June 15, 2023

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Nelson Avenue Owner LP
19700 S. Vermont Avenue, Suite 101
Torrance, CA 90502

Attention: Ms. Montana Kanen
Analyst

Project No.: **21G265-3**

Subject: **Response Letter to Peer Review Comments**
Proposed Industrial Building
15006 – 15100 Nelson Avenue
Industry, California

References: 1) Geotechnical Investigation, Proposed Industrial Building, 15006 – 15100 Nelson Avenue, Industry, California, prepared by Southern California Geotechnical, Inc. (SCG) for Nelson Avenue Owner LP, SCG Project No. 21G265-1R, dated January 31, 2023.

2) CEQA-Level Geologic and Geotechnical Peer Review, Proposed Industrial Development, 15010 and 15100 Nelson Avenue, City of Industry, California, prepared by Leighton Consulting, Inc., for CASC Engineering and Consulting, Inc.

Ms. Kanen:

In accordance with your request, we have prepared this letter to address the peer review comments generated by Leighton Consulting, Inc. (LCI), following their review of the project geotechnical report (References 1) above. The comment issued by the reviewers is presented below, followed by SCG response. A copy of the review sheet is enclosed with this correspondence for reference purposes.

LCI: *Although SCG indicated that the placement of compacted fill would reduce surface manifestations relating to liquefaction, they did not indicate that the hazards relating to surface manifestations due to liquefaction are less than significant. Liquefaction may also cause lateral spreading. We recommend that SCG address the potential for liquefaction to manifest at the surface of the project site and the potential of lateral spreading caused by liquefaction to indicate that the impact from these hazards is less than significant or to provide mitigation measures to reduce these hazards to be less than significant.*

SCG: The liquefaction analysis which was performed as part of the Reference 1 investigation was based on a historic high groundwater level of 10 feet below ground surface (bgs). This historical high level is based on the information provided by the Californian Geological Survey, as referenced in the report. However, our research of more recent nearby well data indicates a more recent high ground water level of 66± feet bgs at a well located very close to the site. In accordance with Special Publication 117A, we have performed the liquefaction evaluation using the mapped historically high groundwater level of 10± feet bgs. Therefore, the liquefaction analysis is

conservative, as it is based on a hypothetical situation where the groundwater level would rise to an elevation more than 50 feet higher than its present elevation by the time of the design seismic event. This scenario is considered to be very unlikely. Therefore, the overall effects from liquefaction are considered to be low. We do recommend that the structural engineer consider the potential total and differential seismic settlements and the potential angular distortions in their design. However, we only expect that surface manifestations of liquefaction would occur if shallow, near-surface soil layers liquefy, and as we discussed above, the nearby groundwater table in the vicinity of the site is presently greater than 66 feet bgs. Based on the lack of current groundwater in the upper 50± feet, the potential for surface manifestation is considered low.

It should also be noted that the layer of compacted structural fill which was recommended to be placed below the proposed building pad was not specifically intended to be a mitigation measure for the hazard related to surface manifestation, as this hazard is considered low. The recommended remedial grading is primarily intended to mitigate other design concerns for this site, including the removal and replacement of undocumented fill soils and to help mitigate potential static settlements. The new structural fill layer will also incidentally be beneficial with respect to limiting the potential for surface manifestations of liquefaction, although this is considered very unlikely.

Based on our review of the available internet aerial photographs obtained from Google Earth, the Puente Creek is a concrete-line channel, that is at least 200 feet away from the project site. The channel extends to a depth of 10± feet below the adjacent site grades. In addition, the nearest CPT to the channel (CPT-1) identified the potentially liquefiable layers beginning at 20 feet below the existing site grades, which is located below the bottom of the channel walls. Furthermore, as indicated above, the likelihood for the groundwater level to rise more than 50 feet prior to the design seismic event is considered low. Therefore, lateral spreading is not considered to be a significant design concern for this project.

