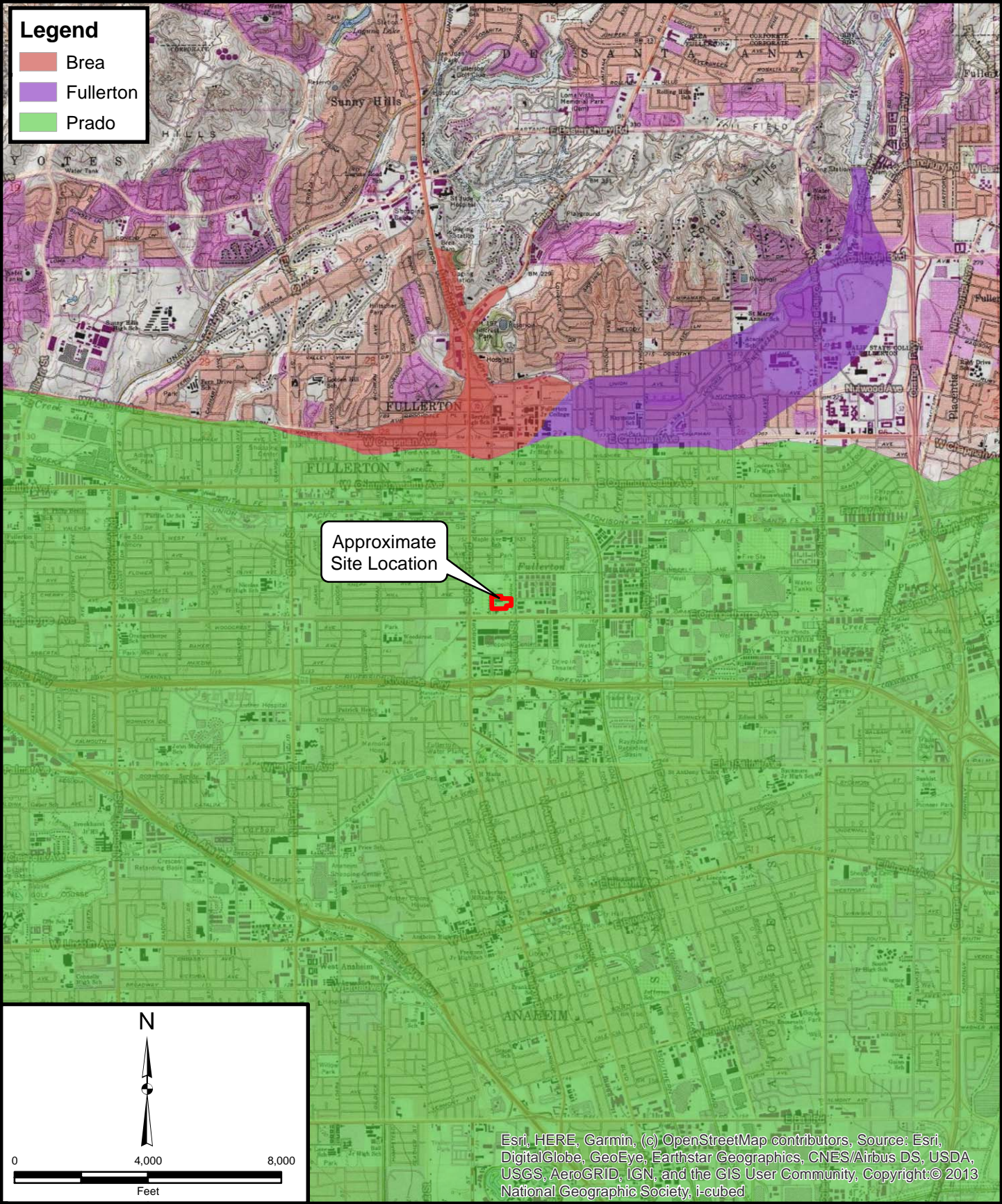
FLOOD HAZARD MAP

Proposed Multi-family/Commercial Retail Development
E. Orangethorpe Avenue and S. Lemon Street,
Fullerton, California

Figure 6




Leighton



Project: 12572.002	Eng/Geol: JLH
Scale: 1" = 4,000'	Date: November 2019
Base Map: ESRI ArcGIS Online 2019 Thematic Information: Leighton, CA DWR, FEMA Author: Leighton Geomatics (btran)	

DAM INUNDATION MAP
 Proposed Multi-family/Commercial Retail Development
 E. Orangethorpe Avenue and S. Lemon Street,
 Fullerton, California

Figure 7



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APPENDIX A

REFERENCES



Leighton

APPENDIX A

REFERENCES

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APPENDIX B
CONE PENETROMETER TEST LOGS



Leighton

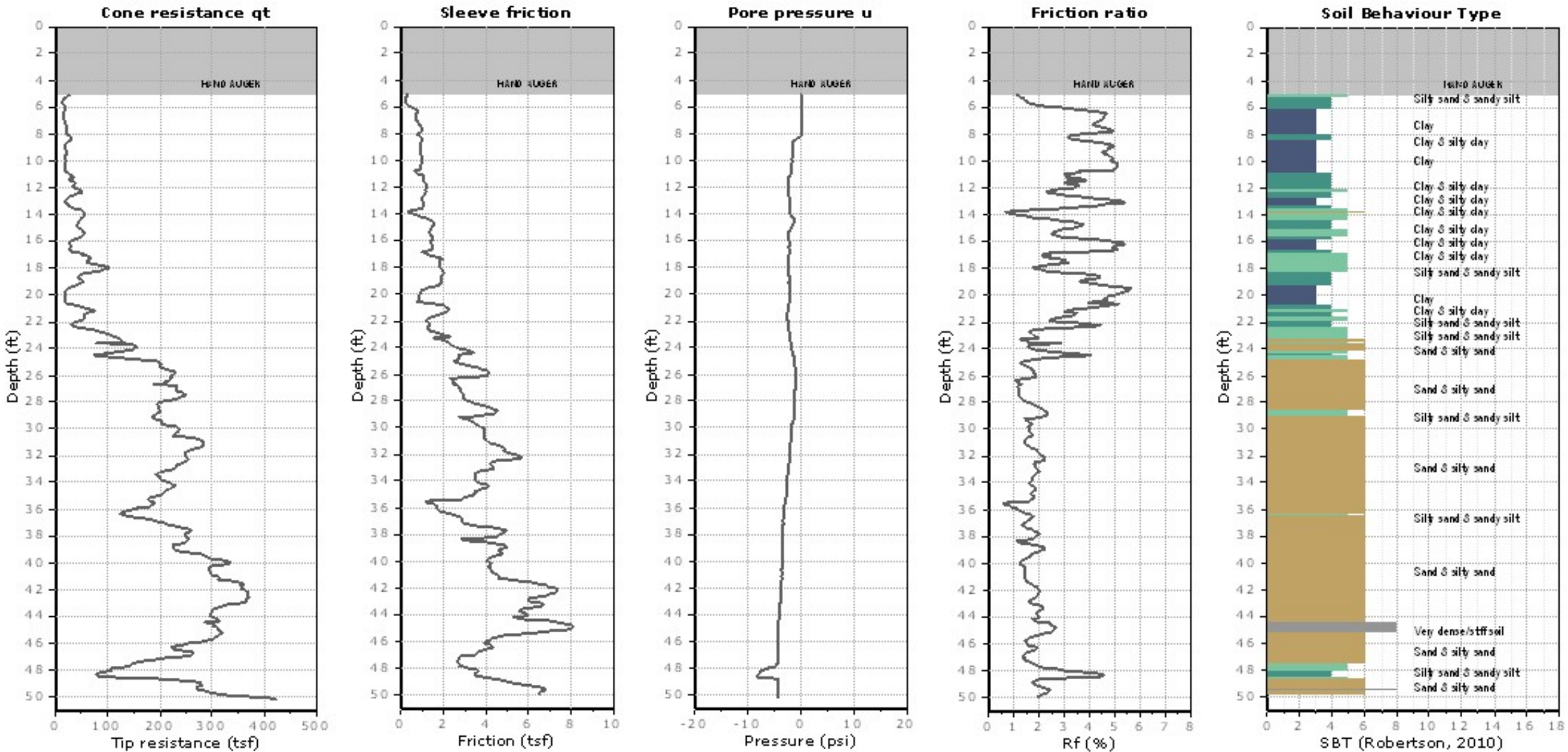
Leighton & Associates
 223-229 E. Orangethorpe Ave.
 Fullerton, CA

CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-2	5.02	4.02	4.49	6.32	710.45	
	10.01	9.01	9.23	13.48	684.67	661.91
	15.12	14.12	14.26	20.88	683.00	679.95
	20.08	19.08	19.18	26.88	713.71	820.60
	25.03	24.03	24.11	32.44	743.31	886.43
	30.02	29.02	29.09	37.80	769.55	928.31
	35.14	34.14	34.20	43.36	788.71	919.01
	40.06	39.06	39.11	48.60	804.76	937.53
	45.08	44.08	44.13	54.28	812.92	882.78
	50.03	49.03	49.07	59.08	830.58	1030.30

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
 Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)



Depth (ft)	Tip Stress (tsf)	Sleeve Stre (tsf)	Pore Pressi (psi)	F.Ratio (%)
0	0	0	0	0
0.082	-0.18	0	0	0
0.149	0.37	0	0	0
0.227	1.56	0	0	0
0.274	2.56	0	0	0
0.35	4.49	0	0	0
0.413	6.68	-0.0008	0	-0.012
0.477	8.88	-0.0019	0	-0.022
0.542	11.26	-0.0019	0	-0.017
0.61	13.64	-0.0019	0	-0.014
0.675	15.84	-0.0019	0	-0.012
0.74	18.5	-0.0019	0	-0.01
0.805	20.33	-0.0019	0	-0.009
0.869	22.44	-0.0019	0	-0.009
0.934	24.08	-0.0017	0	-0.007
0.997	25.27	-0.0016	0	-0.006
1.061	26.37	-0.0008	0	-0.003
1.122	27.47	0	0	0
1.188	28.66	-0.0009	0	-0.003
1.253	29.21	-0.0019	0	-0.007
1.318	30.13	-0.0019	0	-0.006
1.378	29.67	-0.0019	0	-0.006
1.448	31.59	-0.0019	0	-0.006
1.511	32.78	-0.0019	0	-0.006
1.575	33.79	-0.0013	0	-0.004
1.666	35.16	0	0	0
1.706	35.44	0	0	0
1.778	36.54	0	0	0
1.854	35.71	0	0	0
1.906	34.98	0.0057	0	0.016
1.983	33.7	0.0206	0	0.061
2.052	32.87	0.0312	0	0.095
2.111	32.6	0.0393	0	0.121
2.181	31.78	0.0485	0	0.153
2.233	31.59	0.0475	0	0.15
2.307	30.68	0.0392	0	0.128
2.373	30.04	0.0403	0	0.134
2.432	29.21	0.039	0	0.133
2.498	27.56	0.0358	0	0.13
2.563	25.18	0.0326	0	0.129
2.637	23.26	0.0302	0	0.13
2.691	21.98	0.0268	0	0.122
2.759	20.05	0.0268	0	0.134
2.84	18.31	0.0268	0	0.147

2.916	16.48	0.0257	0	0.156
2.962	15.11	0.0249	0	0.165
3.031	12.64	0.0249	0	0.197
3.106	10.99	0.0278	0	0.253
3.174	10.81	0.0307	0	0.284
3.222	10.81	0.0343	0	0.317
3.3	10.53	0.0448	0	0.426
3.352	10.35	0.0547	0	0.528
3.429	10.35	0.084	0	0.812
3.489	10.35	0.1451	0	1.403
3.555	10.9	0.2497	0	2.291
3.61	11.63	0.3276	0	2.817
3.684	13.55	0.4171	0.095	3.077
3.751	16.3	0.4867	0	2.986
3.813	17.95	0.5385	0	3
3.886	21.24	0.587	0	2.763
3.941	24.63	0.6128	0	2.488
4.021	28.3	0.6362	-0.377	2.249
4.073	30.59	0.6379	-0.754	2.086
4.153	32.33	0.6128	-0.377	1.896
4.232	32.14	0.5663	-0.565	1.762
4.279	32.28	0.5434	-0.377	1.684
4.352	31.78	0.5172	-0.188	1.628
4.4	32.23	0.5166	-0.188	1.603
4.483	34.07	0.5162	-0.094	1.515
4.553	36.08	0.5236	-0.188	1.451
4.614	37.64	0.5334	-0.283	1.417
4.679	38.37	0.5357	-0.377	1.396
4.74	39.01	0.5331	-0.377	1.367
4.811	38.64	0.5252	-0.377	1.359
4.866	37.64	0.5139	-0.377	1.366
4.934	33.97	0.4285	-0.283	1.262
4.993	31.41	0.323	-0.188	1.028
5.067	27.29	0.3031	-0.094	1.111
5.126	24.63	0.2868	-0.094	1.164
5.202	21.06	0.2599	-0.094	1.234
5.257	18.96	0.2463	-0.047	1.299
5.33	16.57	0.2262	0	1.365
5.384	15.66	0.2145	0	1.37
5.468	14.19	0.2044	0	1.44
5.544	13.28	0.2049	0	1.543
5.595	13	0.2026	0	1.558
5.645	12.82	0.1999	0	1.559
5.723	13.46	0.2164	0	1.608
5.8	14.56	0.2608	0	1.791
5.857	15.48	0.3245	0	2.097
5.927	17.4	0.4138	0	2.378

5.98	18.31	0.4921	0	2.687
6.053	19.32	0.6031	0	3.121
6.121	19.51	0.685	0	3.512
6.176	19.41	0.7332	0	3.777
6.25	19.23	0.7634	0	3.97
6.306	18.5	0.7668	0	4.145
6.377	17.22	0.7668	0	4.454
6.456	16.57	0.7639	0	4.609
6.505	16.21	0.7537	0	4.65
6.571	15.93	0.7352	0	4.614
6.631	16.03	0.7295	0	4.552
6.701	16.03	0.7307	0	4.56
6.786	16.03	0.7266	0	4.534
6.833	16.03	0.7259	0	4.529
6.919	16.21	0.7285	0	4.494
6.964	16.57	0.733	0.095	4.422
7.041	17.4	0.7537	0	4.332
7.093	18.13	0.7738	0	4.268
7.169	19.14	0.8081	0	4.222
7.219	19.78	0.8296	0	4.194
7.3	20.7	0.87	0	4.204
7.35	21.52	0.895	0	4.159
7.431	21.98	0.9223	0	4.196
7.484	21.43	0.9358	0	4.367
7.561	20.6	0.9552	0	4.636
7.615	20.33	0.9692	0	4.767
7.69	20.24	0.9871	0	4.877
7.748	20.24	1.0019	0	4.951
7.821	20.7	1.0161	0	4.91
7.876	21.06	1.0172	0	4.829
7.956	21.43	0.8843	0	4.127
8.013	21.98	0.7672	0	3.491
8.085	24.36	0.8062	0	3.31
8.143	26.28	0.8447	0	3.214
8.203	28.11	0.8897	0	3.165
8.268	29.03	0.9228	-0.094	3.179
8.35	30.49	0.9597	-0.754	3.148
8.406	28.48	0.9778	-0.801	3.435
8.491	25.55	0.9881	-1.508	3.871
8.534	24.08	0.9783	-1.603	4.066
8.616	22.25	0.9435	-1.697	4.245
8.662	21.06	0.926	-1.697	4.402
8.739	19.51	0.9113	-1.697	4.678
8.821	18.41	0.91	-1.697	4.95
8.865	18.13	0.9092	-1.697	5.021
8.945	18.59	0.9002	-1.697	4.849
8.992	18.96	0.8931	-1.697	4.717

9.072	18.96	0.9041	-1.697	4.776
9.141	19.14	0.9075	-1.697	4.748
9.19	19.51	0.9168	-1.697	4.706
9.269	20.15	0.9223	-1.697	4.584
9.339	20.6	0.9218	-1.697	4.479
9.398	20.51	0.9251	-1.697	4.515
9.467	20.15	0.9261	-1.697	4.603
9.525	20.05	0.9322	-1.697	4.654
9.592	19.69	0.9433	-1.697	4.797
9.656	19.69	0.9561	-1.603	4.862
9.72	19.78	0.9663	-1.603	4.891
9.79	19.69	0.9717	-1.603	4.941
9.846	19.69	0.9738	-1.791	4.953
9.916	20.05	0.9855	-1.791	4.92
10.001	20.33	0.9853	-1.697	4.853
10.046	20.05	0.9748	-1.697	4.867
10.128	19.41	0.9597	-1.697	4.95
10.171	18.86	0.9586	-1.791	5.088
10.25	18.41	0.9365	-1.791	5.095
10.324	17.95	0.9174	-1.791	5.119
10.376	17.95	0.9152	-1.791	5.107
10.452	18.22	0.9162	-1.791	5.035
10.527	18.22	0.9161	-1.791	5.034
10.584	18.22	0.9211	-1.791	5.062
10.632	18.68	0.9187	-1.791	4.924
10.712	18.22	0.9144	-1.885	5.025
10.781	18.31	0.6494	-1.885	3.551
10.842	18.59	0.637	-1.885	3.432
10.905	20.7	0.7524	-1.885	3.64
10.968	23.35	0.6996	-1.885	2.999
11.035	28.48	0.8856	-1.885	3.113
11.093	30.77	0.9962	-2.09	3.241
11.169	34.61	1.0616	-2.09	3.069
11.227	34.16	1.0566	-2.09	3.096
11.292	30.77	1.0472	-2.263	3.407
11.375	27.56	1.0409	-2.263	3.781
11.426	27.11	1.0398	-2.263	3.841
11.494	29.21	1.0356	-2.263	3.549
11.563	33.79	1.0579	-2.263	3.134
11.624	36.36	1.0948	-2.263	3.014
11.703	34.61	1.1716	-2.263	3.388
11.757	33.79	1.2033	-2.263	3.564
11.813	34.57	1.2047	-2.263	3.488
11.885	33.24	1.1748	-2.263	3.538
11.951	34.52	1.1751	-2.263	3.407
12.011	35.9	1.1906	-2.263	3.32
12.082	39.01	1.1856	-2.263	3.042

12.153	45.33	1.163	-2.263	2.568
12.206	48.35	1.1488	-2.263	2.378
12.278	48.63	1.1455	-2.263	2.357
12.351	48.9	1.1517	-2.263	2.357
12.403	47.62	1.1476	-2.263	2.412
12.473	42.86	1.1289	-2.263	2.636
12.548	37.27	1.0972	-2.263	2.946
12.615	32.23	1.0577	-2.263	3.285
12.664	29.03	1.0238	-2.263	3.531
12.737	25.27	0.9874	-2.168	3.912
12.813	22.16	0.9882	-2.168	4.466
12.882	19.87	0.9888	-2.168	4.984
12.94	19.14	0.9942	-2.168	5.203
13.005	19.14	1.0078	-2.168	5.275
13.078	19.14	1.0342	-2.168	5.412
13.153	21.52	1.0698	-2.074	4.978
13.202	23.08	1.0814	-2.074	4.692
13.255	23.53	1.0799	-2.074	4.594
13.328	24.27	1.0612	-2.074	4.379
13.393	25.55	1.0417	-2.074	4.082
13.457	27.38	1.0208	-2.074	3.732
13.521	32.69	1.0019	-2.074	3.067
13.586	41.3	0.9829	-2.168	2.382
13.653	47.89	0.9717	-2.168	2.03
13.739	51.19	0.6206	-2.168	1.213
13.78	52.2	0.3556	-2.168	0.682
13.855	53.11	0.4245	-2.168	0.8
13.926	53.39	0.4898	-2.074	0.918
14.003	53.57	0.5921	-2.074	1.106
14.054	53.3	0.6623	-1.713	1.243
14.123	52.2	0.7622	-1.713	1.461
14.175	52.56	0.8561	-1.713	1.63
14.263	51.01	1.0261	-1.32	2.012
14.314	49.27	1.1214	-1.32	2.277
14.391	47.53	1.2565	-1.32	2.645
14.453	46.43	1.3542	-1.32	2.918
14.523	44.69	1.448	-1.32	3.242
14.574	43.86	1.5035	-1.32	3.429
14.651	42.95	1.541	-1.32	3.59
14.704	41.85	1.5509	-1.414	3.708
14.782	40.93	1.5339	-1.508	3.749
14.839	40.84	1.508	-1.508	3.694
14.913	41.3	1.4691	-1.603	3.559
14.966	42.49	1.4417	-1.791	3.395
15.039	45.33	1.4165	-1.885	3.127
15.099	47.71	1.3998	-1.885	2.936
15.169	50.64	1.3864	-1.98	2.739

15.226	51.92	1.3741	-2.168	2.648
15.299	53.2	1.352	-2.263	2.543
15.356	53.57	1.3355	-2.357	2.494
15.435	53.57	1.3484	-2.357	2.519
15.515	52.84	1.3395	-2.357	2.537
15.565	51.56	1.3663	-2.357	2.652
15.645	48.63	1.4121	-2.357	2.906
15.7	46.25	1.4449	-2.357	3.127
15.777	41.67	1.4751	-2.357	3.543
15.83	38.19	1.4851	-2.263	3.892
15.902	34.16	1.4826	-2.263	4.345
15.962	31.04	1.4667	-2.263	4.73
16.03	27.75	1.4386	-2.263	5.191
16.091	26.46	1.4116	-2.168	5.34
16.142	27.7	1.407	-2.168	5.085
16.221	26.28	1.4219	-2.168	5.417
16.288	27.66	1.4229	-2.168	5.151
16.349	28.66	1.4349	-2.168	5.012
16.406	29.4	1.4327	-2.263	4.879
16.478	28.57	1.4155	-2.168	4.96
16.539	27.84	1.4203	-2.263	5.108
16.606	27.84	1.4239	-2.168	5.121
16.683	28.75	1.4318	-2.168	4.985
16.735	30.04	1.2838	-2.168	4.278
16.823	36.08	0.9932	-2.168	2.755
16.867	41.76	1.0303	-2.168	2.469
16.954	49.63	1.1004	-2.168	2.218
17.026	55.59	1.1808	-2.168	2.126
17.061	50.09	1.2281	-2.263	2.453
17.14	64.1	1.3879	-2.263	2.166
17.218	66.85	1.6206	-2.263	2.425
17.271	67.22	1.7701	-2.357	2.635
17.33	66.3	1.9202	-2.357	2.898
17.408	63.46	1.9434	-2.357	3.064
17.464	60.35	1.8407	-2.357	3.052
17.534	63.64	1.8006	-2.263	2.831
17.596	59.16	1.8594	-2.263	3.145
17.655	63.83	1.867	-2.263	2.927
17.721	71.98	1.848	-2.31	2.569
17.81	91.21	1.8365	-2.31	2.014
17.868	96.7	1.8365	-2.31	1.9
17.94	102.11	1.8298	-2.357	1.793
18.002	101.74	1.8342	-2.357	1.803
18.048	98.72	1.8532	-2.357	1.878
18.13	90.57	1.9261	-2.357	2.128
18.184	84.98	1.9535	-2.357	2.3
18.258	76.1	1.964	-2.357	2.582