LCI: *SCG provided geotechnical recommendations for the development that generally appear appropriate. However, Leighton recommends that the Asphaltic Concrete Pavement sections be revisited to account for the maximum allowed base material by the California Department of Transportation (Cal Trans). Cal Trans limits the amount of base material used for pavement sections to 12.5 inches.*

SCG: We understand that the Highway Design Manual provides minimum aggregate base thicknesses based on different types of subgrade sols, and provides a requirement for a minimum aggregate base thickness being 12 inches for a highly plastic clay (CH). We understand that there are also alternatives to subgrade improvements for the highly plastic soil types, such as chemical stabilization, remove and replace with select material, and/or geogrid reinforcement. However, we are not aware of Caltrans limiting aggregate base thickness. It is SCGs opinion that limiting the amount of aggregate base material would cause unreasonable economic impact, limiting the most cost-effective strategy.

It should be noted, that the recommended pavement section was based on an assumed R-value of 5, as R-value testing was not part of the original scope for the project. As indicated int the referenced report, R-value testing should be performed following rough grading activities to determine the pavement support characteristics of the resultant subgrade soils. In addition, the project is expected to utilize Portland cement concrete (PCC) pavements throughout, which are not required to be underlain by aggregate base. Therefore, at this time, the pavement design recommendations presented in the project soils report are considered valid for the proposed development.

LCI: *The seismic design parameters presented in SCG's 2023 report are based on the 2019 CBC. These parameters should be reviewed and updated as needed based on the most recent edition of the CBC, which went into effect on January 1, 2023 (CBC, 2022).*

SCG: The 2022 CBC Seismic Design Parameters are included below.

Seismic Design Parameters

The 2022 California Building Code (CBC) provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of the structure including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site. Based on the adoption of the 2022 CBC on January 1, 2023, we expect that the proposed development will be designed in accordance with the 2022 CBC.

The 2022 CBC Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool, a web-based software application available at the website www.seismicmaps.org. This software application calculates seismic design parameters in accordance with several building code reference documents, including ASCE 7-16, upon which the 2022 CBC is based. The application utilizes a database of risk-targeted maximum considered earthquake (MCE_R) site accelerations at 0.01-degree intervals for each of the code documents. The table below was created using data obtained from the application. The output generated from this program is attached to this letter.

The 2022 CBC states that for Site Class D sites with a mapped S1 value greater than 0.2, a site-specific ground motion analysis may be required in accordance with Section 11.4.8 of ASCE 7-16. Supplement 3 to ASCE 7-16, modifies Section 11.4.8 of ASCE 7-16 and states that "a ground motion hazard analysis is not required where the value of the parameter SM1 determined by Eq. (11.4-2) is increased by 50% for all applications of SM1 in this Standard. The resulting value of the parameter SD1 determined by Eq. (11.4-4) shall be used for all applications of SD1 in this Standard."

The seismic design parameters presented in the table below were calculated using the site coefficients (Fa and Fv) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 16.4.4 of the 2022 CBC. It should be noted that the site coefficient Fv and the parameters SM1 and SD1 were not included in the SEAOC/OSHPD Seismic Design Maps Tool output for the ASCE 7-16 standard. We calculated these parameters-based on Table 1613.2.3(2) in Section 16.4.4 of the 2022 CBC using the value of S1 obtained from the Seismic Design Maps Tool. The values of SM1 and SD1 tabulated below were determined using equations 11.4-2 and 11.4-4 of ASCE 7-16 (Equations 16-20 and 16-23, respectively, of the 2022 CBC) and **do not include a 50 percent increase.** As discussed

above, if a site-specific analysis has not been performed, SM1 and SD1 must be increased by 50 percent for all applications with respect to the ASCE 7-16 standard.