18.319	70.15	1.9736	-2.263	2.815
18.388	60.53	2.0087	-2.263	3.32
18.45	52.84	2.0096	-2.263	3.806
18.507	47.25	1.9809	-2.263	4.195
18.578	44.23	1.9388	-2.263	4.387
18.667	42.86	1.8865	-2.263	4.405
18.712	43.31	1.8709	-2.168	4.322
18.794	46.15	1.9156	-2.168	4.153
18.842	48.63	1.9135	-2.168	3.938
18.901	50.64	1.8976	-2.168	3.75
18.974	52.29	1.8783	-2.168	3.594
19.06	49.36	1.8777	-2.168	3.807
19.122	47.8	1.8772	-2.263	3.93
19.16	46.43	1.8768	-2.168	4.045
19.235	43.59	1.8628	-2.263	4.277
19.291	39.83	1.8306	-2.168	4.599
19.378	32.42	1.65	-2.168	5.095
19.444	26.28	1.4823	-2.263	5.647
19.504	23.44	1.3214	-2.168	5.644
19.555	21.52	1.1994	-2.263	5.582
19.638	19.41	1.0799	-2.168	5.571
19.688	18.59	1.0119	-2.168	5.452
19.767	18.04	0.9723	-2.168	5.399
19.824	18.13	0.9496	-2.168	5.246
19.898	18.22	0.9322	-2.168	5.124
19.957	18.31	0.922	-2.168	5.043
20.034	18.31	0.8815	-2.168	4.821
20.088	18.13	0.8535	-2.168	4.715
20.179	18.13	0.8463	-2.168	4.676
20.216	18.04	0.8513	-2.168	4.727
20.307	18.22	0.8287	-2.168	4.555
20.354	18.41	0.8269	-2.168	4.5
20.439	18.59	0.8741	-2.168	4.71
20.49	18.68	0.8136	-2.168	4.362
20.545	19.05	0.7485	-2.168	3.936
20.628	21.7	1.118	-2.168	5.159
20.68	26.01	1.3475	-2.168	5.187
20.757	34.61	1.6305	-2.263	4.715
20.819	39.83	1.883	-2.294	4.731
20.884	46.79	2.0643	-2.294	4.414
20.954	53.75	2.1339	-2.294	3.972
21.018	59.16	2.1691	-2.357	3.669
21.074	64.65	2.2139	-2.357	3.426
21.142	73.53	2.2749	-2.357	3.095
21.205	75.55	2.2644	-2.357	2.999
21.27	70.33	2.2416	-2.357	3.189
21.351	60.44	2.1209	-2.64	3.511

21.414	57.23	1.9602	-2.734	3.427
21.476	54.49	1.8496	-2.734	3.397
21.537	53.3	1.7685	-2.734	3.321
21.599	54.3	1.6993	-2.734	3.132
21.659	55.95	1.6046	-2.734	2.87
21.723	55.59	1.4389	-2.734	2.59
21.787	52.93	1.2842	-2.734	2.428
21.879	48.63	1.1617	-2.734	2.391
21.937	45.79	1.1617	-2.64	2.539
22	42.12	1.2044	-2.546	2.862
22.056	38.55	1.2636	-2.451	3.281
22.13	35.07	1.3416	-2.357	3.829
22.188	32.42	1.3722	-2.357	4.237
22.252	30.68	1.3662	-2.357	4.459
22.314	31.59	1.3394	-2.263	4.244
22.405	39.1	1.2918	-2.357	3.306
22.462	47.34	1.2782	-2.357	2.702
22.529	56.96	1.2675	-2.357	2.227
22.594	66.21	1.27	-2.357	1.919
22.654	74.18	1.2898	-2.357	1.74
22.716	81.04	1.3163	-2.263	1.625
22.781	87	1.4251	-2.263	1.639
22.844	93.13	1.5525	-2.263	1.668
22.904	99.08	1.7043	-2.168	1.721
22.967	104.3	1.8509	-2.168	1.775
23.069	111.17	2.0731	-2.168	1.865
23.114	114.47	2.1599	-2.168	1.887
23.18	117.58	2.2721	-2.168	1.933
23.236	120.24	2.1789	-2.168	1.813
23.3	122.43	1.487	-2.168	1.215
23.391	125.27	1.8495	-2.074	1.477
23.456	126.83	1.9521	-2.074	1.539
23.519	129.12	2.0554	-2.074	1.592
23.582	133.42	2.1613	-1.964	1.62
23.626	77.65	2.2296	-1.964	2.872
23.723	146.06	2.3333	-1.964	1.598
23.779	153.48	2.381	-1.885	1.552
23.842	156.23	2.4403	-1.885	1.562
23.906	155.77	2.4954	-1.791	1.602
23.967	153.39	2.5363	-1.791	1.654
24.029	151.1	2.622	-1.791	1.736
24.098	148.44	2.7599	-1.791	1.86
24.161	142.86	2.9169	-1.791	2.042
24.227	132.23	3.0675	-1.791	2.32
24.288	116.21	3.2607	-1.697	2.807
24.346	99.18	3.3912	-1.697	3.42
24.437	78.75	3.1709	-1.697	4.028

24.506	72.98	2.9773	-1.697	4.081
24.576	77.2	2.7452	-1.603	3.557
24.609	81.59	2.6891	-1.414	3.297
24.705	112.36	2.6862	-1.226	2.391
24.769	142.49	2.7278	-1.226	1.915
24.823	167.95	2.7186	-1.414	1.619
24.89	185.16	2.6542	-1.414	1.434
24.948	195.51	2.5751	-1.414	1.317
25.007	199.08	2.5225	-1.32	1.267
25.073	199.91	2.499	-1.226	1.25
25.134	201.01	2.5689	-1.226	1.278
25.2	201.92	2.7015	-1.226	1.338
25.263	201.56	2.9194	-1.226	1.449
25.328	200.37	3.1661	-1.226	1.58
25.424	200.64	3.4104	-1.131	1.7
25.487	203.85	3.5381	-1.131	1.736
25.55	212.18	3.689	-1.131	1.739
25.614	220.05	3.8412	-1.131	1.746
25.672	227.01	3.9793	-1.037	1.753
25.741	231.13	4.0852	-1.037	1.768
25.797	231.23	4.1384	-1.037	1.79
25.866	228.11	4.13	-1.037	1.811
25.923	225.09	4.1162	-1.037	1.829
25.992	223.53	4.0857	-0.942	1.828
26.052	221.43	4.0548	-0.942	1.831
26.155	220.51	4.0544	-0.942	1.839
26.182	220.6	4.0605	-0.942	1.841
26.273	220.79	3.0327	-0.942	1.374
26.337	218.95	2.3033	-0.942	1.052
26.394	215.75	2.3529	-0.942	1.091
26.464	211.26	2.4244	-0.942	1.148
26.533	208.15	2.459	-0.942	1.181
26.591	208.06	2.4704	-1.037	1.187
26.651	186.72	2.4658	-1.037	1.321
26.719	212.73	2.4619	-1.037	1.157
26.818	228.11	2.5537	-1.131	1.12
26.85	232.05	2.6042	-1.131	1.122
26.934	232.6	2.7102	-1.131	1.165
26.995	229.58	2.7295	-1.131	1.189
27.063	232.87	2.7317	-1.131	1.173
27.124	230.22	2.744	-1.131	1.192
27.189	233.15	2.7735	-1.131	1.19
27.245	238.09	2.8095	-1.226	1.18
27.313	243.5	2.8521	-1.226	1.171
27.373	247.16	2.8874	-1.226	1.168
27.44	247.89	2.9155	-1.226	1.176
27.504	247.62	2.9361	-1.226	1.186

27.566	245.42	2.9632	-1.226	1.208
27.628	241.12	2.9823	-1.226	1.237
27.696	236.08	2.9686	-1.226	1.258
27.757	228.48	2.9858	-1.226	1.307
27.85	214.56	2.9808	-1.226	1.389
27.916	207.05	3.0425	-1.226	1.47
27.975	202.1	3.1114	-1.32	1.54
28.033	198.63	3.2003	-1.32	1.611
28.106	196.34	3.3412	-1.32	1.702
28.167	195.79	3.465	-1.32	1.77
28.225	195.88	3.5928	-1.32	1.834
28.286	196.7	3.7144	-1.32	1.889
28.354	197.16	3.8638	-1.32	1.96
28.413	197.62	4.0044	-1.32	2.027
28.508	198.99	4.1666	-1.32	2.094
28.573	199.36	4.2941	-1.32	2.154
28.636	199.45	4.4157	-1.414	2.214
28.701	198.35	4.5203	-1.414	2.279
28.76	196.61	4.5677	-1.414	2.323
28.825	194.6	4.5536	-1.414	2.34
28.887	192.12	4.4681	-1.414	2.326
28.948	189.19	4.3166	-1.414	2.282
29.013	186.35	4.1088	-1.414	2.205
29.077	184.16	3.9004	-1.414	2.118
29.138	184.25	3.3708	-1.414	1.83
29.206	185.9	2.7065	-1.414	1.456
29.265	190.84	2.83	-1.414	1.483
29.332	197.16	2.9677	-1.414	1.505
29.396	202.65	3.0724	-1.414	1.516
29.464	204.12	3.2042	-1.603	1.57
29.538	205.08	3.375	-1.603	1.646
29.604	199.72	3.4533	-1.603	1.729
29.668	206.04	3.4843	-1.65	1.691
29.733	214.19	3.4954	-1.791	1.632
29.795	223.35	3.5215	-1.697	1.577
29.888	231.87	3.6593	-1.791	1.578
29.956	234.8	3.776	-1.791	1.608
30.014	237.45	3.8354	-1.791	1.615
30.079	237.36	3.8582	-1.791	1.626
30.144	236.26	3.8521	-1.791	1.631
30.206	235.16	3.8611	-1.791	1.642
30.265	233.15	3.8883	-1.791	1.668
30.328	230.31	3.9179	-1.791	1.701
30.395	227.93	3.906	-1.791	1.714
30.459	230.81	3.8825	-1.791	1.682
30.523	224.63	3.8625	-1.791	1.72
30.58	231.32	3.8801	-1.791	1.678

30.678	255.58	3.8682	-1.885	1.514
30.735	269.23	3.902	-1.885	1.449
30.802	277.01	3.9591	-1.885	1.429
30.865	280.68	3.9867	-1.885	1.421
30.927	283.52	4.0248	-1.885	1.42
30.985	284.06	4.0658	-1.885	1.431
31.06	284.16	4.1067	-1.885	1.445
31.115	283.52	4.1738	-1.98	1.472
31.182	283.52	4.2841	-1.98	1.511
31.247	281.96	4.4061	-1.98	1.563
31.315	279.49	4.5573	-1.98	1.631
31.376	274.72	4.7071	-1.98	1.714
31.44	270.79	4.8046	-1.98	1.775
31.507	265.66	4.8657	-2.074	1.832
31.567	260.35	4.8975	-2.074	1.881
31.632	255.95	4.887	-2.074	1.91
31.725	250.46	4.8403	-2.074	1.933
31.762	250	4.8274	-2.074	1.931
31.827	248.9	4.9153	-2.074	1.975
31.916	247.8	5.1139	-2.074	2.064
31.98	248.08	5.2772	-2.074	2.128
32.046	249.36	5.426	-2.074	2.176
32.117	251.65	5.5435	-2.074	2.203
32.177	252.93	5.6299	-2.074	2.226
32.243	253.2	5.6731	-2.168	2.241
32.312	253.02	5.6508	-2.168	2.234
32.369	250.82	5.0688	-2.168	2.021
32.433	248.17	4.5749	-2.168	1.844
32.501	244.87	4.4852	-2.168	1.832
32.569	241.94	4.3909	-2.168	1.815
32.63	240.75	4.3	-2.168	1.786
32.679	231.78	4.2338	-2.31	1.827
32.758	231.73	4.2978	-2.31	1.855
32.825	231.68	4.24	-2.31	1.83
32.885	230.77	4.3373	-2.451	1.88
32.969	225.55	4.3577	-2.451	1.932
33.039	218.86	4.3097	-2.451	1.969
33.098	210.8	4.2263	-2.451	2.005
33.164	204.67	4.0682	-2.451	1.988
33.22	199.91	3.8925	-2.451	1.947
33.282	196.7	3.7035	-2.451	1.883
33.343	194.32	3.5654	-2.451	1.835
33.406	193.68	3.5001	-2.451	1.807
33.473	195.69	3.4686	-2.451	1.773
33.534	199.08	3.4567	-2.546	1.737
33.601	201.46	3.4575	-2.546	1.717
33.667	201.37	3.4939	-2.546	1.735

33.727	201.74	3.4994	-2.546	1.735
33.821	205.59	3.4984	-2.546	1.702
33.89	209.8	3.4811	-2.546	1.66
33.947	214.38	3.4782	-2.546	1.623
34.006	218.04	3.5168	-2.64	1.613
34.061	221.79	3.5966	-2.64	1.622
34.125	225.73	3.7157	-2.64	1.646
34.194	228.66	3.8993	-2.64	1.706
34.278	230.77	4.0743	-2.64	1.766
34.347	228.57	4.135	-2.64	1.809
34.405	223.72	4.122	-2.64	1.843
34.47	219.23	4.0579	-2.64	1.851
34.532	215.29	3.9528	-2.734	1.836
34.599	212.54	3.8104	-2.734	1.793
34.66	210.44	3.6759	-2.734	1.747
34.723	209.16	3.5643	-2.734	1.704
34.787	208.15	3.4899	-2.734	1.677
34.853	206.5	3.4662	-2.734	1.679
34.915	202.75	3.4736	-2.734	1.714
34.981	197.16	3.4536	-2.734	1.752
35.043	190.75	3.4077	-2.734	1.787
35.108	183.97	3.2894	-2.734	1.788
35.173	177.93	3.1545	-2.734	1.773
35.269	176.74	2.9792	-2.828	1.686
35.302	179.03	2.9131	-2.828	1.628
35.396	186.35	2.7699	-2.828	1.487
35.462	187.36	1.5106	-2.828	0.806
35.524	189.19	1.0917	-2.828	0.577
35.586	186.17	1.2447	-2.828	0.669
35.652	185.8	1.4132	-2.828	0.761
35.718	182.78	1.55	-2.828	0.848
35.782	177.93	1.6635	-3.048	0.935
35.83	157.14	1.6989	-3.048	1.081
35.894	158.61	1.7082	-3.048	1.077
35.963	152.75	1.7116	-3.205	1.121
36.025	146.61	1.7226	-3.205	1.175
36.117	139.01	1.7253	-3.205	1.242
36.155	135.8	1.7253	-3.205	1.271
36.245	127.38	1.7835	-3.205	1.401
36.322	123.26	1.9134	-3.205	1.553
36.352	123.08	1.9836	-3.205	1.612
36.447	128.94	2.2549	-3.205	1.749
36.512	137.91	2.4368	-3.205	1.767
36.574	151.28	2.6024	-3.205	1.721
36.642	163	2.746	-3.205	1.685
36.708	172.89	2.8443	-3.205	1.646
36.769	180.4	2.8972	-3.205	1.606

36.839	187.27	2.9111	-3.205	1.555
36.9	193.68	2.8827	-3.3	1.489
36.966	199.54	2.8844	-3.3	1.446
37.03	205.22	2.871	-3.3	1.399
37.093	210.9	2.8679	-3.3	1.36
37.157	216.57	2.9399	-3.205	1.358
37.22	224.54	3.1015	-3.3	1.382
37.286	234.06	3.3735	-3.3	1.442
37.349	244.41	3.6761	-3.3	1.504
37.417	252.65	4.0579	-3.3	1.606
37.482	256.96	4.3856	-3.3	1.707
37.547	259.8	4.655	-3.3	1.792
37.609	258.88	4.8871	-3.3	1.888
37.674	256.87	4.9456	-3.3	1.926
37.739	252.75	4.9375	-3.3	1.954
37.799	247.62	4.9049	-3.3	1.981
37.865	247.85	4.8025	-3.3	1.938
37.962	246.15	4.6674	-3.3	1.896
37.996	248.08	4.6295	-3.3	1.867
38.063	251.46	4.5761	-3.3	1.82
38.155	255.68	4.5635	-3.3	1.785
38.219	256.13	4.5666	-3.3	1.783
38.291	255.22	3.6433	-3.3	1.428
38.321	253.84	2.8035	-3.3	1.105
38.395	252.29	2.8776	-3.3	1.141
38.462	249.36	3.2015	-3.3	1.284
38.524	246.7	3.5578	-3.3	1.442
38.612	241.39	4.0433	-3.379	1.675
38.682	225.36	4.4053	-3.379	1.955
38.716	225.64	4.5572	-3.387	2.02
38.784	225.91	4.8469	-3.489	2.146
38.855	225.46	4.9656	-3.394	2.203
38.911	226.01	4.9754	-3.394	2.202
38.987	227.29	4.8921	-3.394	2.153
39.046	230.31	4.7483	-3.489	2.062
39.14	240.93	4.5879	-3.489	1.905
39.182	246.61	4.5884	-3.489	1.861
39.244	258.42	4.5885	-3.489	1.776
39.341	272.34	4.6476	-3.489	1.707
39.399	279.58	4.7225	-3.489	1.689
39.463	284.89	4.7274	-3.489	1.66
39.533	287.18	4.6396	-3.489	1.616
39.589	289.65	4.5264	-3.489	1.563
39.664	295.42	4.3127	-3.489	1.46
39.721	302.29	4.2083	-3.489	1.392
39.785	312.82	4.1792	-3.489	1.336
39.848	325	4.0959	-3.489	1.26

39.918	332.97	4.0371	-3.489	1.213
39.979	333.79	4.0388	-3.489	1.21
40.052	333.79	4.1388	-3.489	1.24
40.114	320.97	4.2228	-3.489	1.316
40.177	308.61	4.2564	-3.489	1.379
40.243	299.08	4.2376	-3.489	1.417
40.308	293.77	4.1936	-3.489	1.428
40.37	293.68	4.1722	-3.489	1.421
40.434	293.22	4.1734	-3.489	1.424
40.502	293.59	4.1742	-3.489	1.422
40.564	294.14	4.1885	-3.583	1.424
40.632	296.24	4.2237	-3.583	1.426
40.699	297.98	4.2443	-3.583	1.425
40.762	296.88	4.2591	-3.583	1.435
40.827	296.43	4.3063	-3.489	1.453
40.892	299.45	4.3973	-3.489	1.469
40.953	305.95	4.4616	-3.489	1.459
41.024	311.45	4.5431	-3.489	1.459
41.084	313.64	4.5914	-3.583	1.464
41.166	311.45	4.616	-3.489	1.482
41.221	311.45	4.6076	-3.583	1.48
41.3	318.59	4.5844	-3.489	1.439
41.355	332.32	4.8371	-3.489	1.456
41.427	347.53	5.32	-3.583	1.531
41.481	356.87	5.6899	-3.646	1.595
41.536	357.55	5.9669	-3.646	1.669
41.603	358.24	6.2642	-3.646	1.749
41.668	357.23	6.4714	-3.771	1.812
41.735	353.94	6.635	-3.771	1.875
41.832	357	6.8119	-3.771	1.908
41.895	355.95	6.9205	-3.771	1.945
41.958	356.77	7.0665	-3.771	1.981
42.021	359.7	7.223	-3.771	2.008
42.089	362.91	7.3387	-3.771	2.022
42.154	367.4	7.3625	-3.771	2.004
42.216	369.5	7.321	-3.771	1.982
42.277	368.95	7.2726	-3.771	1.971
42.345	368.86	7.2209	-3.771	1.958
42.407	369.05	7.1089	-3.771	1.927
42.476	369.78	6.9414	-3.771	1.877
42.54	370.05	6.7678	-3.771	1.829
42.601	370.51	6.5957	-3.771	1.78
42.67	366.94	6.3862	-3.771	1.741
42.732	366.8	6.1699	-3.771	1.682
42.794	366.39	5.9847	-3.771	1.634
42.86	366.66	5.9561	-3.771	1.625
42.922	365.38	6.0155	-3.771	1.647

42.991	358.06	5.977	-3.771	1.67
43.055	347.34	6.1628	-3.771	1.775
43.119	334.43	6.4408	-3.866	1.926
43.19	323.44	6.6682	-3.866	2.062
43.25	314.28	6.7259	-3.866	2.14
43.32	308.15	6.6165	-3.866	2.148
43.393	305.03	6.4089	-3.866	2.101
43.456	301.46	6.1811	-3.866	2.051
43.523	298.72	5.9616	-3.866	1.996
43.589	298.67	5.7534	-3.866	1.927
43.652	298.62	5.6062	-3.866	1.878
43.717	298.17	5.5878	-3.866	1.874
43.78	296.98	5.6654	-3.866	1.908
43.843	297.98	5.7759	-3.866	1.939
43.914	296.15	5.9033	-3.866	1.994
43.978	297.8	5.9507	-3.866	1.999
44.042	301.37	5.9768	-3.866	1.984
44.105	306.5	5.6609	-3.866	1.847
44.172	310.8	5.2796	-3.866	1.699
44.238	312.54	5.5203	-3.866	1.767
44.301	313.19	5.831	-3.866	1.862
44.368	312.36	6.2042	-3.866	1.987
44.437	311.26	6.6808	-4.101	2.147
44.49	286.26	6.9658	-4.101	2.434
44.555	302.29	7.3345	-4.172	2.427
44.62	302.29	7.5992	-4.243	2.514
44.72	303.39	7.9214	-4.337	2.612
44.78	305.13	8.0543	-4.337	2.64
44.881	309.8	8.0907	-4.337	2.612
44.908	310.16	8.0911	-4.337	2.609
44.975	311.72	8.077	-4.337	2.592
45.039	312.27	8.0003	-4.337	2.562
45.11	314.56	7.7371	-4.337	2.46
45.173	318.86	7.4081	-4.337	2.324
45.239	319.87	6.9669	-4.337	2.178
45.309	316.02	6.4651	-4.337	2.046
45.375	312.09	5.9883	-4.337	1.919
45.411	310.99	5.7424	-4.337	1.847
45.473	309.16	5.3362	-4.337	1.726
45.547	306.59	4.871	-4.337	1.589
45.604	304.49	4.6664	-4.337	1.533
45.67	301.28	4.4597	-4.337	1.481
45.735	294.87	4.3247	-4.337	1.467
45.803	287.64	4.1936	-4.337	1.458
45.901	274.72	4.1236	-4.337	1.501
45.935	270.05	4.1215	-4.337	1.527
46.032	252.38	3.9571	-4.337	1.568

46.064	247.07	3.9012	-4.337	1.579
46.159	238	4.0748	-4.337	1.713
46.224	231.23	4.1898	-4.337	1.812
46.289	220.88	4.283	-4.337	1.94
46.358	231.04	4.3564	-4.337	1.886
46.422	225.36	4.3062	-4.337	1.911
46.458	230.86	4.2611	-4.432	1.846
46.59	255.22	3.9083	-4.432	1.532
46.615	259.16	3.8632	-4.432	1.491
46.687	263.92	3.8088	-4.432	1.444
46.727	265.02	3.7596	-4.432	1.419
46.827	262.64	3.6056	-4.432	1.373
46.884	258.7	3.5525	-4.432	1.374
46.95	249.63	3.5032	-4.432	1.404
46.983	243.13	3.4981	-4.432	1.439
47.054	228.94	3.2678	-4.432	1.428
47.118	212.64	2.7987	-4.432	1.317
47.184	194.87	2.7453	-4.432	1.409
47.25	182.51	2.7131	-4.432	1.487
47.314	173.44	2.6811	-4.471	1.546
47.376	161.63	2.6747	-4.51	1.655
47.475	152.75	2.6407	-4.51	1.73
47.507	151.1	2.6529	-4.51	1.756
47.575	145.6	2.7184	-4.526	1.868
47.638	141.39	2.7851	-4.526	1.971
47.708	138	2.7046	-4.62	1.961
47.775	131.13	2.7933	-4.62	2.131
47.836	118.41	2.687	-4.62	2.271
47.912	107.42	2.9091	-4.62	2.71
47.981	104.21	3.0818	-6.207	2.96
48.051	106.5	3.3467	-6.207	3.145
48.112	101.28	3.5438	-6.207	3.502
48.182	87.64	3.6159	-7.543	4.131
48.244	80.4	3.6413	-7.732	4.535
48.311	78.11	3.5694	-7.92	4.576
48.378	79.76	3.5116	-8.014	4.409
48.443	79.12	3.511	-8.109	4.444
48.514	117.12	3.5104	-8.109	3
48.585	159.43	3.6448	-8.109	2.288
48.639	197.53	3.8098	-8.109	1.93
48.702	220.15	4.0339	-6.6	1.833
48.77	236.63	4.2743	-5.186	1.807
48.827	252.1	4.3969	-4.62	1.745
48.893	265.2	4.5553	-4.337	1.718
48.989	277.47	4.9186	-4.243	1.773
49.023	279.3	5.047	-4.243	1.807
49.117	279.58	5.3899	-4.243	1.928

49.149	278.2	5.4966	-4.243	1.976
49.225	273.72	5.7335	-4.243	2.095
49.286	269.14	5.937	-4.148	2.206
49.356	273.44	6.1863	-4.148	2.263
49.455	270.33	6.5884	-4.148	2.438
49.479	273.17	6.6609	-4.148	2.439
49.567	283.7	6.7938	-4.148	2.395
49.625	290.84	6.7808	-4.148	2.332
49.695	297.25	6.7108	-4.148	2.258
49.749	304.3	6.6321	-4.148	2.18
49.819	319.05	6.5281	-4.148	2.047
49.876	338.83	6.501	-4.148	1.919
49.941	360.62	0	-4.148	0
50.003	380.77	0	-4.148	0
50.069	398.9	0	-4.148	0
50.166	416.48	0	-4.148	0
50.231	422.53	0	-4.148	0

Depth (ft)	Tip Stress (tsf)	Sleeve Stress (tsf)	Pore Pressure (psi)	F.Ratio (%)
0	0	0.0019	0.094	141.873
0.091	0.09	0.0101	0.188	10.676
0.149	0.09	0.0248	0.188	26.325
0.229	0.09	0.0687	0.094	73.957
0.267	0.09	0.0951	0.094	102.374
0.33	0.27	0.1546	0.094	56.034
0.4	3.48	0.2817	0.094	8.091
0.479	6.78	0.4205	0.094	6.202
0.544	8.24	0.5661	0.094	6.866
0.614	11.63	0.7042	0.094	6.053
0.691	16.03	0.8238	0.094	5.139
0.725	17.31	0.8678	0.094	5.012
0.799	19.51	0.9127	0.094	4.678
0.873	19.6	0.9179	0.094	4.682
0.937	22.07	0.9206	0	4.171
1.022	21.34	0.8842	0	4.143
1.053	19.88	0.8605	0	4.329
1.124	17.22	0.8006	0	4.649
1.193	14.84	0.6679	0	4.501
1.269	12.92	0.6048	-0.094	4.683
1.338	11.72	0.5588	0	4.766
1.408	10.81	0.5339	-0.094	4.941
1.469	9.16	0.5189	0	5.665
1.517	8.43	0.4989	0	5.92
1.583	8.15	0.4653	-0.267	5.71
1.647	7.88	0.4441	0.047	5.637
1.714	7.6	0.4487	-0.566	5.909
1.783	7.6	0.4525	0.094	5.951
1.842	7.6	0.4521	0.094	5.946
1.927	7.6	0.4567	0.188	6.005
1.984	7.6	0.4832	0.188	6.354
2.068	8.15	0.5081	0.188	6.231
2.111	8.7	0.5049	0.188	5.801
2.188	8.79	0.4855	0.188	5.52
2.255	9.07	0.3876	0.188	4.273
2.311	8.24	0.3344	0.094	4.056
2.377	7.33	0.3186	0	4.348
2.428	6.41	0.3037	0	4.736
2.514	5.86	0.2752	-0.094	4.696
2.568	5.31	0.2508	0	4.721
2.631	5.04	0.2192	-0.016	4.351
2.697	4.21	0.1953	0	4.636
2.76	3.66	0.1789	0	4.884
2.833	3.3	0.1538	0	4.664

2.892	3.3	0.1473	0	4.467
2.966	3.3	0.1475	0.094	4.471
3.023	3.3	0.1403	0	4.256
3.093	3.57	0.1579	0	4.42
3.183	4.03	0.1838	0	4.562
3.216	4.03	0.1997	0	4.955
3.284	4.49	0.2556	0.094	5.693
3.367	5.04	0.3433	0.094	6.813
3.428	6.32	0.4064	0.094	6.429
3.493	10.08	0.4459	0.094	4.425
3.56	15.21	0.4804	0.094	3.159
3.627	21.07	0.5026	0.094	2.385
3.69	25.19	0.4902	0.094	1.946
3.758	27.57	0.4847	0.094	1.758
3.826	29.22	0.4624	0.094	1.583
3.893	29.95	0.4337	0.094	1.448
3.964	30.32	0.4224	0.094	1.393
4.032	30.68	0.4238	0.094	1.381
4.103	31.05	0.4207	0	1.355
4.165	31.42	0.4199	0	1.337
4.231	31.33	0.4199	0	1.341
4.3	30.96	0.4088	0	1.32
4.364	30.32	0.4008	0	1.322
4.429	29.95	0.4022	0	1.343
4.464	30.27	0.4027	0	1.33
4.53	29.68	0.4027	0	1.357
4.594	30.23	0.4023	0	1.331
4.697	31.14	0.3341	0	1.073
4.73	31.33	0.2855	0	0.911
4.802	31.51	0.2741	0	0.87
4.874	31.33	0.3015	0	0.963
4.932	30.5	0.3294	0	1.08
5.006	29.68	0.3921	0	1.321
5.098	27.14	0.5097	-0.296	1.879
5.159	25.85	0.601	-0.296	2.325
5.228	24.02	0.7157	-0.53	2.98
5.3	22.1	0.8222	-0.624	3.722
5.367	20.27	0.8975	-0.624	4.43
5.434	18.9	0.9311	-0.624	4.93
5.466	18.26	0.9414	-0.624	5.16
5.534	17.07	0.9509	-0.624	5.575
5.599	16.42	0.9405	-0.624	5.729
5.695	16.06	0.922	-0.719	5.745
5.757	15.97	0.8991	-0.907	5.636
5.826	15.6	0.8725	-1.096	5.598
5.892	15.33	0.8552	-1.19	5.586
5.957	15.33	0.841	-1.284	5.494

6.017	15.33	0.8369	-1.284	5.468
6.057	15.33	0.8346	-1.284	5.452
6.142	15.78	0.8329	-1.284	5.283
6.206	15.51	0.8465	-1.001	5.464
6.272	15.69	0.8712	-0.907	5.557
6.322	15.69	0.8904	-0.813	5.679
6.392	16.33	0.9054	-0.907	5.548
6.454	16.61	0.9187	-0.907	5.536
6.523	16.97	0.937	-0.907	5.524
6.581	17.34	0.9495	-0.907	5.48
6.674	19.08	0.9849	-0.907	5.166
6.736	20.18	1.0038	-1.001	4.978
6.801	20.64	1.0113	-1.096	4.904
6.863	20.82	1.0102	-1.096	4.856
6.928	21.18	1.0076	-1.096	4.76
6.991	21.46	1.0151	-1.19	4.734
7.053	21.83	1.0208	-1.19	4.681
7.118	23.66	1.0105	-1.19	4.275
7.176	26.4	1.0089	-1.284	3.824
7.24	30.07	1.0321	-1.284	3.435
7.305	33	1.0798	-1.284	3.275
7.388	35.74	1.1342	-1.284	3.175
7.464	36.84	1.1647	-1.19	3.163
7.532	37.3	1.1908	-1.19	3.194
7.568	36.93	1.2068	-1.19	3.269
7.635	35.28	1.2236	-1.284	3.47
7.698	33	1.2403	-1.473	3.762
7.776	29.97	1.1934	-1.567	3.984
7.848	26.22	1.034	-1.661	3.947
7.919	22.65	1.0317	-1.661	4.56
7.988	19.9	1.001	-1.661	5.035
8.053	17.16	0.9507	-1.653	5.549
8.115	15.42	0.8774	-1.645	5.7
8.183	14.14	0.8021	-1.645	5.684
8.244	13.4	0.775	-1.645	5.793
8.311	13.49	0.7821	-1.661	5.806
8.376	14.32	0.7898	-1.567	5.525
8.442	15.51	0.7882	-1.567	5.09
8.506	15.97	0.804	-1.567	5.043
8.569	15.87	0.855	-1.661	5.394
8.637	15.78	0.94	-1.661	5.965
8.703	16.79	1.0189	-1.661	6.077
8.767	18.44	1.0779	-1.661	5.853
8.83	19.63	1.1158	-1.661	5.691
8.892	19.63	1.1369	-1.661	5.799
8.954	18.8	1.1482	-1.661	6.114
9.021	18.44	1.1651	-1.661	6.327

9.09	18.07	1.1786	-1.567	6.53
9.164	17.89	1.1449	-1.567	6.408
9.236	17.8	1.1178	-1.567	6.288
9.295	17.61	1.1131	-1.567	6.327
9.371	17.52	1.1283	-1.567	6.448
9.438	17.07	1.1323	-1.567	6.644
9.495	17.07	1.1091	-1.567	6.508
9.561	17.25	1.0512	-1.567	6.103
9.625	17.34	0.9744	-1.567	5.627
9.693	17.8	0.7334	-1.567	4.126
9.758	18.44	0.5165	-1.567	2.805
9.823	19.72	0.5748	-1.567	2.918
9.887	21.64	0.6588	-1.567	3.047
9.952	22.28	0.7499	-1.661	3.369
10.018	22.01	0.8348	-1.441	3.796
10.082	22.65	0.8923	-1.441	3.943
10.15	22.47	0.9515	-1.441	4.239
10.212	22.74	1.0266	-1.284	4.518
10.283	23.75	1.1206	-1.284	4.722
10.35	26.13	1.1756	-1.284	4.502
10.421	29.06	1.1997	-1.284	4.131
10.462	31.07	1.2078	-1.284	3.89
10.529	35.65	1.2292	-1.378	3.45
10.596	39.68	1.2562	-1.378	3.167
10.659	45.45	1.2052	-1.378	2.653
10.732	50.39	1.1406	-1.378	2.264
10.817	54.69	1.1796	-1.378	2.158
10.849	56.52	1.1959	-1.378	2.117
10.92	60.46	1.2327	-1.378	2.04
10.991	64.67	1.2734	-1.268	1.97
11.043	64.86	1.3143	-1.268	2.027
11.109	73.55	1.3684	-1.268	1.861
11.179	79.78	1.4141	-1.19	1.773
11.251	85.64	1.4508	-1.19	1.694
11.328	89.39	1.2997	-1.096	1.454
11.399	91.95	1.279	-1.096	1.391
11.464	92.41	1.2948	-1.096	1.401
11.535	89.39	1.2606	-1.096	1.41
11.573	86.1	1.2376	-1.096	1.438
11.64	78.59	1.1869	-1.001	1.511
11.703	55.43	1.1386	-1.025	2.055
11.765	58.45	1.1076	-1.048	1.896
11.832	50.02	1.0839	-1.025	2.167
11.934	37.66	1.0252	-1.001	2.723
11.966	33.45	1.0064	-1.001	3.01
12.074	26.49	0.9511	-1.001	3.592
12.104	25.4	0.9354	-1.001	3.685

12.172	22.92	0.9017	-1.001	3.936
12.245	21.28	0.8789	-1.001	4.134
12.311	21.28	0.8865	-1.001	4.17
12.375	21.28	0.9223	-1.001	4.338
12.453	21.28	0.9851	-0.907	4.633
12.492	22.74	1.0229	-0.907	4.501
12.561	26.31	1.0912	-0.907	4.149
12.632	29.7	1.1706	-0.907	3.943
12.696	32.9	1.2404	-0.907	3.771
12.766	35.28	1.2958	-0.907	3.674
12.844	37.48	1.3117	-0.907	3.501
12.881	38.76	1.3098	-0.907	3.38
12.946	40.87	1.3022	-1.001	3.187
13.015	43.07	1.304	-1.096	3.029
13.081	44.71	1.304	-1.096	2.917
13.146	45.81	1.304	-1.19	2.847
13.22	45.9	1.3077	-1.19	2.85
13.296	45.81	1.3381	-1.19	2.922
13.363	45.81	1.381	-1.378	3.016
13.426	45.54	1.4207	-1.473	3.121
13.497	45.26	1.4667	-1.661	3.242
13.561	44.16	1.5137	-1.85	3.43
13.627	41.97	1.5657	-2.039	3.733
13.69	39.68	1.612	-2.133	4.066
13.758	37.85	1.6791	-2.227	4.44
13.828	36.2	1.4718	-2.416	4.07
13.894	34.73	1.3837	-2.416	3.988
13.954	33.82	1.4756	-2.51	4.368
14.026	33.09	1.5643	-2.51	4.733
14.082	32.81	1.6166	-2.604	4.932
14.14	31.99	1.6603	-2.635	5.196
14.21	34.55	1.7095	-2.635	4.953
14.273	34.83	1.7289	-2.635	4.97
14.352	35.65	1.6425	-2.698	4.612
14.42	37.02	1.6555	-2.698	4.476
14.46	38.21	1.6739	-2.793	4.385
14.525	41.14	1.7111	-2.887	4.163
14.622	45.81	1.7256	-3.075	3.77
14.664	45.45	1.7256	-3.17	3.801
14.72	49.38	1.7256	-3.452	3.498
14.786	50.66	1.7275	-3.735	3.413
14.862	52.22	0.6418	-4.112	1.23
14.916	53.96	0.7354	-4.301	1.364
14.981	54.88	0.8844	-4.584	1.614
15.077	55.52	1.0952	-4.772	1.975
15.142	55.79	1.2234	-3.767	2.195
15.187	54.56	1.2991	-3.767	2.384

15.253	53.59	1.4036	-3.767	2.622
15.328	54.51	1.4999	-2.981	2.754
15.401	54.78	1.5787	-2.981	2.884
15.441	54.6	1.6255	-2.981	2.979
15.507	54.05	1.6788	-2.981	3.108
15.608	50.94	1.753	-2.981	3.444
15.682	47.19	1.8106	-2.981	3.841
15.728	45.35	1.8468	-2.981	4.076
15.793	42.61	1.8972	-2.981	4.457
15.859	40.78	1.9402	-2.981	4.763
15.923	40.04	1.9723	-2.981	4.93
15.99	39.4	1.8072	-2.981	4.591
16.03	38.85	1.6546	-2.981	4.263
16.101	37.57	1.7341	-2.981	4.621
16.173	37.3	1.8027	-2.981	4.839
16.246	35.65	1.8317	-2.981	5.144
16.31	34.37	1.8423	-3.028	5.367
16.373	33.36	1.8579	-3.028	5.576
16.437	33.36	1.8808	-3.028	5.645
16.501	33.27	1.9043	-3.075	5.732
16.568	33.45	1.8918	-3.075	5.663
16.636	33.82	1.8381	-3.075	5.442
16.696	35.28	1.804	-3.075	5.119
16.771	37.66	1.7774	-3.075	4.725
16.839	42.52	1.7774	-3.075	4.185
16.907	48.83	1.7855	-3.075	3.66
16.965	53.69	1.7914	-3.075	3.34
17.045	57.9	1.7879	-3.075	3.09
17.108	62.2	1.7889	-3.075	2.878
17.174	66.87	1.7889	-3.075	2.677
17.211	69.43	1.7884	-3.075	2.577
17.304	75.66	1.7989	-3.075	2.379
17.366	77.95	1.6628	-3.075	2.134
17.43	78.95	1.5603	-3.075	1.977
17.495	79.78	1.587	-3.075	1.99
17.548	80.6	1.6066	-3.17	1.994
17.61	81.33	1.6338	-3.075	2.01
17.687	80.79	1.6689	-3.075	2.067
17.748	80.74	1.6924	-3.075	2.097
17.811	82.07	1.7237	-3.075	2.101
17.879	80.69	1.7614	-2.981	2.184
17.944	77.67	1.795	-2.981	2.312
18.006	73.37	1.8432	-2.981	2.514
18.068	68.24	1.8836	-2.981	2.762
18.134	61.74	1.944	-2.981	3.151
18.198	54.33	1.9638	-2.981	3.618
18.292	43.43	1.9336	-2.981	4.456

18.353	39.31	1.9054	-2.981	4.852
18.419	39.22	1.9133	-2.981	4.884
18.477	39.22	1.9203	-2.793	4.901
18.544	38.85	1.8985	-2.793	4.891
18.603	39.13	1.8858	-2.698	4.824
18.672	40.14	1.875	-2.793	4.676
18.73	40.04	1.8488	-2.793	4.621
18.791	41.6	1.8471	-2.793	4.444
18.861	43.71	1.8699	-2.793	4.282
18.917	44.99	1.85	-2.793	4.116
19.008	42.43	1.7779	-2.793	4.195
19.071	38.58	1.7442	-2.793	4.526
19.136	36.11	1.6998	-2.793	4.713
19.197	34.46	1.6805	-2.793	4.882
19.26	34.37	1.6891	-2.793	4.921
19.324	34.28	1.6817	-2.793	4.912
19.387	32.45	1.612	-2.887	4.975
19.454	29.7	1.5218	-2.887	5.131
19.515	26.77	1.4591	-2.887	5.459
19.58	24.57	1.3378	-2.887	5.453
19.64	24.02	1.0885	-2.793	4.539
19.706	24.21	1.2516	-2.793	5.179
19.77	25.3	1.1659	-2.793	4.615
19.859	25.95	1.0629	-2.793	4.103
19.925	26.04	1.087	-2.871	4.182
19.969	27.87	1.1892	-2.871	4.274
20.067	27.78	1.5027	-2.871	5.418
20.11	28.37	1.6367	-2.895	5.777
20.193	28.87	1.8216	-2.895	6.318
20.23	29.7	1.8744	-2.891	6.32
20.296	31.9	1.959	-2.887	6.15
20.367	33	2.1068	-2.887	6.393
20.431	33.91	2.2281	-2.887	6.579
20.499	36.38	2.3946	-2.887	6.589
20.564	41.23	2.5206	-2.887	6.119
20.645	46	2.5329	-2.887	5.512
20.714	47.09	2.4668	-2.887	5.243
20.776	46.82	2.3745	-2.887	5.076
20.846	47.19	2.2701	-2.887	4.815
20.914	46.73	2.1391	-2.887	4.582
20.98	47.28	2.0304	-2.887	4.298
21.045	46.18	1.9553	-2.981	4.238
21.108	43.25	1.6042	-2.981	3.713
21.187	39.59	1.4677	-2.981	3.711
21.249	37.12	1.4503	-2.981	3.912
21.323	39.45	1.4071	-2.981	3.571
21.356	36.66	1.3894	-2.981	3.795

21.417	39.31	1.3489	-2.997	3.435
21.482	38.21	1.29	-2.997	3.38
21.569	47.46	1.2426	-2.997	2.621
21.636	49.75	1.2358	-2.981	2.486
21.7	51.67	1.235	-2.981	2.392
21.765	53.5	1.2492	-2.981	2.337
21.827	54.97	1.2787	-2.981	2.328
21.892	56.52	1.3174	-2.981	2.333
21.952	58.45	1.354	-2.981	2.318
22.017	60.83	1.3734	-2.981	2.26
22.077	62.93	1.3835	-2.981	2.2
22.139	64.76	1.3942	-2.981	2.154
22.206	66.78	1.4332	-2.981	2.148
22.302	70.99	1.5213	-2.981	2.144
22.329	72.73	1.5509	-2.981	2.134
22.417	78.68	1.6494	-2.981	2.098
22.474	82.8	1.7184	-2.981	2.076
22.534	87.38	1.8054	-2.981	2.067
22.601	93.51	1.8999	-2.981	2.033
22.66	101.2	1.9934	-2.887	1.971
22.724	109.17	2.1028	-2.887	1.927
22.819	121.07	2.2633	-2.887	1.87
22.866	129.03	2.364	-2.887	1.833
22.924	135.72	2.5226	-2.887	1.859
22.989	141.21	2.7028	-2.887	1.915
23.078	147.34	2.9139	-2.887	1.978
23.134	149.82	3.0355	-2.887	2.027
23.202	150.73	2.7224	-2.887	1.807
23.249	149.91	2.3943	-2.887	1.598
23.336	147.16	2.7477	-2.887	1.868
23.398	145.88	2.8507	-2.887	1.955
23.46	144.87	2.9342	-2.793	2.026
23.539	142.95	3.0191	-2.793	2.113
23.575	140.71	3.0923	-2.274	2.198
23.648	138.46	3.2382	-2.274	2.339
23.718	141.03	3.3196	-2.274	2.354
23.785	141.21	3.35	-1.968	2.373
23.854	137	3.32	-1.968	2.424
23.903	131.69	3.2369	-1.661	2.458
23.969	120.89	3.0548	-1.661	2.528
24.039	109.53	2.834	-1.661	2.588
24.105	100.1	2.6492	-1.755	2.647
24.166	92.6	2.6456	-1.755	2.858
24.231	92.5	2.6451	-1.755	2.86
24.303	92.5	2.6523	-1.755	2.868
24.376	92.41	2.7402	-1.661	2.966
24.457	103.22	2.8154	-1.661	2.728

24.501	111.46	2.8917	-1.661	2.595
24.577	123.17	3.0418	-1.567	2.47
24.65	140.39	3.1616	-1.567	2.252
24.704	153.48	3.1441	-1.567	2.049
24.778	171.42	2.8901	-1.567	1.686
24.829	181.31	2.8467	-1.567	1.57
24.905	193.21	3.1878	-1.567	1.65
24.956	198.71	3.4517	-1.567	1.737
25.032	204.66	3.8457	-1.583	1.879
25.095	199.35	4.1596	-1.583	2.087
25.16	209.42	4.4059	-1.575	2.104
25.227	212.9	4.5535	-1.575	2.139
25.292	212.9	4.6166	-1.567	2.169
25.366	209.14	4.638	-1.567	2.218
25.43	203.19	4.6292	-1.567	2.279
25.504	198.71	4.5619	-1.567	2.296
25.574	196.97	4.4779	-1.567	2.274
25.611	196.6	4.4266	-1.567	2.252
25.677	197.61	4.3526	-1.567	2.203
25.775	200.35	4.3662	-1.567	2.18
25.838	204.29	4.3884	-1.567	2.148
25.876	207.04	4.393	-1.567	2.122
25.94	211.98	4.3757	-1.567	2.064
26.008	213.9	4.3425	-1.567	2.03
26.087	212.25	4.4037	-1.567	2.075
26.14	210.06	4.4514	-1.567	2.119
26.213	208.5	4.7034	-1.567	2.256
26.279	204.56	4.9335	-1.473	2.412
26.344	200.17	5.0856	-1.473	2.541
26.413	196.97	5.1811	-1.473	2.631
26.481	197.01	5.2733	-1.473	2.677
26.548	197.01	4.7341	-1.473	2.403
26.614	197.06	4.4428	-1.473	2.255
26.672	198.71	4.5509	-1.473	2.291
26.758	199.71	4.7058	-1.378	2.357
26.818	199.62	4.7744	-1.394	2.392
26.86	198.89	4.81	-1.41	2.419
26.928	198.34	4.8621	-1.41	2.452
27.001	196.32	4.9298	-1.41	2.511
27.061	197.79	4.9595	-1.378	2.508
27.124	198.25	4.919	-1.378	2.481
27.193	199.16	4.743	-1.378	2.382
27.262	200.17	4.5181	-1.284	2.257
27.325	200.99	4.2827	-1.378	2.131
27.392	203.47	3.9868	-1.284	1.96
27.459	208.87	3.6896	-1.378	1.767
27.514	215.83	3.4721	-1.284	1.609

27.585	222.78	3.3032	-1.284	1.483
27.686	231.94	3.3595	-1.284	1.449
27.717	234.87	3.3345	-1.284	1.42
27.807	240.91	3.3582	-1.284	1.394
27.871	240.64	3.4114	-1.378	1.418
27.907	239.08	3.4008	-1.378	1.423
27.977	232.67	3.3264	-1.378	1.43
28.042	222.6	3.2055	-1.378	1.44
28.109	209.42	3.0739	-1.378	1.468
28.173	198.34	2.9893	-1.473	1.507
28.236	190.74	2.9845	-1.661	1.565
28.304	185.8	2.9886	-1.85	1.609
28.368	186.62	2.9807	-1.85	1.597
28.436	194.49	3.0011	-1.85	1.543
28.536	213.54	3.1204	-1.85	1.461
28.575	219.95	3.209	-1.85	1.459
28.648	233.31	3.4338	-1.85	1.472
28.707	243.93	3.608	-1.85	1.479
28.774	252.26	3.7694	-1.85	1.494
28.846	260.32	3.8966	-1.85	1.497
28.908	269.66	3.8778	-1.85	1.438
28.973	277.53	4.0598	-1.85	1.463
29.039	284.95	4.4312	-1.85	1.555
29.111	290.07	4.0773	-1.85	1.406
29.175	290.44	4.28	-1.912	1.474
29.23	274.97	4.8361	-1.912	1.759
29.296	283.85	5.264	-1.912	1.855
29.362	283.76	5.6407	-1.923	1.988
29.428	282.11	5.8613	-1.933	2.078
29.485	277.9	5.8157	-1.933	2.093
29.567	272.04	6.0703	-1.892	2.232
29.63	269.84	6.1405	-1.85	2.276
29.699	265.08	5.231	-1.904	1.974
29.763	258.76	4.7081	-1.904	1.82
29.824	245.49	4.6095	-1.958	1.878
29.886	244.21	4.4653	-1.958	1.829
29.955	239.9	4.3419	-1.85	1.81
30.017	242.28	4.2516	-2.169	1.755
30.072	231.02	4.1809	-2.169	1.81
30.16	252.81	4.1141	-2.169	1.628
30.211	259.68	4.1463	-2.416	1.597
30.269	265.08	4.102	-2.416	1.548
30.362	270.02	4.1997	-2.416	1.556
30.425	272.22	4.2346	-2.416	1.556
30.482	274.88	4.2394	-2.416	1.542
30.547	277.62	4.2638	-2.416	1.536
30.6	278.26	4.3712	-2.51	1.571

30.688	280.19	4.5805	-2.51	1.635
30.748	278.08	4.6798	-2.51	1.683
30.812	275.06	4.7967	-2.51	1.744
30.876	275.06	4.9746	-2.51	1.809
30.94	271.76	5.1718	-2.51	1.903
30.998	268.83	4.9043	-2.51	1.825
31.058	266.45	4.4159	-2.51	1.658
31.126	263.52	4.474	-2.51	1.698
31.189	260.41	4.4673	-2.51	1.716
31.273	260.41	4.5242	-2.51	1.738
31.324	259.22	4.6438	-2.604	1.792
31.392	261.6	4.8049	-2.604	1.837
31.455	270.67	4.9511	-2.604	1.829
31.523	275.33	5.0991	-2.698	1.852
31.594	277.53	5.2409	-2.698	1.889
31.663	274.97	5.334	-2.698	1.94
31.723	274.05	5.3299	-2.698	1.945
31.795	272.77	5.2384	-2.698	1.921
31.859	270.12	5.1553	-2.698	1.909
31.929	266.55	5.1179	-2.698	1.92
31.994	260.5	5.1179	-2.698	1.965
32.061	253.64	5.1232	-2.698	2.02
32.123	246.86	5.1351	-2.698	2.08
32.192	241	5.0962	-2.793	2.115
32.261	236.88	4.99	-2.793	2.107
32.328	234.32	4.8194	-2.793	2.057
32.394	231.3	4.6467	-2.793	2.009
32.47	227.73	4.5093	-2.793	1.98
32.502	225.53	4.2562	-2.793	1.888
32.566	219.21	3.7576	-2.793	1.714
32.637	214.09	3.6968	-2.793	1.727
32.705	210.06	3.6233	-2.793	1.725
32.769	207.86	3.5931	-2.887	1.729
32.831	204.84	3.5864	-2.965	1.751
32.906	207.36	3.6005	-2.965	1.737
32.967	206.85	3.6474	-2.965	1.764
33.041	214.18	3.7303	-3.075	1.742
33.101	220.22	3.8383	-3.075	1.743
33.157	226.35	3.9152	-3.075	1.73
33.233	236.97	4.0045	-3.075	1.69
33.29	243.29	4.083	-3.075	1.679
33.38	252.35	4.2084	-3.075	1.668
33.424	257.39	4.3027	-3.075	1.672
33.485	260.96	4.4994	-3.075	1.724
33.563	264.07	4.7697	-3.075	1.806
33.618	263.52	4.9827	-3.075	1.891
33.707	259.22	5.2093	-3.075	2.01

33.756	256.2	5.3016	-3.075	2.07
33.836	250.98	5.409	-3.075	2.156
33.899	247.69	5.4515	-3.17	2.201
33.945	244.12	5.4588	-3.17	2.237
34.03	243.11	5.4031	-3.17	2.223
34.087	243.02	5.2811	-3.17	2.174
34.165	239.9	5.1097	-3.17	2.13
34.222	236.33	5.0047	-3.17	2.118
34.275	233.13	4.8848	-3.17	2.096
34.356	228.83	4.6058	-3.17	2.013
34.415	224.98	4.3498	-3.17	1.934
34.472	219.21	4.1233	-3.17	1.881
34.546	208.23	3.8608	-3.17	1.855
34.604	202.82	3.7373	-3.17	1.843
34.686	194.59	3.5256	-3.17	1.812
34.742	190.19	3.4677	-3.17	1.824
34.801	184.88	3.2102	-3.264	1.737
34.9	168.49	2.8572	-3.264	1.696
34.932	162.72	2.8732	-3.264	1.766
34.993	150.09	2.8897	-3.264	1.926
35.069	129.49	2.8606	-3.264	2.21
35.13	96.26	2.7944	-3.437	2.905
35.19	97.17	2.7576	-3.437	2.839
35.267	85.27	2.6656	-3.437	3.128
35.333	79.69	2.6144	-3.547	3.283
35.403	75.93	2.6334	-3.547	3.47
35.468	69.16	2.64	-3.547	3.82
35.538	58.17	2.5411	-3.547	4.372
35.605	49.02	2.414	-3.547	4.93
35.668	43.07	2.3718	-3.547	5.514
35.733	40.14	2.2529	-3.547	5.62
35.796	38.95	2.0198	-3.547	5.193
35.853	37.85	1.8149	-3.547	4.802
35.941	39.59	1.7796	-3.641	4.501
35.997	38.31	1.7833	-3.641	4.662
36.055	55.06	1.8388	-3.452	3.343
36.117	97.45	1.959	-3.452	2.011
36.203	159.06	2.19	-3.547	1.377
36.241	173.89	2.3135	-3.547	1.331
36.317	205.11	2.6142	-3.547	1.275
36.38	218.66	2.8757	-3.547	1.315
36.44	226.17	3.0946	-3.547	1.369
36.514	233.04	3.4686	-3.547	1.489
36.568	238.26	3.7768	-3.547	1.586
36.633	244.3	4.1832	-3.547	1.713
36.709	253.45	4.6503	-3.547	1.835
36.795	259.59	5.0938	-3.547	1.963

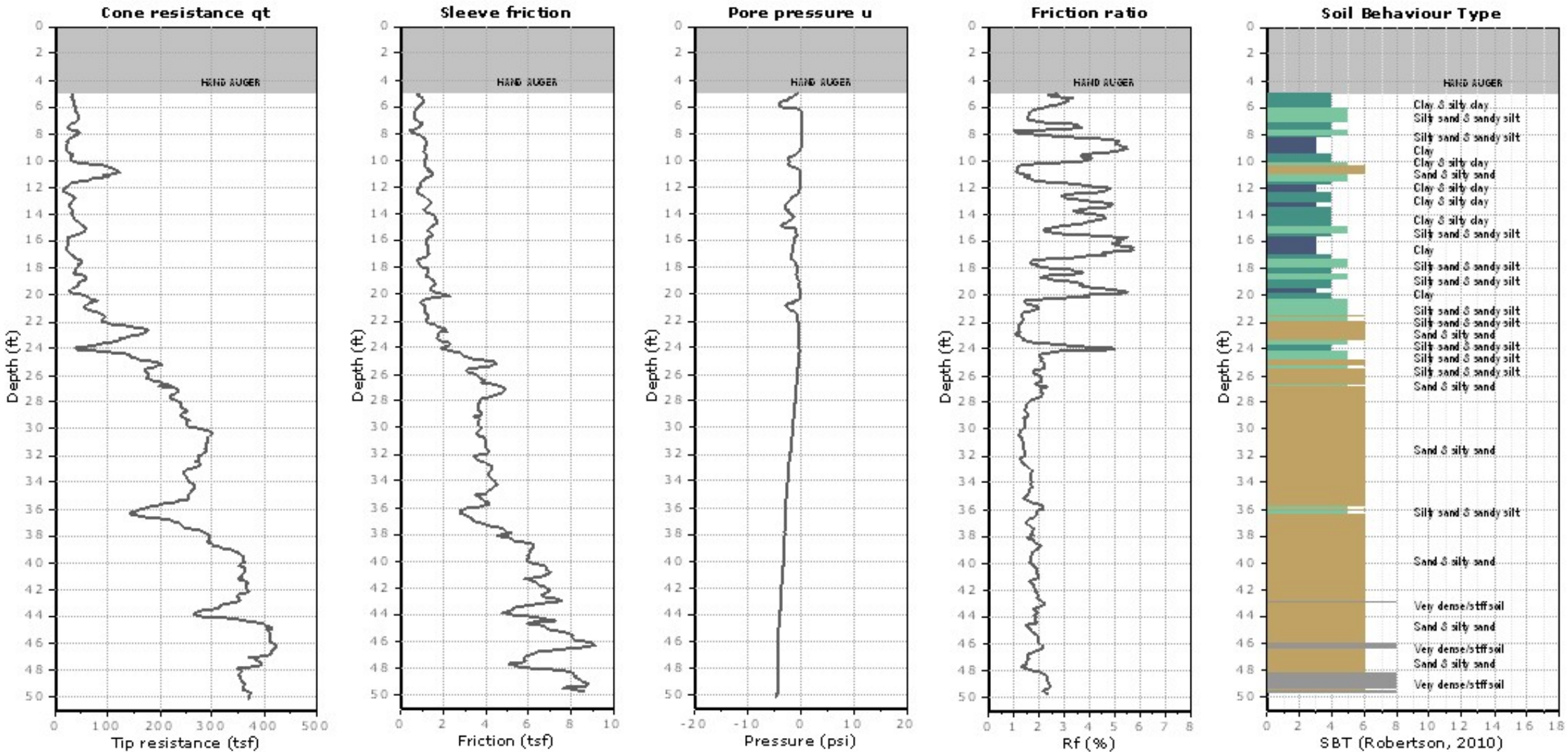
36.85	261.88	5.2606	-3.547	2.009
36.906	262.61	5.3797	-3.547	2.049
36.962	262.61	5.4752	-3.547	2.085
37.046	260.14	5.5874	-3.547	2.148
37.125	260.05	5.6558	-3.547	2.175
37.18	259.86	5.7163	-3.547	2.2
37.235	260.87	5.8534	-3.547	2.244
37.291	262.15	5.7089	-3.547	2.178
37.37	262.97	5.0039	-3.547	1.903
37.434	260.59	5.2969	-3.547	2.033
37.503	254	5.524	-3.547	2.175
37.567	250.52	5.6446	-3.547	2.254
37.626	240.82	5.7103	-3.547	2.372
37.696	235.78	5.7593	-3.547	2.443
37.761	237.8	5.7961	-3.547	2.438
37.825	238.35	5.8668	-3.547	2.462
37.889	239.45	6.0124	-3.547	2.512
37.957	241	6.1178	-3.547	2.539
38.025	242.92	6.1545	-3.547	2.534
38.092	245.12	6.1582	-3.547	2.513
38.167	248.88	6.2226	-3.547	2.501
38.229	251.99	6.2901	-3.547	2.497
38.303	255.28	6.3781	-3.547	2.499
38.367	257.02	6.4524	-3.547	2.511
38.435	259.86	6.5277	-3.547	2.512
38.471	260.87	6.5817	-3.547	2.523
38.567	264.9	6.7856	-3.452	2.562
38.637	268.28	5.9224	-3.547	2.208
38.706	271.95	5.9402	-3.547	2.185
38.743	274.05	6.082	-3.547	2.22
38.811	277.17	6.297	-3.547	2.272
38.877	279.18	6.4722	-3.452	2.319
38.942	276.71	6.6342	-3.531	2.398
39.002	278.63	6.7249	-3.531	2.414
39.071	278.08	6.7709	-3.531	2.435
39.131	282.11	6.8433	-3.547	2.426
39.2	284.67	7.045	-3.547	2.475
39.262	285.59	7.2626	-3.547	2.543
39.324	285.59	7.4126	-3.547	2.596
39.395	286.78	7.4964	-3.547	2.614
39.46	287.88	7.5044	-3.547	2.607
39.525	288.43	7.5187	-3.547	2.607
39.588	288.61	7.5635	-3.547	2.621
39.655	289.62	7.5936	-3.547	2.622
39.747	294.74	7.1083	-3.547	2.412
39.784	297.22	6.5111	-3.547	2.191
39.877	303.53	6.6437	-3.547	2.189

39.944	305.91	6.7962	-3.547	2.222
40.007	308.29	6.9224	-3.547	2.246
40.072	311.77	7.0286	-3.641	2.255
40.143	300.69	7.1162	-3.641	2.367
40.203	317.63	7.1572	-3.641	2.254
40.268	327.15	7.17	-3.735	2.192
40.332	335.58	7.1809	-3.735	2.14
40.399	339.6	7.143	-3.735	2.104
40.461	341.89	7.0368	-3.735	2.059
40.528	342.35	6.8851	-3.735	2.011
40.595	343.54	6.7323	-3.735	1.96
40.655	343.91	6.6006	-3.735	1.92
40.719	342.99	6.4515	-3.735	1.881
40.784	341.8	6.3317	-3.735	1.853
40.85	340.43	6.2677	-3.735	1.841
40.915	339.24	6.2254	-3.735	1.835
40.981	337.22	6.1745	-3.735	1.831
41.049	334.75	5.7027	-3.735	1.704
41.115	331.64	5.3599	-3.735	1.616
41.177	327.89	5.2939	-3.735	1.615
41.25	323.58	5.1531	-3.829	1.593
41.323	319.37	4.9647	-3.829	1.555
41.362	302.71	4.8446	-3.845	1.601
41.432	304.81	4.6483	-3.845	1.525
41.49	304.63	4.5835	-3.845	1.505
41.554	305.55	4.5841	-3.829	1.501
41.651	302.25	4.2018	-3.924	1.39
41.715	296.85	4.0777	-3.924	1.374
41.779	292.73	4.0468	-3.924	1.383
41.844	287.24	3.9533	-3.924	1.377
41.91	280.19	3.82	-3.924	1.364
41.972	264.62	3.6552	-4.018	1.382
42.015	241.83	3.5383	-4.018	1.463
42.112	231.11	3.2332	-4.018	1.399
42.174	220.59	3.0716	-4.112	1.393
42.237	206.85	2.9386	-4.112	1.421
42.302	191.11	2.8013	-4.112	1.466
42.368	174.44	2.6562	-4.112	1.523
42.433	156.32	2.5063	-4.112	1.604
42.497	138.28	2.344	-4.112	1.696
42.561	121.34	2.2062	-4.112	1.819
42.626	103.49	2.1221	-4.112	2.052
42.697	89.03	2.0055	-4.112	2.254
42.763	74.38	1.8871	-4.112	2.539
42.801	69.07	1.8303	-4.112	2.652
42.893	59.91	1.6804	-4.206	2.808
42.963	60.19	1.7222	-4.206	2.864

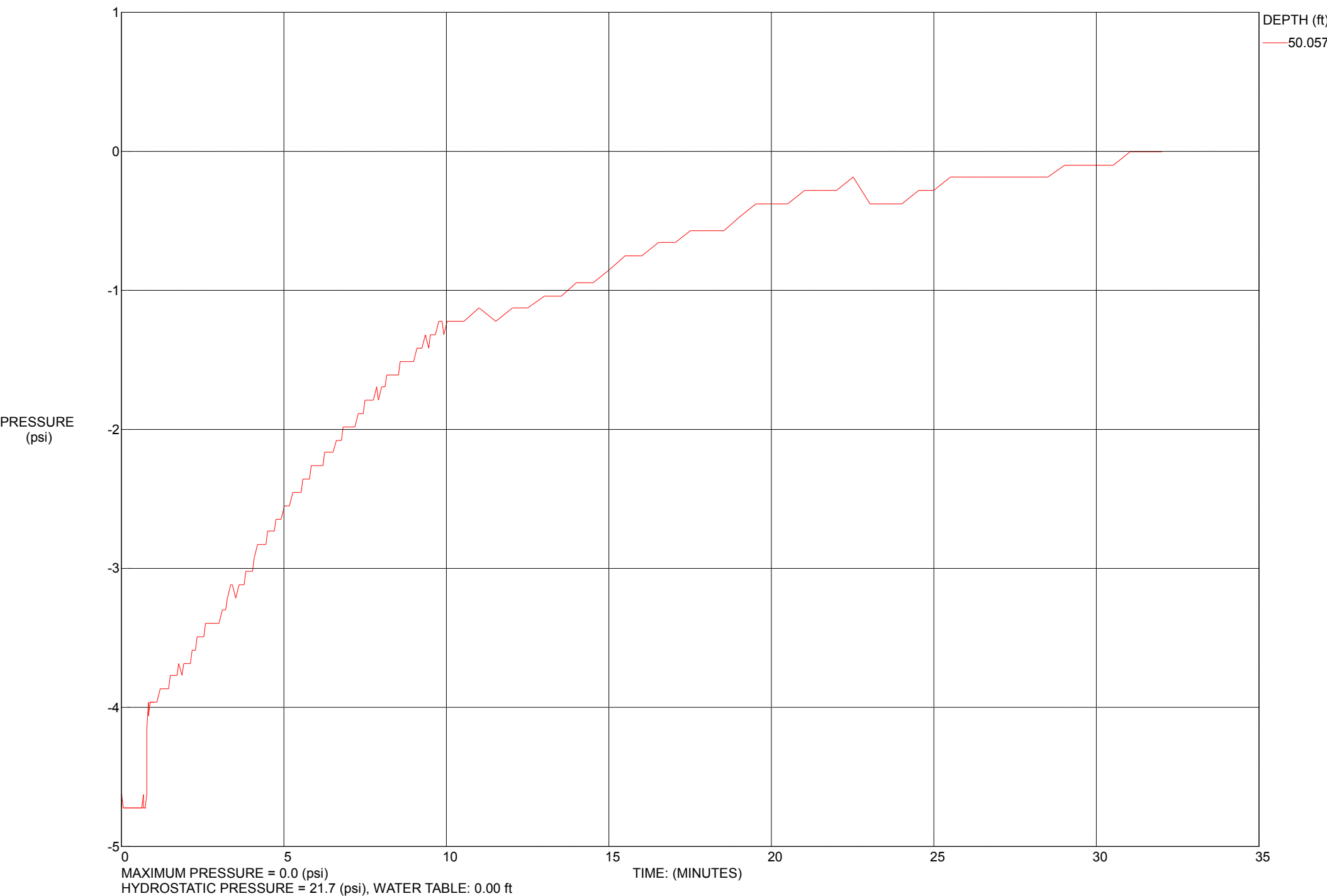
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43.102	59.73	1.7505	-4.206	2.934
43.139	56.71	1.7561	-4.206	3.1
43.2	48.74	1.7598	-4.206	3.615
43.269	48.97	1.7614	-4.206	3.601
43.334	47.64	1.7527	-4.206	3.684
43.4	49.2	1.755	-4.206	3.572
43.46	51.67	1.7758	-4.301	3.441
43.534	57.44	1.7798	-4.301	3.102
43.606	64.03	1.808	-4.301	2.826
43.668	75.66	1.8915	-4.301	2.502
43.736	104.31	2.0054	-4.206	1.924
43.809	135.9	2.296	-4.206	1.69
43.869	150.27	2.6071	-4.206	1.736
43.937	147.25	2.6373	-4.206	1.792
44.002	135.99	2.7468	-4.206	2.021
44.071	132.15	2.9194	-4.206	2.21
44.14	142.31	3.1361	-4.112	2.205
44.2	166.3	3.2294	-4.112	1.943
44.265	194.13	2.9124	-4.206	1.501
44.329	209.6	2.3112	-4.301	1.103
44.406	224.61	2.409	-4.301	1.073
44.463	250.62	2.5457	-4.301	1.016
44.534	287.33	2.6909	-4.301	0.937
44.598	318.55	2.9864	-4.269	0.938
44.654	312.69	3.1924	-4.269	1.021
44.718	336.67	3.3054	-4.269	0.982
44.781	337.22	3.2688	-4.301	0.969
44.847	336.31	3.1433	-4.206	0.935
44.913	329.99	3.4008	-4.206	1.031
44.978	329.35	3.5694	-4.206	1.084
45.043	333.93	3.7389	-4.206	1.12
45.104	333.84	3.9258	-3.971	1.176
45.185	348.67	4.1089	-3.971	1.179
45.24	358.74	4.2408	-3.971	1.182
45.3	363.13	4.3938	-3.735	1.21
45.36	366.43	4.4003	-3.735	1.201
45.44	368.53	4.4082	-3.735	1.196
45.505	365.24	4.4261	-3.735	1.212
45.558	360.57	4.3859	-3.735	1.217
45.652	359.2	4.406	-3.735	1.227
45.708	357.18	4.4148	-3.641	1.236
45.77	347.84	4.4464	-3.641	1.278
45.823	339.7	4.5124	-3.641	1.329
45.912	327.43	4.7637	-3.641	1.455
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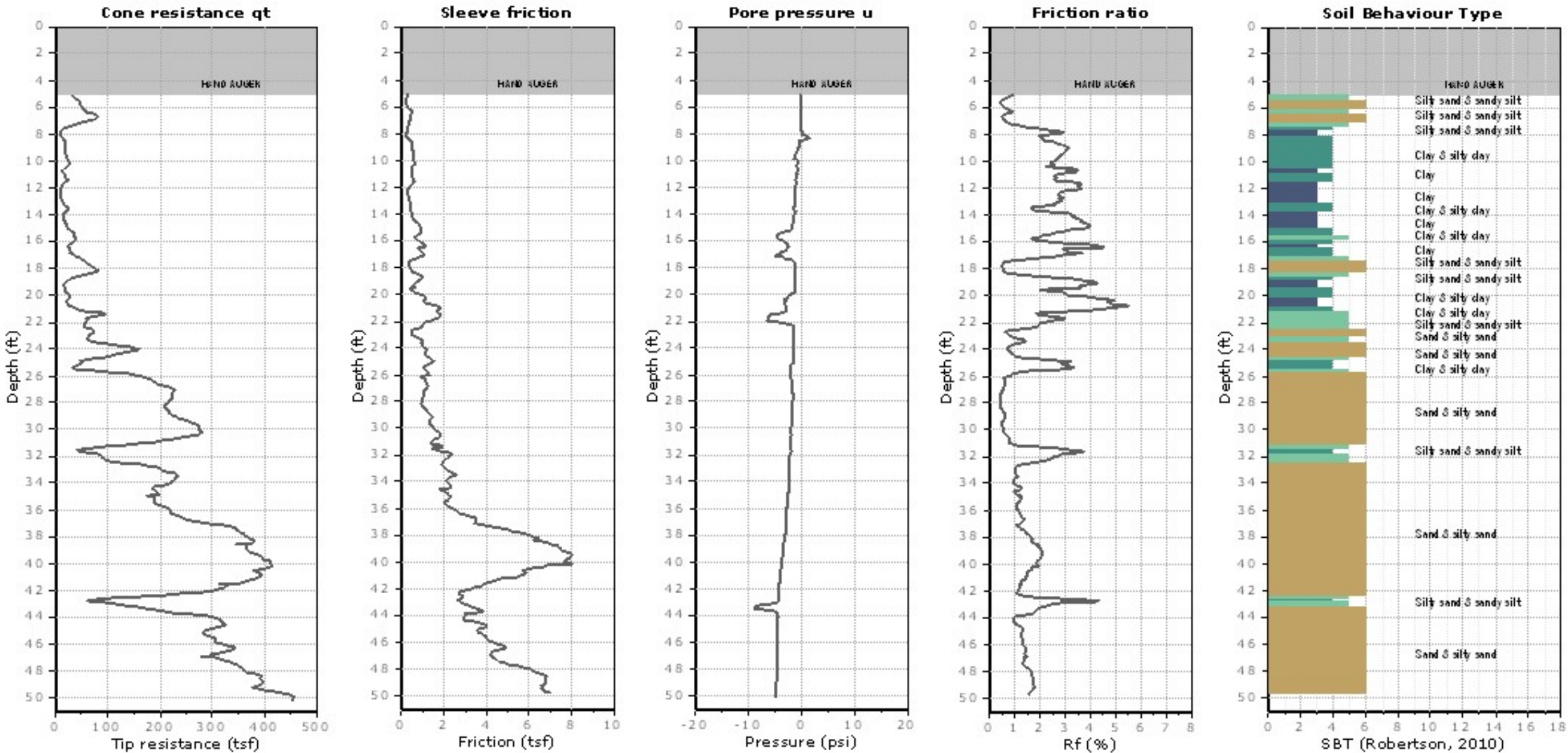
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46.171	291.26	5.6636	-3.641	1.945
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46.297	284.95	6.3747	-3.609	2.238
46.361	283.67	6.5825	-3.609	2.321
46.429	280.92	6.7607	-3.609	2.407
46.492	282.38	6.913	-3.547	2.449
46.554	282.57	7.0721	-3.547	2.503
46.636	281.1	7.2447	-3.547	2.578
46.705	281.19	7.3282	-3.547	2.607
46.762	280.1	7.35	-3.547	2.625
46.828	279.73	7.3589	-3.547	2.631
46.886	280.05	7.3815	-3.547	2.636
46.941	279.27	7.406	-3.547	2.652
47.011	280	7.4393	-3.547	2.657
47.083	280.05	7.4471	-3.547	2.66
47.153	280.1	7.4634	-3.547	2.665
47.204	281.19	7.4999	-3.547	2.668
47.279	282.57	7.5725	-3.547	2.68
47.335	283.21	7.666	-3.547	2.707
47.41	285.77	7.8242	-3.547	2.738
47.467	286.96	7.9191	-3.547	2.76
47.539	287.14	7.9772	-3.547	2.779
47.6	287.05	7.9664	-3.547	2.776
47.66	288.15	7.6183	-3.547	2.644
47.74	290.26	6.9124	-3.547	2.382
47.806	294.19	7.0821	-3.547	2.408
47.861	301.24	7.2518	-3.547	2.408
47.923	312.23	7.3954	-3.547	2.369
47.989	325.41	7.4394	-3.594	2.286
48.069	321.57	7.3862	-3.594	2.297
48.127	353.25	7.3532	-3.594	2.082
48.193	367.07	7.3014	-3.641	1.989
48.255	377.23	7.2158	-3.641	1.913
48.32	384.19	7.0729	-3.641	1.841
48.382	391.06	6.9742	-3.641	1.784
48.447	394.99	6.9674	-3.641	1.764
48.517	398.84	6.9633	-3.641	1.746
48.583	402.41	6.964	-3.641	1.731
48.643	404.42	7.0227	-3.641	1.737
48.708	408.09	7.2055	-3.641	1.766
48.776	409.37	7.4499	-3.641	1.82
48.84	410.92	7.5751	-3.641	1.844
48.928	407.54	7.7498	-3.641	1.902
48.997	406.16	7.866	-3.547	1.937
49.064	403.23	7.944	-3.641	1.97
49.128	398.93	7.9266	-3.641	1.987

49.19	396	7.8238	-3.641	1.976
49.257	393.16	7.6532	-3.641	1.947
49.322	393.07	7.5348	-3.641	1.917
49.387	394.35	7.5002	-3.641	1.902
49.448	398.66	7.4714	-3.641	1.874
49.512	400.12	7.4329	-3.641	1.858
49.579	399.3	7.5006	-3.641	1.879
49.642	395.45	7.6707	-3.641	1.94
49.708	389.68	7.8931	-3.641	2.026
49.774	383.27	0	-3.641	0
49.838	378.33	0	-3.641	0
49.9	372.84	0	-3.641	0
49.974	365.15	0	-3.735	0
50.031	358.37	0	-3.735	0
50.093	346.2	0	-3.641	0



TEST ID: CPT-3





Depth (ft)	Tip Stress (tsf)	Sleeve Stress (tsf)	Pore Pressure (psi)	F.Ratio (%)
0	0	0.0153	0	0
0.068	6.69	0.0155	0	0.232
0.167	9.34	0.0217	0	0.233
0.241	11.18	0.0247	0	0.221
0.286	12.09	0.0318	0	0.263
0.375	13.83	0.0418	0	0.302
0.42	14.56	0.0388	0	0.267
0.464	15.3	0.0364	0	0.238
0.55	16.76	0.0364	0	0.217
0.601	17.4	0.0364	0	0.209
0.688	18.14	0.0364	0	0.201
0.723	18.41	0.0364	0	0.198
0.809	18.41	0.0364	0	0.198
0.856	18.14	0.0364	0	0.201
0.931	18.14	0.0384	0	0.211
1.019	17.86	0.0384	0	0.215
1.061	17.59	0.0384	0	0.218
1.117	17.5	0.0387	0	0.221
1.214	17.31	0.0461	0	0.266
1.272	17.04	0.0512	0	0.301
1.361	16.31	0.0523	0	0.321
1.397	13.92	0.0518	0	0.372
1.467	14.93	0.0489	0	0.327
1.511	14.75	0.0454	0	0.308
1.595	14.11	0.0493	0	0.349
1.648	13.92	0.0476	0	0.342
1.741	13.65	0.0542	0	0.397
1.784	13.88	0.0547	0	0.394
1.881	13.83	0.0527	-0.094	0.381
1.927	14.11	0.0522	0	0.37
1.978	14.84	0.0532	-0.094	0.358
2.064	16.95	0.0605	0	0.357
2.113	17.95	0.0632	0	0.352
2.168	18.96	0.0673	0	0.355
2.234	19.83	0.0745	0	0.376
2.32	20.7	0.0843	0	0.407
2.368	21.16	0.0879	0	0.415
2.432	20.98	0.0838	-0.094	0.4
2.503	20.7	0.0768	-0.094	0.371
2.591	18.05	0.0646	-0.094	0.358
2.654	14.56	0.0499	-0.094	0.343
2.716	11.45	0.0342	-0.094	0.298
2.78	10.63	0.0232	0	0.218
2.841	10.63	0.0193	0	0.181

2.907	10.53	0.0192	0	0.183
2.963	10.08	0.0187	0	0.186
3.045	8.98	0.0194	0	0.217
3.107	8.34	0.0224	0	0.269
3.165	7.79	0.0253	0	0.325
3.227	7.42	0.0292	-0.094	0.393
3.292	6.87	0.0342	-0.094	0.497
3.353	6.32	0.0419	-0.094	0.664
3.417	5.68	0.0509	-0.094	0.896
3.481	5.59	0.0531	-0.094	0.951
3.575	5.13	0.0485	-0.094	0.945
3.633	5.13	0.0479	-0.094	0.935
3.697	5.13	0.046	-0.094	0.896
3.754	5.13	0.0441	-0.094	0.86
3.817	5.4	0.0441	-0.094	0.816
3.875	5.68	0.0441	-0.094	0.777
3.937	5.68	0.0442	-0.094	0.779
4.018	5.86	0.0528	-0.094	0.9
4.082	5.95	0.0852	-0.094	1.431
4.142	6.41	0.13	-0.094	2.028
4.207	6.87	0.1773	0	2.581
4.286	9.25	0.2231	0	2.411
4.354	13.19	0.2698	-0.094	2.046
4.41	17.31	0.313	-0.094	1.808
4.475	20.61	0.3511	-0.094	1.704
4.538	22.9	0.3783	-0.094	1.652
4.603	24.64	0.3727	-0.094	1.513
4.682	26.29	0.3508	-0.094	1.335
4.736	27.75	0.3428	-0.189	1.235
4.797	29.04	0.3356	-0.094	1.156
4.87	30.14	0.3356	-0.283	1.114
4.927	27.66	0.3354	-0.094	1.212
4.993	30.96	0.3268	-0.267	1.056
5.063	32.33	0.3064	-0.252	0.948
5.134	32.79	0.2836	-0.283	0.865
5.223	34.26	0.2614	-0.283	0.763
5.264	36	0.2491	-0.283	0.692
5.353	39.2	0.2184	-0.283	0.557
5.397	40.4	0.2041	-0.283	0.505
5.487	42.69	0.1975	-0.283	0.463
5.519	43.51	0.1975	-0.283	0.454
5.612	44.33	0.203	-0.189	0.458
5.657	44.61	0.2086	-0.189	0.468
5.745	44.98	0.2193	-0.189	0.488
5.787	45.62	0.2244	-0.283	0.492
5.873	47.08	0.2321	-0.283	0.493
5.921	48.18	0.2427	-0.283	0.504

5.999	50.47	0.2772	-0.283	0.549
6.044	51.85	0.3198	-0.283	0.617
6.126	54.69	0.4126	-0.377	0.755
6.172	56.24	0.4519	-0.377	0.804
6.252	58.26	0.5053	-0.377	0.867
6.341	58.53	0.5284	-0.377	0.903
6.378	59.45	0.5264	-0.377	0.885
6.451	66.68	0.5124	-0.377	0.768
6.504	71.81	0.4929	-0.377	0.686
6.574	78.13	0.4369	-0.283	0.559
6.667	80.24	0.3898	-0.283	0.486
6.703	80.06	0.387	-0.283	0.483
6.78	78.13	0.3953	-0.283	0.506
6.858	74.65	0.4097	-0.283	0.549
6.902	72.27	0.4093	-0.283	0.566
6.977	66.78	0.3907	-0.283	0.585
7.053	59.45	0.3734	-0.283	0.628
7.093	55.51	0.3606	-0.283	0.65
7.174	48.09	0.3476	-0.283	0.723
7.244	41.13	0.3374	-0.283	0.82
7.315	34.44	0.3378	-0.283	0.981
7.366	31.14	0.3597	-0.283	1.155
7.437	24.92	0.3439	-0.283	1.38
7.506	19.24	0.2896	-0.283	1.506
7.553	16.76	0.3053	-0.283	1.822
7.628	13.28	0.2959	-0.283	2.229
7.722	11.36	0.2734	-0.283	2.408
7.752	10.44	0.2649	-0.016	2.537
7.844	8.34	0.2478	-0.016	2.973
7.888	8.24	0.2341	-0.016	2.84
7.96	8.52	0.2087	0.189	2.449
8.049	9.43	0.2211	0.283	2.343
8.088	9.98	0.2111	0.377	2.113
8.159	10.99	0.213	0.754	1.936
8.21	11.27	0.2257	1.226	2
8.28	12.46	0.2613	1.509	2.094
8.365	14.56	0.3075	1.415	2.109
8.402	15.57	0.328	0.849	2.105
8.471	17.31	0.375	-0.094	2.166
8.561	17.68	0.4359	-0.472	2.466
8.596	17.59	0.4601	-0.472	2.617
8.681	17.95	0.4915	-0.472	2.739
8.759	18.05	0.5135	-0.566	2.847
8.796	17.95	0.5227	-0.566	2.913
8.885	17.77	0.5418	-0.566	3.05
8.961	17.59	0.5499	-0.566	3.128
9.001	17.59	0.5529	-0.66	3.145

9.083	17.68	0.5533	-0.66	3.131
9.16	18.23	0.5523	-0.66	3.031
9.199	18.32	0.5513	-0.754	3.011
9.264	18.59	0.5543	-0.849	2.983
9.331	18.87	0.5624	-0.849	2.982
9.384	19.24	0.5671	-0.943	2.95
9.456	19.51	0.5668	-1.038	2.907
9.52	19.79	0.5638	-1.132	2.852
9.587	20.34	0.5688	-1.32	2.8
9.647	20.98	0.5796	-1.226	2.766
9.713	21.71	0.593	-1.32	2.734
9.78	22.63	0.6045	-1.415	2.674
9.844	22.99	0.6083	-1.604	2.648
9.91	22.9	0.6135	-1.038	2.681
9.979	23.27	0.6119	-0.849	2.632
10.084	25.19	0.6047	-0.754	2.402
10.126	25.74	0.6104	-0.849	2.373
10.192	25.74	0.6282	-0.849	2.442
10.261	25.37	0.651	-0.849	2.567
10.343	23.91	0.5378	-0.943	2.251
10.376	22.72	0.5099	-0.849	2.246
10.451	20.61	0.5314	-1.038	2.58
10.519	17.95	0.535	-0.849	2.982
10.606	15.48	0.522	-0.849	3.375
10.636	14.56	0.5113	-0.912	3.513
10.713	13.47	0.4725	-0.912	3.512
10.788	14.56	0.4437	-0.912	3.049
10.833	13.1	0.4434	-0.943	3.389
10.911	14.56	0.4438	-0.943	3.05
10.976	16.31	0.4421	-0.849	2.713
11.064	17.4	0.4402	-0.849	2.531
11.097	17.5	0.4434	-0.943	2.536
11.169	18.14	0.4644	-0.943	2.562
11.243	19.88	0.5273	-0.943	2.655
11.32	22.44	0.5907	-1.038	2.634
11.357	23.45	0.6018	-1.038	2.568
11.432	23.36	0.6158	-1.226	2.638
11.516	21.53	0.6297	-1.132	2.927
11.585	18.78	0.6159	-1.132	3.283
11.652	16.58	0.5881	-1.132	3.55
11.69	15.76	0.5645	-1.132	3.587
11.758	14.38	0.5153	-1.132	3.587
11.839	13.01	0.4455	-1.132	3.429
11.906	11.36	0.3998	-1.226	3.525
11.943	10.81	0.3799	-1.226	3.521
12.009	9.8	0.3582	-1.226	3.661
12.09	9.16	0.3162	-1.226	3.459

12.157	9.07	0.2861	-1.226	3.161
12.227	8.98	0.2624	-1.226	2.929
12.292	9.25	0.2625	-1.226	2.843
12.367	9.53	0.2642	-1.226	2.779
12.407	9.53	0.2594	-1.226	2.728
12.478	9.8	0.2667	-1.226	2.726
12.541	10.17	0.2779	-1.226	2.738
12.607	10.72	0.2985	-1.226	2.789
12.686	11.18	0.3288	-1.226	2.947
12.766	11.54	0.3268	-1.32	2.836
12.831	11.63	0.3176	-1.32	2.734
12.861	11.82	0.3204	-1.32	2.716
12.93	12.37	0.3536	-1.32	2.864
13	14.11	0.3867	-1.32	2.745
13.079	16.03	0.4193	-1.32	2.619
13.15	16.58	0.4206	-1.32	2.54
13.215	16.03	0.4141	-1.32	2.586
13.282	16.85	0.4168	-1.32	2.476
13.347	18.87	0.4146	-1.226	2.2
13.387	20.34	0.4031	-1.226	1.984
13.456	23.27	0.404	-1.509	1.738
13.534	25.1	0.4057	-1.462	1.618
13.599	24.18	0.3974	-1.886	1.645
13.677	22.08	0.4031	-1.415	1.828
13.749	18.96	0.4101	-1.226	2.165
13.785	17.59	0.4294	-1.132	2.444
13.851	15.76	0.4594	-1.399	2.92
13.938	15.76	0.4989	-1.399	3.17
14.003	15.76	0.52	-1.399	3.304
14.061	15.76	0.5292	-1.509	3.364
14.122	16.21	0.5289	-1.509	3.266
14.202	15.94	0.5277	-1.604	3.316
14.263	15.94	0.5359	-1.698	3.367
14.329	15.94	0.557	-1.698	3.5
14.399	15.94	0.5855	-1.698	3.679
14.45	16.49	0.6032	-1.698	3.664
14.519	17.86	0.6401	-1.698	3.589
14.578	18.78	0.6876	-1.698	3.667
14.665	19.79	0.7686	-1.698	3.89
14.715	20.52	0.8068	-1.698	3.937
14.771	21.16	0.8342	-1.792	3.947
14.837	21.8	0.859	-1.792	3.945
14.895	22.35	0.8843	-1.792	3.961
14.963	23.36	0.8945	-1.792	3.834
15.039	25.37	0.8925	-1.886	3.521
15.098	27.66	0.8982	-1.886	3.25
15.177	29.95	0.9165	-1.981	3.063

15.248	32.88	0.928	-2.264	2.825
15.293	34.62	0.9252	-2.641	2.675
15.383	35.72	0.8943	-3.584	2.507
15.448	35.54	0.8413	-4.15	2.371
15.505	35.77	0.7885	-4.433	2.208
15.566	35.36	0.7341	-4.621	2.08
15.621	35.82	0.6965	-4.81	1.948
15.701	37.46	0.65	-4.716	1.738
15.755	37.56	0.6272	-4.716	1.673
15.814	36.55	0.6307	-4.527	1.729
15.91	35.63	0.7176	-3.961	2.017
15.949	34.9	0.7717	-3.773	2.215
16.012	33.07	0.8591	-3.395	2.602
16.106	29.22	0.9604	-3.113	3.292
16.171	26.75	0.9967	-2.83	3.732
16.236	25.28	1.0374	-2.735	4.11
16.307	24.73	1.0847	-2.641	4.393
16.339	24.55	1.1062	-2.547	4.513
16.441	24.92	1.1232	-2.452	4.515
16.481	25.56	0.9416	-2.547	3.69
16.553	26.47	0.7646	-2.641	2.893
16.624	27.3	0.8373	-2.83	3.072
16.699	28.95	0.8991	-3.018	3.111
16.741	29.86	0.9315	-3.113	3.124
16.811	31.42	0.9649	-3.898	3.077
16.864	27.11	0.9904	-3.898	3.66
16.936	35.54	1.0547	-3.898	2.972
17.005	37.92	1.077	-4.81	2.845
17.092	40.85	1.0202	-5.093	2.502
17.127	41.68	0.9771	-4.527	2.348
17.217	44.98	0.8205	-3.301	1.826
17.294	48.82	0.659	-3.207	1.351
17.333	50.75	0.5845	-3.018	1.153
17.409	53.86	0.456	-1.792	0.847
17.49	56.15	0.3516	-1.509	0.626
17.534	57.16	0.326	-1.509	0.571
17.603	59.17	0.314	-1.415	0.531
17.676	61.65	0.3111	-1.415	0.505
17.721	63.11	0.3178	-1.415	0.504
17.793	66.78	0.3435	-1.415	0.515
17.869	70.53	0.363	-1.415	0.515
17.913	72.36	0.3787	-1.415	0.523
17.983	75.84	0.4032	-1.415	0.532
18.065	78.5	0.4335	-1.415	0.552
18.145	79.42	0.4495	-1.415	0.566
18.183	79.05	0.4525	-1.415	0.573
18.248	76.67	0.4539	-1.415	0.592

18.336	72.55	0.4912	-1.415	0.677
18.407	66.41	0.5816	-1.415	0.876
18.442	62.47	0.6351	-1.415	1.017
18.519	53.31	0.7792	-1.415	1.462
18.596	42.69	0.8898	-1.415	2.086
18.665	34.26	0.9437	-1.415	2.756
18.704	31.24	0.9681	-1.415	3.102
18.785	27.94	0.9676	-1.415	3.466
18.859	24.64	0.9241	-1.415	3.754
18.928	21.53	0.8768	-1.415	4.077
18.972	20.61	0.8542	-1.415	4.149
19.05	18.41	0.7881	-1.415	4.285
19.096	17.59	0.7481	-1.415	4.258
19.174	16.85	0.6531	-1.415	3.88
19.241	16.85	0.6018	-1.415	3.575
19.332	16.85	0.6014	-1.415	3.573
19.367	16.85	0.6114	-1.415	3.632
19.448	17.77	0.635	-1.415	3.578
19.526	18.5	0.4793	-1.415	2.593
19.558	18.59	0.3707	-1.415	1.996
19.652	18.96	0.4488	-1.32	2.369
19.687	18.78	0.4863	-1.32	2.592
19.771	19.97	0.5936	-1.226	2.975
19.843	22.99	0.6883	-1.226	2.996
19.905	24.73	0.7534	-1.871	3.05
19.978	27.21	0.835	-1.871	3.072
20.02	27.3	0.91	-2.264	3.338
20.095	27.02	1.0413	-2.452	3.859
20.15	27.53	1.1019	-2.748	4.009
20.213	27.75	1.125	-2.748	4.059
20.31	24.27	1.1211	-2.748	4.626
20.349	22.63	1.1165	-3.301	4.945
20.412	22.63	1.098	-2.978	4.862
20.479	22.63	1.0502	-3.301	4.651
20.545	22.63	1.0841	-3.207	4.802
20.617	23.45	1.1485	-3.113	4.907
20.687	24.09	1.2135	-3.113	5.046
20.759	25.37	1.3879	-3.113	5.48
20.823	28.3	1.4439	-3.018	5.109
20.898	32.06	1.6448	-3.018	5.137
20.96	38.01	1.7919	-3.018	4.719
21.024	43.69	1.814	-2.924	4.156
21.098	44.98	1.7543	-2.924	3.904
21.167	51.3	1.7035	-2.924	3.324
21.196	59.08	1.6865	-2.924	2.857
21.269	79.42	1.6817	-3.018	2.119
21.334	94.26	1.7295	-3.301	1.836

21.405	94.53	1.796	-4.244	1.901
21.469	88.39	1.8375	-5.187	2.081
21.542	79.6	1.8461	-5.942	2.322
21.591	74.75	1.84	-6.13	2.465
21.655	65.77	1.8285	-6.225	2.784
21.719	59.72	1.8031	-6.225	3.024
21.788	59.63	1.7056	-6.225	2.865
21.852	60.91	1.5825	-6.225	2.602
21.92	60	1.4165	-6.602	2.365
21.99	57.62	1.2204	-6.414	2.122
22.071	55.23	1.1092	-5.376	2.011
22.132	53.4	1.0596	-3.584	1.986
22.206	53.4	1.037	-2.358	1.943
22.276	54.78	1.0195	-1.698	1.862
22.339	56.7	0.9977	-1.698	1.76
22.383	58.62	0.9767	-1.698	1.667
22.456	64.03	0.9257	-1.698	1.446
22.52	68.33	0.849	-1.698	1.243
22.587	71.26	0.7451	-1.604	1.046
22.655	72.36	0.5657	-1.509	0.782
22.724	72.18	0.4495	-1.509	0.623
22.793	70.99	0.4577	-1.509	0.645
22.839	70.26	0.4655	-1.509	0.663
22.935	67.88	0.4717	-1.509	0.695
22.966	62.47	0.4783	-1.557	0.766
23.041	62.93	0.5216	-1.557	0.829
23.117	62.38	0.5957	-1.557	0.955
23.195	61.56	0.6947	-1.604	1.129
23.262	61.56	0.8027	-1.604	1.305
23.304	62.01	0.8584	-1.604	1.385
23.368	63.48	0.92	-1.698	1.45
23.434	66.23	0.9549	-1.698	1.442
23.538	75.84	0.9758	-1.698	1.287
23.566	82.44	0.9785	-1.698	1.187
23.639	96.55	0.9514	-1.698	0.986
23.694	109	0.9428	-1.698	0.865
23.764	122.19	0.9697	-1.604	0.794
23.827	135.93	0.9618	-1.604	0.708
23.893	145.92	1.0173	-1.604	0.697
23.955	152.61	1.0762	-1.604	0.705
24.027	159.93	1.1398	-1.604	0.713
24.095	158.28	1.184	-1.604	0.748
24.156	149.67	1.2021	-1.604	0.803
24.218	143.17	1.1863	-1.604	0.829
24.31	132.18	1.1218	-1.604	0.849
24.363	123.75	1.0899	-1.604	0.881
24.419	116.97	1.092	-1.604	0.934

24.484	110.56	1.0923	-1.604	0.988
24.542	102.87	1.0948	-1.604	1.064
24.636	88.76	1.2333	-1.604	1.39
24.698	77.77	1.3482	-1.604	1.734
24.768	65.31	1.4108	-1.604	2.161
24.832	52.58	1.4477	-1.604	2.755
24.899	45.8	1.4781	-1.604	3.229
24.957	47.54	1.4876	-1.604	3.131
25.001	48.64	1.4423	-1.509	2.967
25.07	48.64	1.3794	-1.604	2.837
25.134	49.28	1.4356	-1.698	2.914
25.202	46.17	1.3619	-1.879	2.952
25.263	39.66	1.2386	-2.016	3.125
25.331	34.35	1.1184	-2.154	3.259
25.402	31.6	1.0523	-2.154	3.333
25.466	32.24	1.0397	-2.154	3.228
25.531	41.86	1.0532	-2.075	2.518
25.594	59.27	1.0805	-2.075	1.824
25.662	82.17	1.1202	-2.075	1.364
25.722	105.25	1.1714	-2.075	1.113
25.792	123.39	1.2141	-2.075	0.984
25.86	138.13	1.2349	-2.075	0.894
25.929	149.4	1.2432	-2.075	0.832
25.999	158.19	1.2923	-2.075	0.817
26.063	165.25	1.1975	-2.075	0.725
26.128	171.02	0.945	-2.075	0.553
26.201	176.51	1.0172	-1.981	0.576
26.252	181.28	1.0558	-1.981	0.583
26.323	185.4	1.0956	-1.981	0.591
26.389	186.13	1.12	-1.918	0.602
26.466	186.86	1.1306	-1.918	0.605
26.524	191.63	1.1434	-1.918	0.597
26.591	195.47	1.1704	-1.886	0.599
26.656	199.87	1.1953	-1.886	0.598
26.725	204.82	1.213	-1.792	0.592
26.782	210.95	1.2212	-1.792	0.579
26.844	216.82	1.2267	-1.792	0.566
26.909	221.49	1.2115	-1.792	0.547
26.974	224.05	1.1916	-1.792	0.532
27.036	225.98	1.164	-1.792	0.515
27.102	225.98	1.1339	-1.792	0.502
27.195	224.24	1.0712	-1.792	0.478
27.254	223.5	1.048	-1.792	0.469
27.316	221.76	1.0307	-1.792	0.465
27.386	221.21	1.0225	-1.792	0.462
27.449	221.4	1.023	-1.698	0.462
27.509	222.22	1.0234	-1.698	0.461

27.57	223.23	1.0241	-1.698	0.459
27.633	222.5	1.0256	-1.698	0.461
27.701	222.5	1.0196	-1.698	0.458
27.788	220.66	1.0144	-1.698	0.46
27.829	220.48	1.0124	-1.698	0.459
27.919	217.92	0.9934	-1.698	0.456
27.983	216.36	0.9881	-1.792	0.457
28.049	213.89	0.9608	-1.792	0.449
28.109	211.78	0.9558	-1.792	0.451
28.174	209.86	0.9478	-1.792	0.452
28.229	208.39	0.9382	-1.792	0.45
28.296	208.02	0.9543	-1.792	0.459
28.355	208.94	0.9784	-1.792	0.468
28.417	210.4	1.0205	-1.792	0.485
28.481	211.6	1.0688	-1.792	0.505
28.58	215.35	1.1332	-1.792	0.526
28.615	215.72	1.1563	-1.792	0.536
28.694	215.53	1.1976	-1.792	0.556
28.77	215.35	1.2408	-1.792	0.576
28.807	216.18	1.2735	-1.886	0.589
29.016	223.41	1.3966	-1.886	0.625
29.09	231.47	1.4218	-1.886	0.614
29.142	235.59	1.4305	-1.886	0.607
29.208	241.92	1.4272	-1.886	0.59
29.288	245.95	1.3895	-1.886	0.565
29.363	250.07	1.327	-1.886	0.531
29.4	252.91	1.3162	-1.886	0.52
29.47	259.96	1.3135	-1.886	0.505
29.552	265.09	1.3122	-1.886	0.495
29.621	269.58	1.322	-1.886	0.49
29.687	272.05	1.3583	-1.886	0.499
29.73	272.97	1.3843	-1.886	0.507
29.806	273.15	1.4315	-1.886	0.524
29.88	273.61	1.4608	-1.886	0.534
29.953	273.7	1.4879	-1.981	0.544
29.988	274.62	1.5011	-1.981	0.547
30.07	275.72	1.537	-1.981	0.558
30.132	278.46	1.5744	-1.981	0.565
30.212	279.65	1.6481	-1.981	0.589
30.251	279.01	1.6908	-1.981	0.606
30.326	275.9	1.7611	-1.981	0.638
30.397	269.3	1.8129	-1.981	0.673
30.473	260.69	1.8409	-1.886	0.706
30.518	256.02	1.8495	-1.981	0.722
30.586	246.5	1.8245	-1.981	0.74
30.66	234.22	1.7674	-1.981	0.755
30.737	222.22	1.6813	-1.981	0.757

30.775	216.45	1.6288	-1.981	0.753
30.877	200.05	1.5252	-2.075	0.763
30.915	193.46	1.4794	-2.075	0.765
30.99	179.54	1.3956	-2.075	0.777
31.068	160.48	1.3931	-2.075	0.868
31.135	137.49	1.3914	-2.075	1.012
31.184	125.4	1.4511	-2.075	1.157
31.255	102.78	1.7194	-2.075	1.674
31.332	81.89	1.9314	-2.075	2.359
31.413	63.2	1.9049	-2.075	3.015
31.447	55.6	1.6634	-2.075	2.993
31.52	45.16	1.4412	-2.075	3.194
31.564	41.4	1.4864	-2.075	3.593
31.637	43.6	1.6323	-2.075	3.746
31.704	58.99	1.8223	-1.792	3.09
31.765	59.17	2.0032	-2.169	3.387
31.837	80.24	2.2594	-2.169	2.817
31.93	86.29	2.3589	-2.169	2.735
31.971	87.48	2.2992	-2.452	2.629
32.021	88.03	2.2224	-2.358	2.526
32.117	88.03	2.2184	-2.264	2.521
32.156	88.03	2.2224	-2.358	2.526
32.244	92.88	2.18	-2.452	2.348
32.288	97.19	2.1371	-2.452	2.2
32.376	106.07	2.0237	-2.452	1.908
32.417	110.47	1.979	-2.452	1.792
32.51	125.22	1.9683	-2.452	1.572
32.548	137.22	1.9765	-2.452	1.441
32.638	161.95	1.9656	-2.452	1.214
32.692	172.21	1.9377	-2.452	1.125
32.774	186.86	1.917	-2.452	1.026
32.823	192.08	1.9271	-2.452	1.003
32.913	198.04	2.0031	-2.452	1.012
32.95	199.23	2.0356	-2.452	1.022
33.042	202.25	2.0957	-2.358	1.036
33.085	205.18	2.1236	-2.452	1.035
33.177	214.34	2.1929	-2.452	1.023
33.214	220.02	2.2339	-2.452	1.015
33.307	230.74	2.3611	-2.452	1.023
33.359	233.58	2.4445	-2.452	1.047
33.443	234.31	2.5286	-2.358	1.079
33.483	233.3	2.5612	-2.358	1.098
33.532	232.48	2.5516	-2.358	1.098
33.621	230.74	2.4531	-2.358	1.063
33.702	229.37	2.275	-2.358	0.992
33.75	227.26	2.1699	-2.358	0.955
33.843	223.69	2.1045	-2.358	0.941

33.881	222.68	2.1045	-2.358	0.945
33.971	222.31	2.1062	-2.358	0.948
34.01	221.21	2.1342	-2.358	0.965
34.101	214.25	2.1932	-2.358	1.024
34.137	208.76	2.2166	-2.358	1.062
34.189	202.53	2.2508	-2.358	1.112
34.27	191.17	2.292	-2.358	1.199
34.321	187.96	2.3079	-2.358	1.228
34.408	185.76	2.3115	-2.358	1.245
34.456	186.13	2.3151	-2.358	1.244
34.547	189.52	1.872	-2.358	0.988
34.585	190.89	1.7845	-2.358	0.935
34.677	193.37	1.9699	-2.358	1.019
34.72	194.28	2.0324	-2.358	1.046
34.807	196.39	2.1292	-2.358	1.084
34.843	196.94	2.151	-2.547	1.092
34.917	172.57	2.1976	-2.547	1.274
35	190.25	2.2502	-2.547	1.183
35.048	190.16	2.2795	-2.735	1.199
35.133	189.52	2.3337	-2.735	1.232
35.172	189.43	2.3206	-2.735	1.225
35.262	189.43	2.2532	-2.735	1.19
35.339	188.6	2.1998	-2.735	1.167
35.394	187.87	2.1433	-2.735	1.141
35.461	188.42	2.0665	-2.735	1.097
35.508	189.98	2.0458	-2.735	1.077
35.589	194.92	2.0447	-2.735	1.049
35.632	197.95	2.0539	-2.735	1.038
35.716	205.82	2.1165	-2.735	1.029
35.796	211.41	2.1755	-2.735	1.029
35.843	212.79	2.2219	-2.735	1.044
35.92	216.18	2.3223	-2.735	1.074
35.973	217.82	2.3838	-2.83	1.095
36.045	219.29	2.4528	-2.83	1.119
36.131	218.74	2.5138	-2.83	1.149
36.169	219.11	2.5447	-2.83	1.162
36.22	220.39	2.6007	-2.83	1.18
36.294	225.06	2.7103	-2.83	1.204
36.376	231.56	2.8304	-2.83	1.223
36.42	234.04	2.9153	-2.83	1.246
36.509	238.71	3.1155	-2.83	1.305
36.584	242.65	3.2775	-2.83	1.351
36.621	244.39	3.3442	-2.83	1.369
36.705	248.24	3.4635	-2.83	1.395
36.746	251.35	3.4879	-2.83	1.388
36.831	260.23	3.4805	-2.83	1.338
36.902	270.77	3.4765	-2.83	1.284

36.948	276.08	3.4961	-2.83	1.267
37.03	289.27	3.4566	-2.924	1.195
37.116	307.41	3.4377	-2.924	1.118
37.147	317.3	3.3982	-2.924	1.071
37.223	332.69	3.7176	-2.924	1.118
37.315	343.13	4.1212	-2.924	1.201
37.35	346.25	4.2701	-2.83	1.233
37.419	345.88	4.5362	-2.987	1.312
37.501	346.11	4.7602	-2.987	1.376
37.533	346.34	4.8223	-2.987	1.393
37.627	350.37	5.0677	-3.018	1.447
37.664	353.76	5.1852	-3.018	1.466
37.75	358.61	5.4266	-3.018	1.513
37.822	361.64	5.5858	-3.018	1.545
37.89	362.28	5.7436	-3.018	1.586
37.931	361.73	5.8331	-3.113	1.613
38.009	365.12	5.9906	-3.113	1.641
38.076	370.25	6.1024	-3.113	1.648
38.144	373.82	6.3207	-3.113	1.691
38.212	377.12	6.4327	-3.113	1.706
38.275	379.68	6.2237	-3.113	1.639
38.341	380.23	6.256	-3.113	1.646
38.41	378.76	6.4861	-3.113	1.713
38.474	377.57	6.6575	-3.113	1.763
38.522	343.96	6.7743	-3.301	1.97
38.6	366.4	6.9323	-3.301	1.892
38.65	366.4	7.0087	-3.301	1.913
38.723	365.48	7.2002	-3.49	1.97
38.79	365.03	7.3367	-3.49	2.01
38.86	365.67	7.3976	-3.49	2.023
38.93	365.39	7.4386	-3.49	2.036
39.003	366.49	7.4705	-3.49	2.039
39.07	369.7	7.5155	-3.49	2.033
39.136	372.35	7.5718	-3.49	2.034
39.203	375.65	7.6623	-3.49	2.04
39.265	379.04	7.7658	-3.49	2.049
39.334	382.98	7.9031	-3.49	2.064
39.396	388.29	7.9868	-3.49	2.057
39.465	392.78	8.0208	-3.49	2.042
39.53	394.79	7.9923	-3.49	2.025
39.595	394.89	7.9384	-3.49	2.011
39.636	395.71	7.9128	-3.584	2
39.712	401.12	7.8638	-3.584	1.961
39.779	408.17	7.7477	-3.584	1.898
39.845	411.1	7.6681	-3.584	1.865
39.914	411.28	7.6361	-3.584	1.857
39.978	410	7.6957	-3.584	1.877

40.045	410.73	7.812	-3.584	1.902
40.152	414.67	8.0351	-3.584	1.938
40.186	414.21	7.5038	-3.679	1.812
40.249	411.65	6.8438	-3.679	1.663
40.318	402.76	6.7548	-3.679	1.677
40.386	394.7	6.5492	-3.679	1.659
40.448	390.4	6.262	-3.679	1.604
40.508	377.76	5.9721	-3.82	1.581
40.578	389.99	5.677	-3.82	1.456
40.65	385.09	5.6709	-3.82	1.473
40.715	389.57	5.751	-3.961	1.476
40.783	393.15	5.8506	-3.961	1.488
40.814	394.15	5.8785	-3.961	1.492
40.911	393.88	5.8101	-3.961	1.475
40.946	393.51	5.7563	-3.961	1.463
41.039	387.01	5.5783	-3.961	1.442
41.101	382.06	5.4586	-3.961	1.429
41.171	378.12	5.2816	-3.961	1.397
41.233	371.8	4.7516	-3.961	1.278
41.305	364.57	4.4771	-3.961	1.228
41.365	357.97	4.4246	-4.055	1.236
41.406	356.32	4.372	-4.055	1.227
41.483	351.38	4.1903	-4.055	1.193
41.539	313.91	4.0902	-4.197	1.303
41.611	329.03	3.9614	-4.197	1.204
41.69	324.45	3.8085	-4.197	1.174
41.757	320.32	3.7181	-4.339	1.161
41.826	317.03	3.6541	-4.339	1.153
41.906	312.9	3.4908	-4.339	1.116
41.944	310.98	3.4535	-4.339	1.111
42.008	304.57	3.3369	-4.339	1.096
42.077	289.27	3.0529	-4.339	1.056
42.152	264.08	2.8034	-4.339	1.062
42.198	247.5	2.7399	-4.339	1.107
42.267	223.87	2.7062	-4.339	1.209
42.337	200.97	2.7268	-4.339	1.357
42.42	171.29	2.7845	-4.339	1.626
42.454	158.93	2.81	-4.339	1.769
42.524	128.88	2.8894	-4.339	2.243
42.603	98.65	2.9141	-4.433	2.956
42.682	74.01	2.8783	-4.433	3.892
42.72	65.22	2.8191	-4.433	4.327
42.805	62.65	2.6657	-4.433	4.259
42.878	80.52	2.6487	-4.433	3.292
42.917	91.69	2.6666	-4.433	2.91
43	110.65	2.7753	-4.527	2.51
43.069	125.86	2.9209	-5.376	2.322

43.155	142.99	3.0415	-6.696	2.129
43.195	150.13	3.0804	-7.357	2.053
43.263	163.87	3.2037	-8.394	1.956
43.346	175.78	3.3374	-8.866	1.9
43.383	181.73	3.3903	-8.866	1.867
43.456	191.63	3.5022	-8.866	1.829
43.536	202.44	3.6405	-8.206	1.799
43.571	208.94	3.7061	-7.168	1.775
43.642	221.95	3.8073	-5.187	1.716
43.712	235.32	3.8192	-4.716	1.623
43.789	256.2	3.7769	-4.716	1.475
43.868	277.64	3.1797	-4.716	1.146
43.902	286.62	2.986	-4.81	1.042
43.969	297.42	2.9961	-4.621	1.008
44.033	307.32	2.9797	-4.527	0.97
44.113	313.09	2.938	-4.527	0.939
44.181	316.29	2.9204	-4.621	0.923
44.236	316.89	2.9381	-4.621	0.927
44.303	317.48	2.9506	-4.621	0.93
44.386	320.23	3.152	-4.716	0.984
44.462	323.71	3.3944	-4.716	1.049
44.494	326.37	3.499	-4.621	1.072
44.567	325.45	3.7004	-4.621	1.137
44.65	319.32	3.9114	-4.621	1.225
44.715	313.55	4.0052	-4.621	1.278
44.752	309.33	4.0315	-4.621	1.304
44.863	296.23	3.9818	-4.621	1.344
44.906	292.39	3.9043	-4.716	1.336
44.973	286.16	3.7493	-4.716	1.311
45.04	282.86	3.6269	-4.716	1.283
45.121	282.95	3.5771	-4.716	1.265
45.162	282.95	3.5773	-4.716	1.265
45.227	283.04	3.5946	-4.621	1.27
45.296	286.07	3.6479	-4.621	1.276
45.359	289.64	3.7277	-4.621	1.287
45.425	294.58	3.806	-4.621	1.292
45.493	300.91	3.8811	-4.621	1.29
45.564	304.2	3.9552	-4.621	1.3
45.61	304.02	3.9901	-4.716	1.313
45.673	303.84	4.0211	-4.716	1.324
45.741	303.84	4.0224	-4.716	1.324
45.806	304.66	4.0561	-4.716	1.332
45.885	308.32	4.1396	-4.716	1.343
45.943	313.18	4.2158	-4.716	1.346
46.022	320.6	4.3393	-4.716	1.354
46.093	329.58	4.4976	-4.716	1.365
46.158	337.09	4.6372	-4.621	1.376

46.221	341.21	4.7507	-4.716	1.393
46.288	341.94	4.8475	-4.716	1.418
46.327	340.48	4.8902	-4.716	1.437
46.403	339.1	4.9139	-4.716	1.449
46.468	335.35	4.8741	-4.716	1.454
46.54	330.22	4.8189	-4.716	1.46
46.607	321.61	4.4851	-4.716	1.395
46.673	310.43	4.2396	-4.716	1.366
46.74	302.19	4.273	-4.716	1.414
46.808	298.16	4.2584	-4.716	1.429
46.88	301	4.2316	-4.716	1.406
46.918	277.64	4.2148	-4.763	1.518
46.996	303.56	4.2089	-4.763	1.387
47.06	309.33	4.2561	-4.763	1.376
47.123	312.63	4.3239	-4.81	1.383
47.19	320.14	4.3633	-4.81	1.363
47.25	326.37	4.3825	-4.81	1.343
47.32	331.5	4.4467	-4.81	1.342
47.395	337.82	4.5314	-4.81	1.342
47.448	342.58	4.5954	-4.81	1.342
47.519	348.17	4.7122	-4.81	1.354
47.598	350.09	4.9161	-4.81	1.404
47.647	351.28	5.0911	-4.81	1.45
47.726	354.22	5.3894	-4.81	1.522
47.77	355.5	5.5497	-4.81	1.561
47.838	358.25	5.7529	-4.81	1.606
47.919	358.25	5.954	-4.81	1.662
47.971	359.71	6.0628	-4.81	1.686
48.043	364.11	6.1234	-4.81	1.682
48.118	371.53	6.1589	-4.81	1.658
48.163	377.39	6.2186	-4.81	1.648
48.236	385.54	6.383	-4.81	1.656
48.309	392.05	6.5636	-4.81	1.674
48.36	394.61	6.6654	-4.81	1.689
48.436	393.24	6.7405	-4.81	1.714
48.497	394.34	6.8079	-4.81	1.727
48.561	390.49	6.824	-4.81	1.748
48.653	394.06	6.8073	-4.81	1.728
48.717	395.71	6.7831	-4.81	1.714
48.783	396.08	6.7837	-4.81	1.713
48.848	396.17	6.7855	-4.81	1.713
48.917	396.72	6.7831	-4.81	1.71
48.972	395.99	6.7833	-4.81	1.713
49.042	391.96	6.7838	-4.905	1.731
49.094	386.18	6.7792	-4.81	1.756
49.157	380.14	6.7318	-4.905	1.771
49.218	377.76	6.6191	-4.81	1.753

49.284	382.15	6.5615	-4.81	1.717
49.348	388.29	6.6148	-4.905	1.704
49.441	399.83	6.6079	-4.905	1.653
49.51	409.27	6.6503	-4.905	1.625
49.568	419.89	6.6817	-4.905	1.592
49.631	430.34	6.7378	-4.905	1.566
49.693	439.04	6.834	-4.905	1.557
49.751	445.63	6.9486	-4.905	1.56
49.812	452.96	0	-4.905	0
49.897	456.08	0	-4.905	0
49.962	456.72	0	-4.905	0
50.021	455.71	0	-4.905	0
50.085	454.15	0	-4.905	0
50.14	453.05	0	-4.905	0

APPENDIX C
LABORATORY TEST RESULTS



Leighton



**TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS**

Project Name: SLR Fullerton Tested By : OHF/ACS Date: 11/26/19
 Project No. : 12572.002 Input By: J. Ward Date: 12/05/19

Boring No.	CPT-2			
Sample No.	CPT-2			
Sample Depth (ft)	0-5			
Soil Identification:				
	Dark olive brown SM			
Wet Weight of Soil + Container (g)	144.64			
Dry Weight of Soil + Container (g)	143.98			
Weight of Container (g)	69.51			
Moisture Content (%)	0.89			
Weight of Soaked Soil (g)	100.19			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	151			
Crucible No.	17			
Furnace Temperature (°C)	860			
Time In / Time Out	8:00/8:45			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	10.8091			
Wt. of Crucible (g)	10.8063			
Wt. of Residue (g) (A)	0.0028			
PPM of Sulfate (A) x 41150	115.22			
PPM of Sulfate, Dry Weight Basis	116			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	30			
ml of AgNO ₃ Soln. Used in Titration (C)	0.7			
PPM of Chloride (C -0.2) * 100 * 30 / B	50			
PPM of Chloride, Dry Wt. Basis	50			

pH TEST, DOT California Test 643

pH Value	7.93			
Temperature °C	22.1			



SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name: SLR Fullerton
 Project No. : 12572.002
 Boring No.: CPT-2
 Sample No. : CPT-2

Tested By : O. Figueroa Date: 12/05/19
 Input By: J. Ward Date: 12/05/19
 Depth (ft.) : 0-5

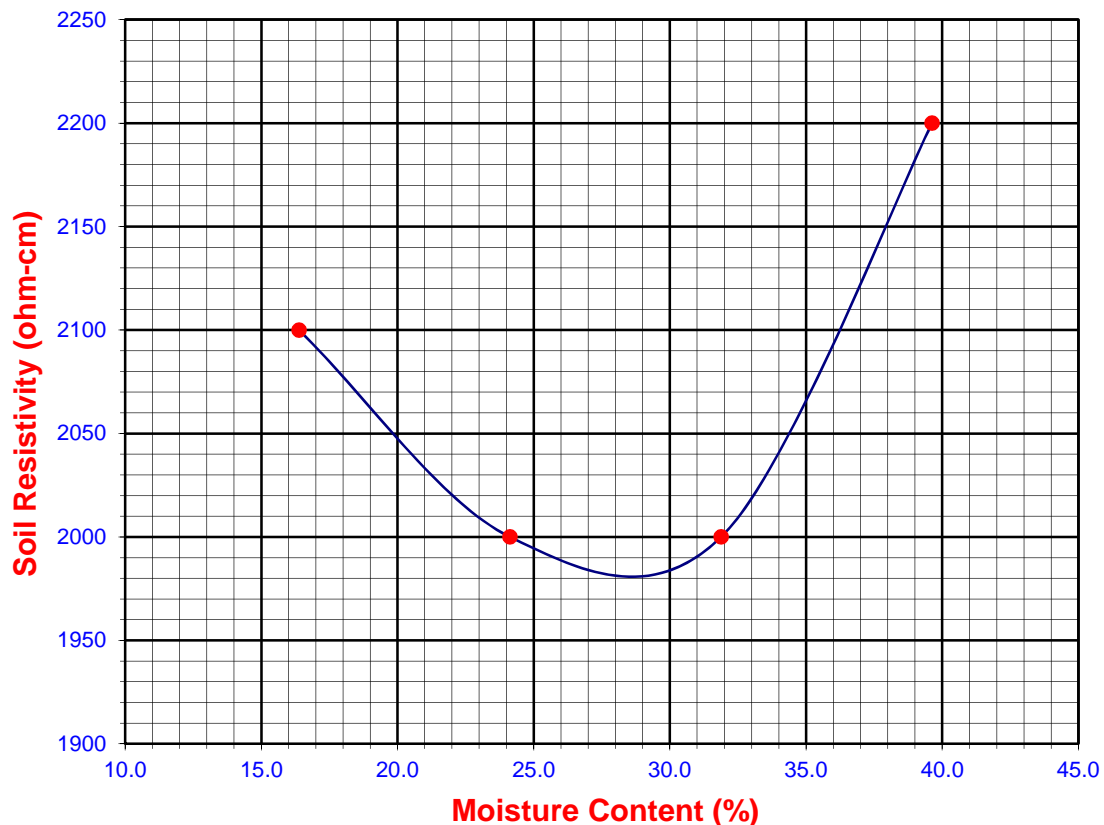
Soil Identification:* Dark olive brown SM

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	20	16.38	2100	2100
2	30	24.13	2000	2000
3	40	31.88	2000	2000
4	50	39.63	2200	2200
5				

Moisture Content (%) (Mci)	0.89
Wet Wt. of Soil + Cont. (g)	144.64
Dry Wt. of Soil + Cont. (g)	143.98
Wt. of Container (g)	69.51
Container No.	
Initial Soil Wt. (g) (Wt)	130.20
Box Constant	1.000
$MC = (((1 + Mci/100) \times (Wa/Wt + 1)) - 1) \times 100$	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II		DOT CA Test 643	
1980	28.6	116	50	7.93	22.1





DIRECT SHEAR TEST
Consolidated Drained - ASTM D 3080

Project Name: [SLR Fullerton](#) Tested By: [G. Bathala](#) Date: [12/03/19](#)
Project No.: [12572.002](#) Checked By: [J. Ward](#) Date: [12/05/19](#)
Boring No.: [CPT-1](#) Sample Type: [90% Remold](#)
Sample No.: [CPT-1](#) Depth (ft.): [0-5](#)
Soil Identification: [Dark olive brown clayey sand \(SC\)](#)

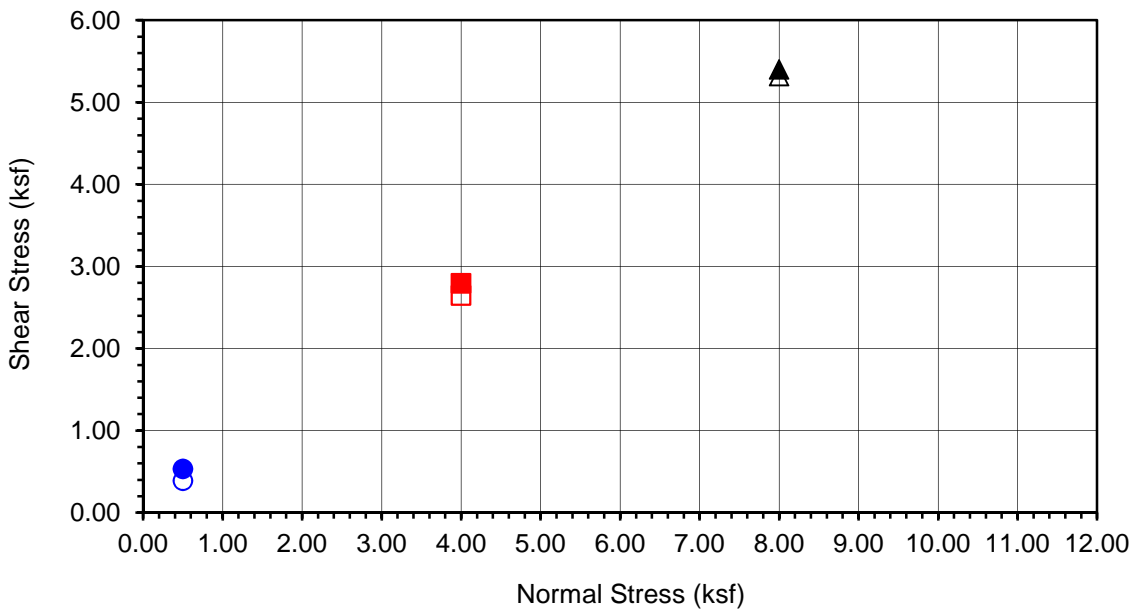
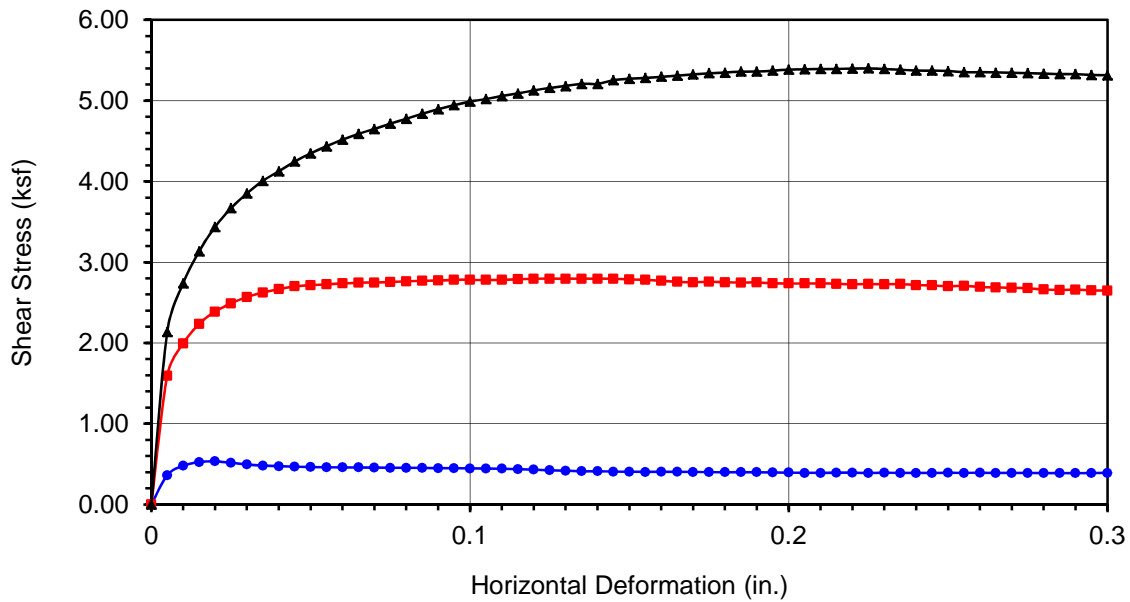
Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	193.39	192.89	193.78
Weight of Ring(gm):	46.01	45.39	46.04

Before Shearing

Weight of Wet Sample+Cont.(gm):	189.33	189.33	189.33
Weight of Dry Sample+Cont.(gm):	178.84	178.84	178.84
Weight of Container(gm):	67.92	67.92	67.92
Vertical Rdg.(in): Initial	0.2323	0.0000	0.2692
Vertical Rdg.(in): Final	0.2320	-0.0181	0.2964

After Shearing

Weight of Wet Sample+Cont.(gm):	215.10	224.60	204.40
Weight of Dry Sample+Cont.(gm):	191.61	203.63	184.74
Weight of Container(gm):	58.68	70.31	50.93
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43



Boring No.	CPT-1
Sample No.	CPT-1
Depth (ft)	0-5
<u>Sample Type:</u>	
90% Remold	
<u>Soil Identification:</u>	
Dark olive brown clayey sand (SC)	

Normal Stress (kip/ft ²)	0.500	4.000	8.000
Peak Shear Stress (kip/ft ²)	● 0.534	■ 2.795	▲ 5.401
Shear Stress @ End of Test (ksf)	○ 0.390	□ 2.647	△ 5.316
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.46	9.46	9.46
Dry Density (pcf)	112.0	112.1	112.3
Saturation (%)	50.5	50.7	50.9
Soil Height Before Shearing (in.)	1.0003	0.9819	0.9728
Final Moisture Content (%)	17.7	15.7	14.7



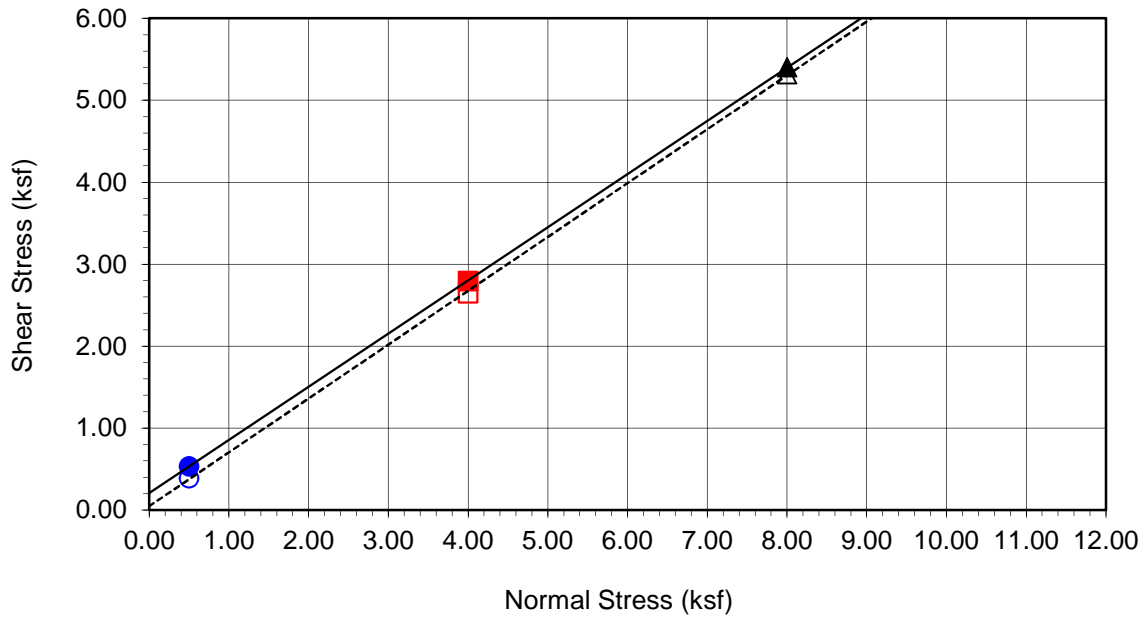
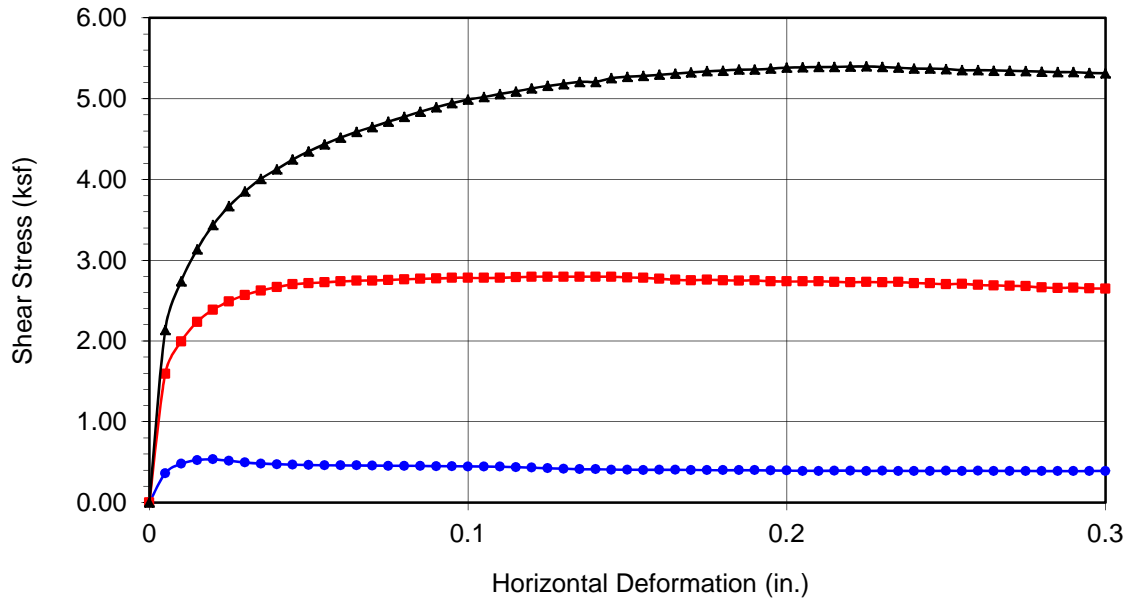
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DIRECT SHEAR TEST RESULTS
Consolidated Drained - ASTM D 3080

Project No.:

12572.002

SLR Fullerton



Boring No.	CPT-1	
Sample No.	CPT-1	
Depth (ft)	0-5	
Sample Type:	90% Remold	
Soil Identification:	Dark olive brown clayey sand (SC)	
Strength Parameters		
	C (psf)	ϕ (°)
Peak	206	33
Ultimate	47	33

Normal Stress (kip/ft ²)	0.500	4.000	8.000
Peak Shear Stress (kip/ft ²)	● 0.534	■ 2.795	▲ 5.401
Shear Stress @ End of Test (ksf)	○ 0.390	□ 2.647	△ 5.316
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.46	9.46	9.46
Dry Density (pcf)	112.0	112.1	112.3
Saturation (%)	50.5	50.7	50.9
Soil Height Before Shearing (in.)	1.0003	0.9819	0.9728
Final Moisture Content (%)	17.7	15.7	14.7



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DIRECT SHEAR TEST RESULTS
Consolidated Drained - ASTM D 3080

Project No.:

12572.002

SLR Fullerton



EXPANSION INDEX of SOILS
ASTM D 4829

Project Name: SLR Fullerton Tested By: S. Felter Date: 11/26/19
 Project No.: 12572.002 Checked By: J. Ward Date: 12/05/19
 Boring No.: CPT-2 Depth (ft.): 0-5
 Sample No.: CPT-2
 Soil Identification: Dark olive brown silty sand (SM)

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0180
Wt. Comp. Soil + Mold (g)	574.90	439.50
Wt. of Mold (g)	166.40	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	0	0
Wet Wt. of Soil + Cont. (g)	808.60	605.90
Dry Wt. of Soil + Cont. (g)	738.50	539.46
Wt. of Container (g)	0.00	166.40
Moisture Content (%)	9.49	17.81
Wet Density (pcf)	123.2	130.2
Dry Density (pcf)	112.5	110.5
Void Ratio	0.498	0.525
Total Porosity	0.332	0.344
Pore Volume (cc)	68.8	72.5
Degree of Saturation (%) [S _{meas}]	51.5	91.6

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
11/26/19	11:15	1.0	0	0.5190
11/26/19	11:25	1.0	10	0.5190
Add Distilled Water to the Specimen				
11/26/19	11:50	1.0	25	0.5290
11/27/19	6:40	1.0	1155	0.5370
11/27/19	8:28	1.0	1263	0.5370

Expansion Index (EI _{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	18
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MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name: SLR Fullerton Tested By: J. Gonzalez Date: 11/26/19
 Project No.: 12572.001 Input By: J. Ward Date: 12/02/19
 Boring No.: CPT-1 Depth (ft.): 0-5
 Sample No.: CPT-1
 Soil Identification: Dark olive brown clayey sand (SC)

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	<input checked="" type="checkbox"/>	Moist			Rammer Weight (lb.) =	10.0
		Dry			Height of Drop (in.) =	18.0
Compaction Method:	<input checked="" type="checkbox"/>	Mechanical Ram			Mold Volume (ft ³)	0.03320
		Manual Ram				

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3783	3866	3875			
Weight of Mold (g)	1817	1817	1817			
Net Weight of Soil (g)	1966	2049	2058			
Wet Weight of Soil + Cont. (g)	460.3	445.5	453.1			
Dry Weight of Soil + Cont. (g)	432.1	410.0	408.5			
Weight of Container (g)	39.4	38.6	38.6			
Moisture Content (%)	7.18	9.56	12.06			
Wet Density (pcf)	130.5	136.1	136.7			
Dry Density (pcf)	121.8	124.2	122.0			

Maximum Dry Density (pcf) 124.2
Corrected Dry Density (pcf) 126.3

Optimum Moisture Content (%) 9.6
Corrected Moisture Content (%) 9.1

Procedure A
 Soil Passing No. 4 (4.75 mm) Sieve
 Mold : 4 in. (101.6 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 25 (twenty-five)
 May be used if + #4 is 20% or less

Procedure B
 Soil Passing 3/8 in. (9.5 mm) Sieve
 Mold : 4 in. (101.6 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 25 (twenty-five)
 Use if + #4 is >20% and +3/8 in. is 20% or less

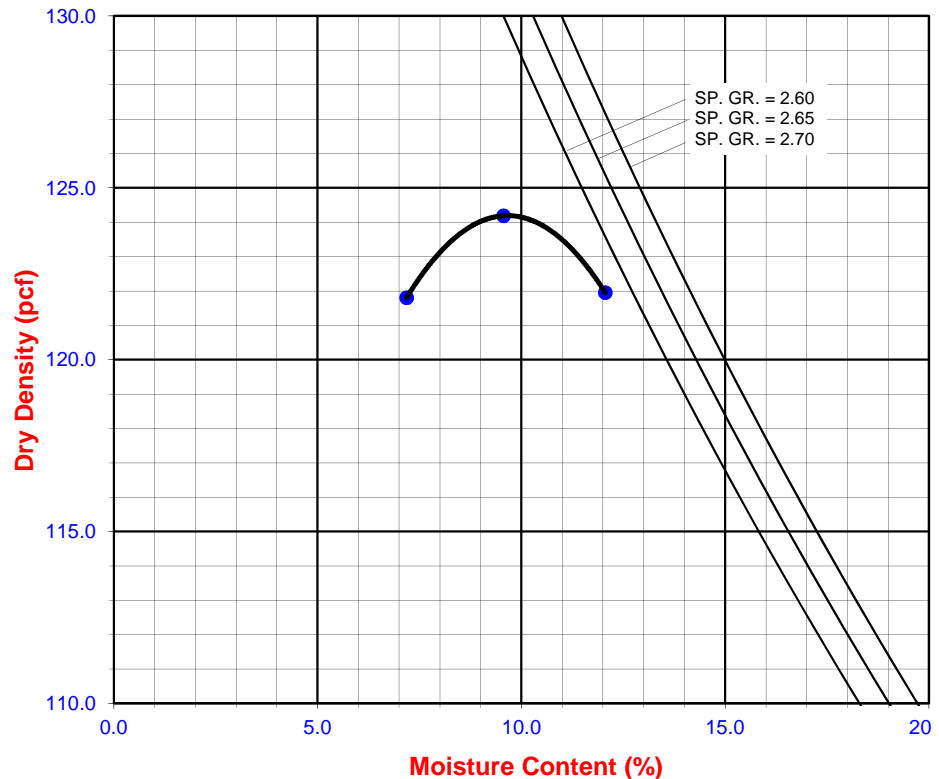
Procedure C
 Soil Passing 3/4 in. (19.0 mm) Sieve
 Mold : 6 in. (152.4 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 56 (fifty-six)
 Use if +3/8 in. is >20% and +3/4 in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI





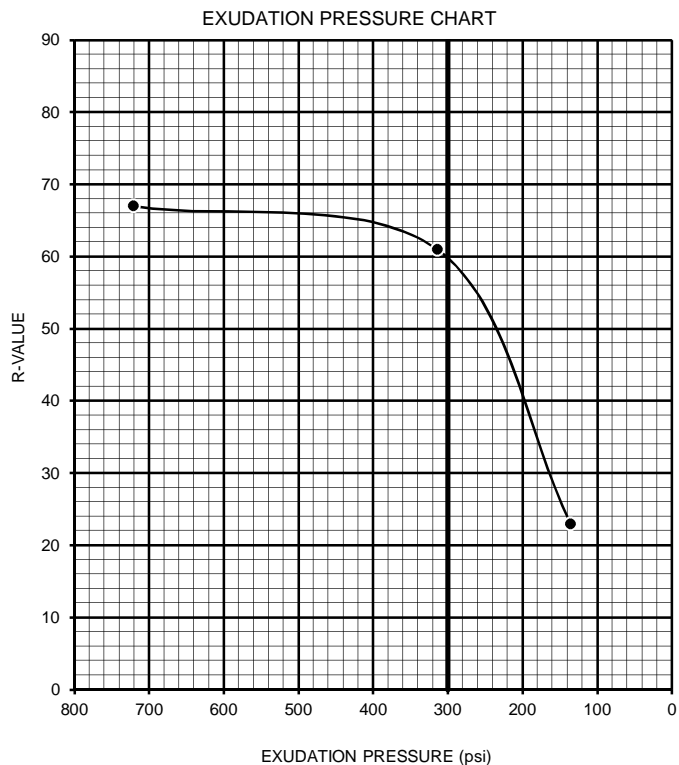
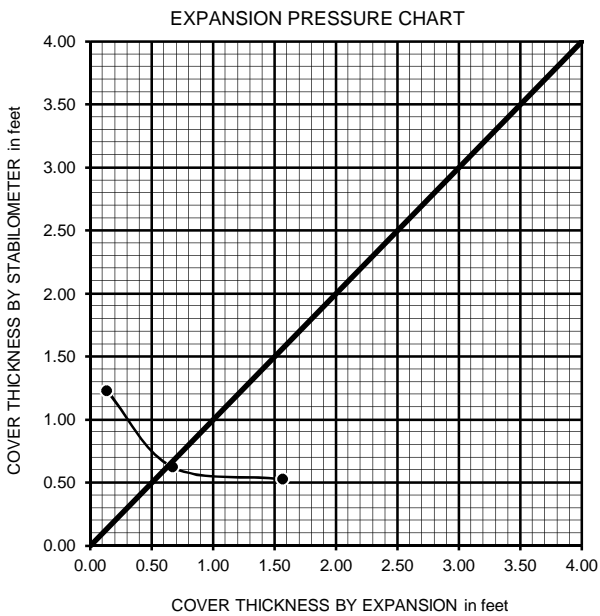
R-VALUE TEST RESULTS

DOT CA Test 301

PROJECT NAME: SLR Fullerton PROJECT NUMBER: 12572.002
 BORING NUMBER: CPT-2 DEPTH (FT.): 0-5
 SAMPLE NUMBER: CPT-2 TECHNICIAN: R. Manning
 SAMPLE DESCRIPTION: Dark olive brown silty sand (SM) DATE COMPLETED: 12/5/2019

TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	10.0	11.6	13.3
HEIGHT OF SAMPLE, Inches	2.45	2.47	2.50
DRY DENSITY, pcf	119.1	118.2	116.7
COMPACTOR PRESSURE, psi	350	300	100
EXUDATION PRESSURE, psi	722	315	136
EXPANSION, Inches x 10 ^{exp-4}	47	20	4
STABILITY Ph 2,000 lbs (160 psi)	29	36	95
TURNS DISPLACEMENT	5.62	5.52	5.68
R-VALUE UNCORRECTED	67	61	23
R-VALUE CORRECTED	67	61	23

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.53	0.62	1.23
EXPANSION PRESSURE THICKNESS, ft.	1.57	0.67	0.13



R-VALUE BY EXPANSION: 61
 R-VALUE BY EXUDATION: 60
 EQUILIBRIUM R-VALUE: 60

APPENDIX D
LIQUEFACTION ANALYSIS

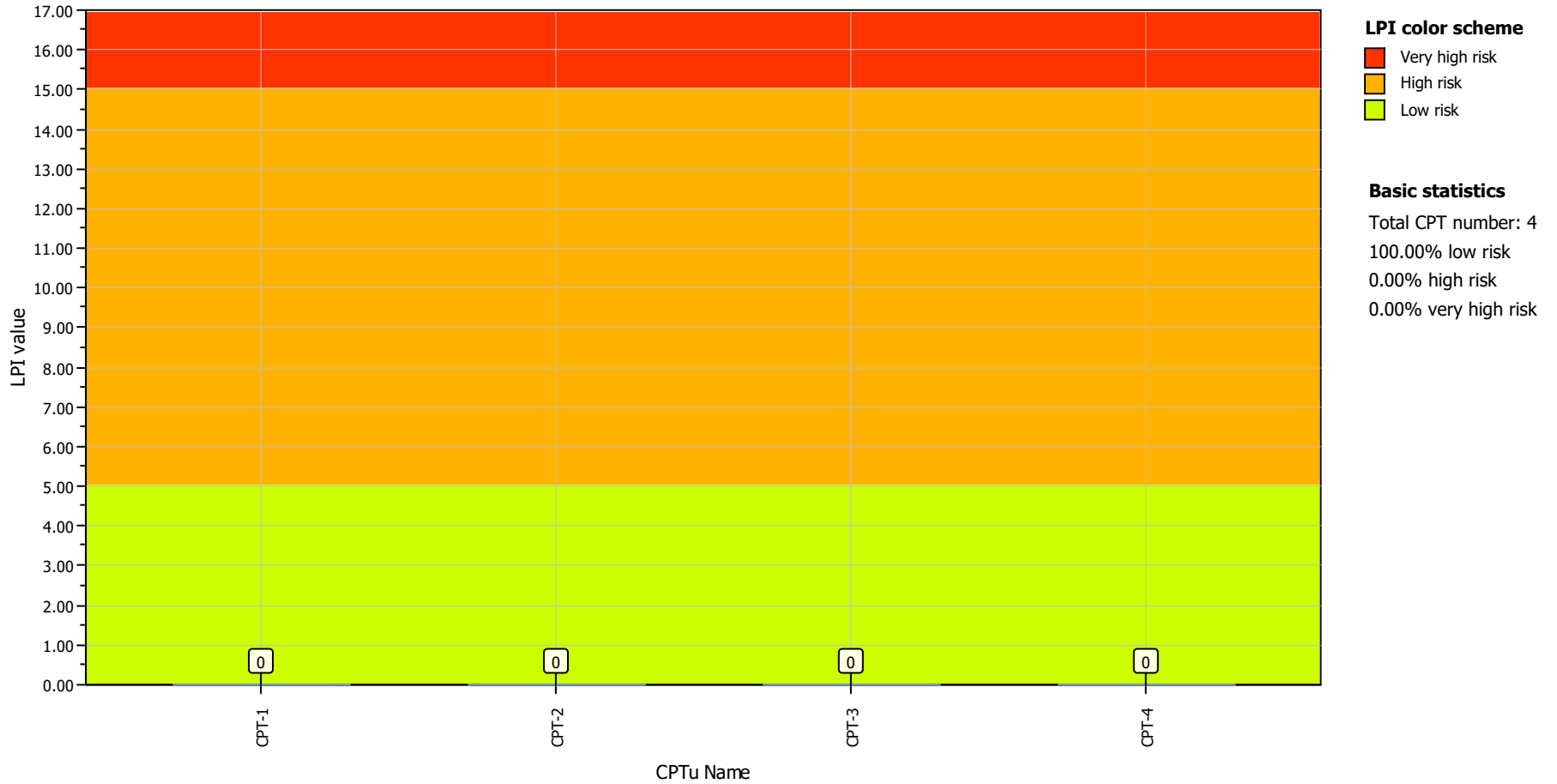


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Project title : SLR Fullerton

Location : Orangethorpe and Lemon DD

Overall Liquefaction Potential Index report

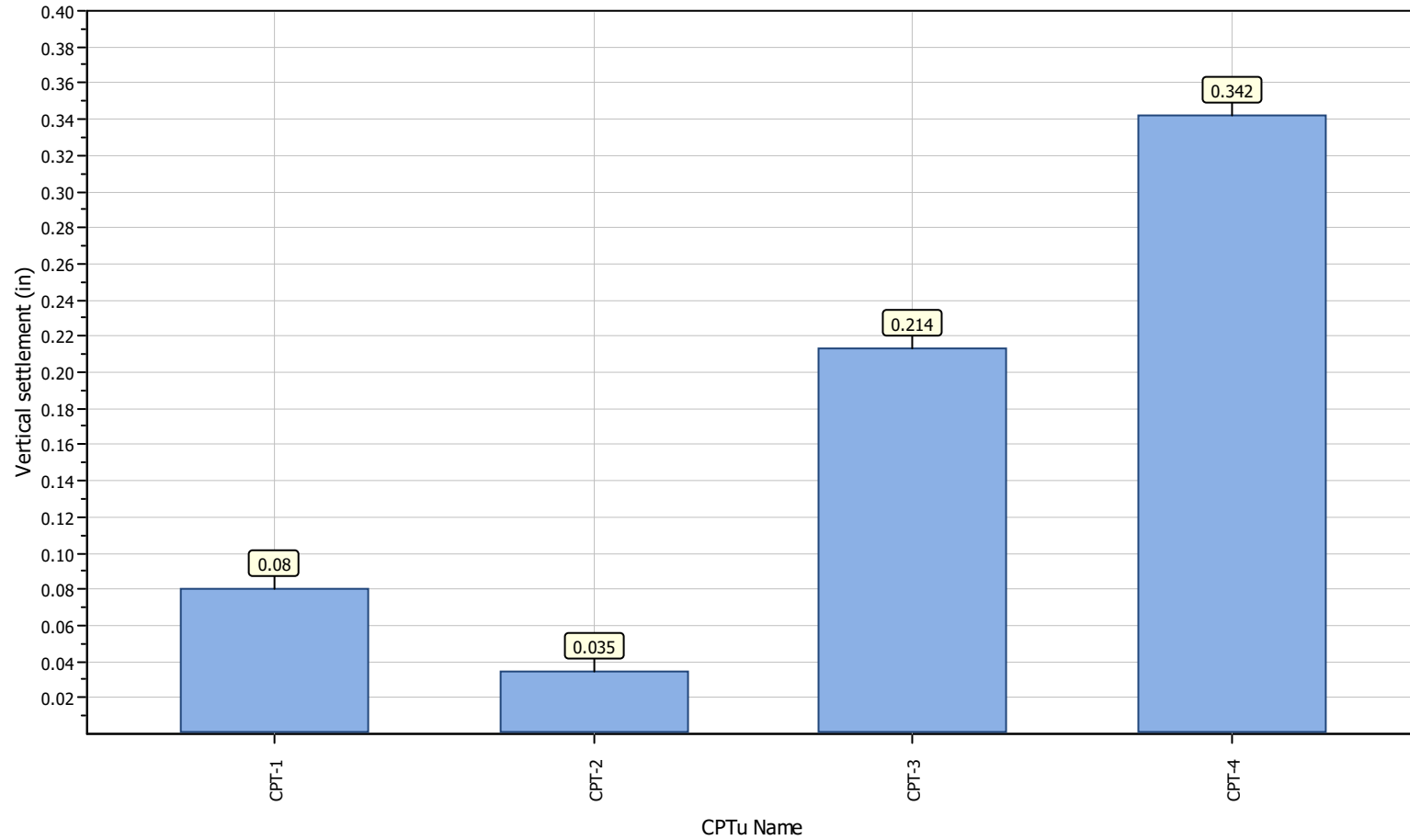




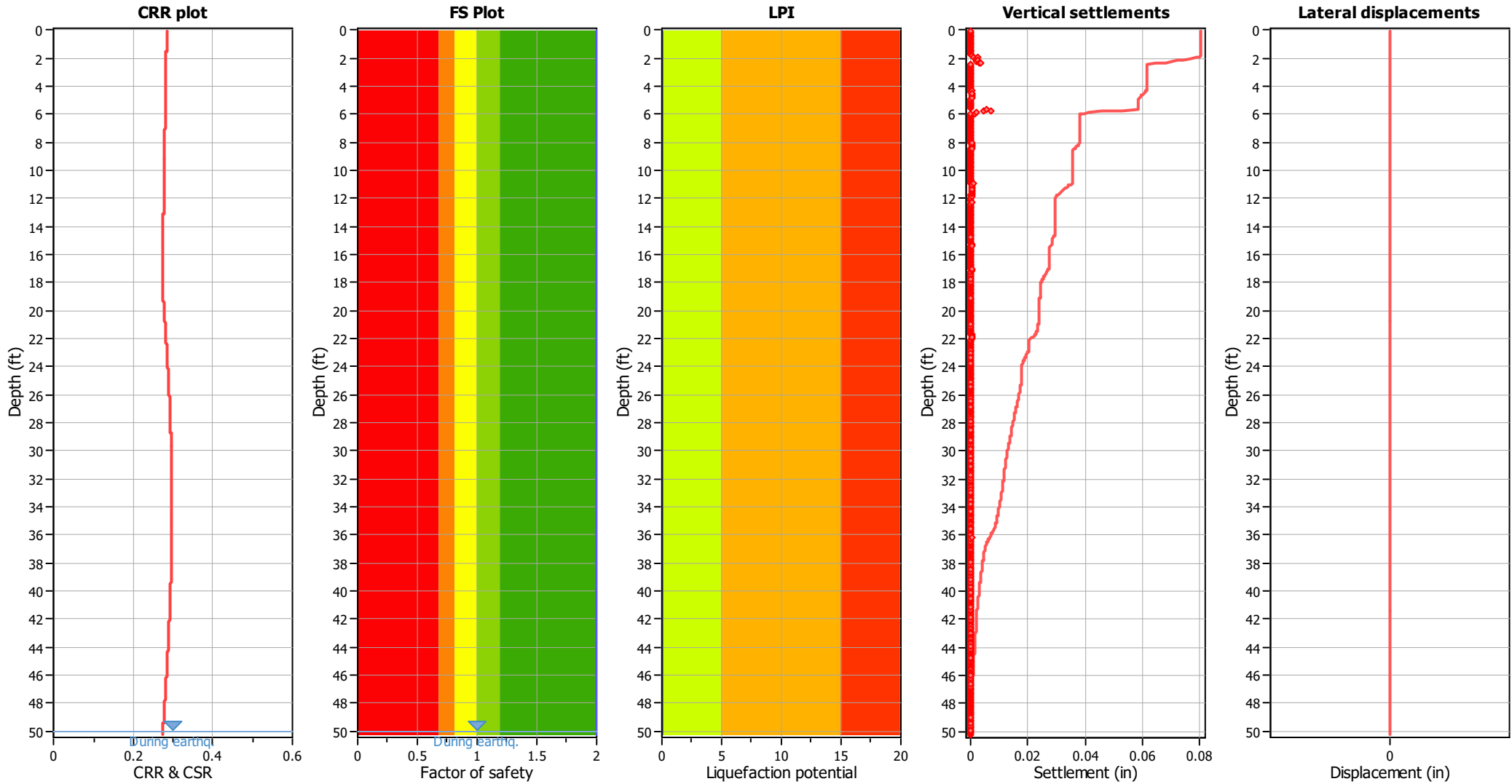
Project title : SLR Fullerton

Location : Orangethorpe and Lemon DD

Overall vertical settlements report



Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	50.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K _σ applied:	Yes
Earthquake magnitude M _w :	6.50	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.63	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

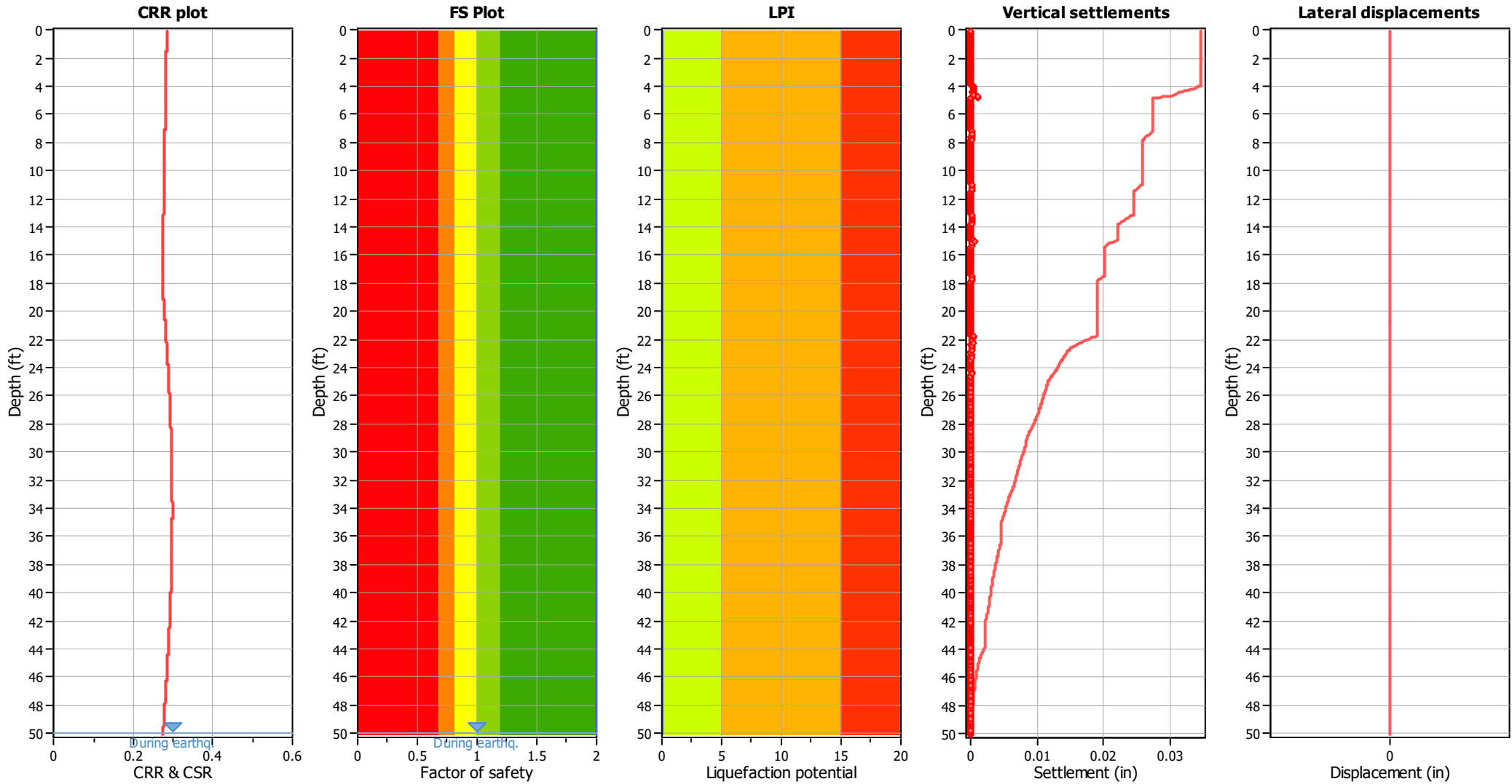
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis overall plots



Input parameters and analysis data

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Peak ground acceleration:	0.63	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

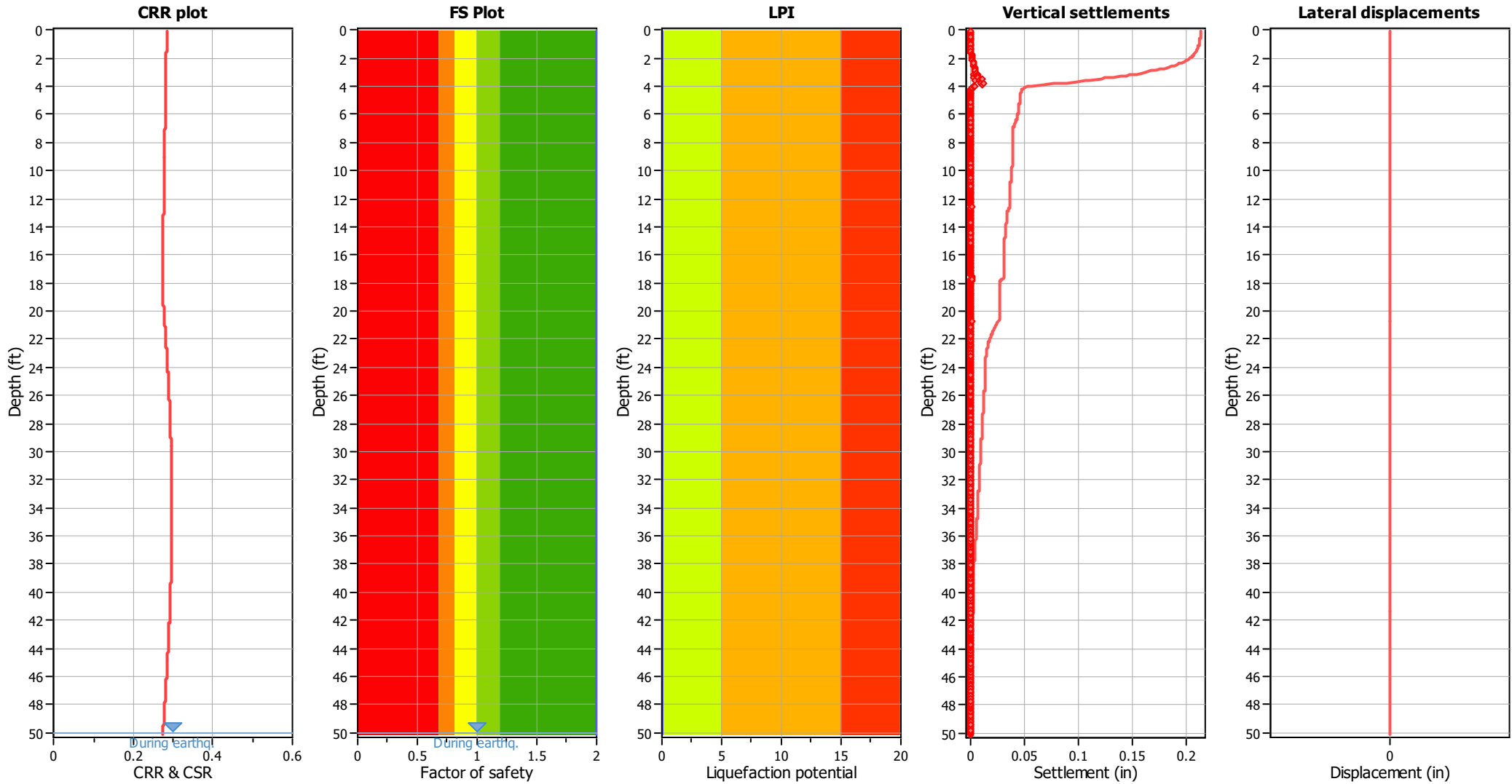
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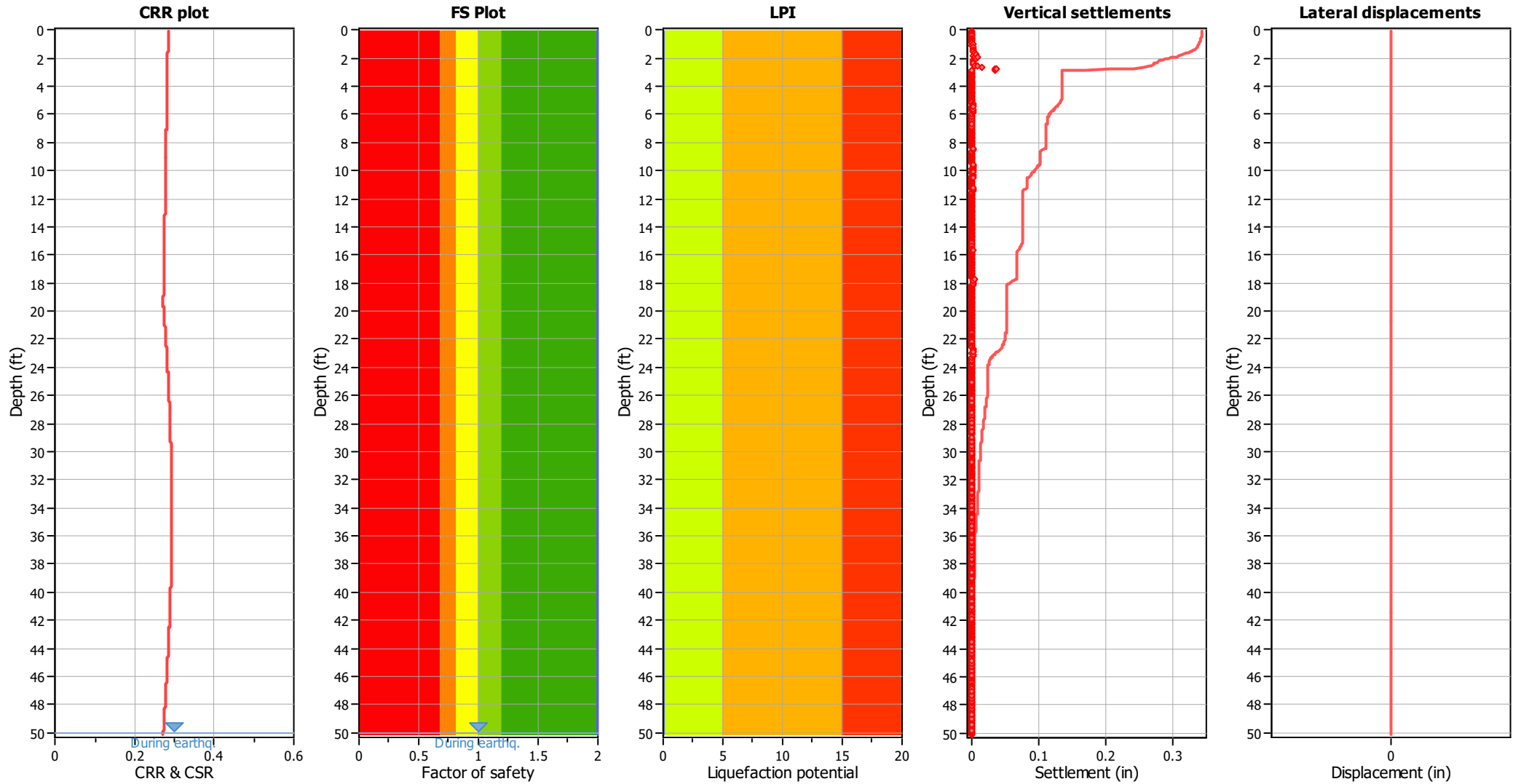
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Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_{σ} applied:	Yes
Earthquake magnitude M_w :	6.50	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.63	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

F.S. color scheme

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