2022 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.753
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.628
Site Class	---	D*
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.753
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	1.068[1]
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.169
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.712[1]

*The 2022 CBC requires that Site Class F be assigned to any profile containing soils vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils. For Site Class F, the site *coefficients* are to be determined in accordance with Section 11.4.7 ASCE 7-16. However, Section 20.3.1 of ASCE 7-16 indicates that for sites with structures having a fundamental period of vibration equal to or less than 0.5 seconds, the site coefficient factors (F_a and F_v) may be determined using the standard procedures. Based on the proposed construction, we expect that the proposed building will possess a fundamental period of vibration less than 0.5 seconds. The seismic design parameters tabulated above were calculated using the site coefficient factors for Site Class D, assuming that the fundamental period of the structure is less than 0.5 seconds. However, the results of the liquefaction evaluation indicate that the subject site is underlain by potentially liquefiable soils. Therefore, if the proposed structure has a fundamental period greater than 0.5 seconds, a site-specific seismic hazards analysis will be required and additional subsurface exploration will be necessary.

Note 1: These values must be increased by 50 percent if a site-specific ground motion hazard analysis has not been performed. However, this increase is not expected to affect the design of the structure type proposed for this site. This assumption should be confirmed by the project structural engineer. The values tabulated above do not include a 50-percent increase.

Closure

We sincerely appreciate the opportunity to be of continued service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Pablo Montes Jr.
Project Engineer

Robert G. Trazo, GE 2655
Principal Engineer

Daniel W. Nielsen GE 3166
Senior Engineer

Enclosures: CEQA-Level Geologic and Geotechnical Peer Review (19 pages)

Distributions: (1) Addressee .

Leighton Consulting, Inc.
A Leighton Group Company

March 28, 2023

Project No. 13521.004

CASC Engineering and Consulting, Inc.
1470 East Cooley Drive
Colton, California 92324

Attention: Ms. Mandi Needle

Subject: CEQA-Level Geologic and Geotechnical Peer Review
Proposed Industrial Building Development
15010 and 15100 Nelson Avenue
City of Industry, California

In accordance with your request and authorization, Leighton Consulting, Inc. (Leighton) has conducted a geologic and geotechnical peer review of two geotechnical reports submitted in preparation of CEQA studies for construction of a new industrial building, located at 15010 and 15100 Nelson Avenue in the City of Industry, California. We have reviewed these reports to assess their adequacy in addressing the geotechnical conditions for the project and comment where additional information should be provided.

We have also reviewed geotechnical and geologic maps and reports available online and in our in-house library to further review the site geologic and geotechnical conditions and discuss potential geologic and geotechnical impacts associated with the project in accordance with the California Environmental Quality Act (CEQA). We referenced the California Geological Survey's Guidelines for Geologic/Seismic Considerations in EIRs (CGS Note 46) during our work.

Documents that you have provided for our review include:

> Southern California Geotechnical (SCG), 2023a, *Geotechnical Investigation, Proposed Industrial Building, 15006 – 15100 Nelson Avenue, Industry, California*, Project No. 21G265-1R, dated January 31, 2023.
>
> Southern California Geotechnical (SCG), 2023b, *Results of Infiltration Testing, Proposed Industrial Building, 15006-15100 Nelson Avenue, Industry, California*, Project No. 21G265-2R, dated January 31, 2023.

Our work has included the following:

- Review site geology and potential geologic hazards based on review of available information, including the geotechnical investigation study and infiltration testing by Southern California Geotechnical (2023a and 2023b) previously prepared for the project.
- Review of geotechnical characteristics of the subsurface earth materials based on available data, including data in the report by SCG, to evaluate the potential impacts on the project.
- Review geotechnical recommendations for the project as presented in the report by SCG.
- Preparation of this report presenting the results of our review, summarizing the geotechnical and geologic conditions and providing recommendations for additional studies where appropriate. We also discuss the potential impacts at the site and where appropriate, provide preliminary mitigation alternatives for potentially significant geologic hazards.

No subsurface exploration or laboratory testing were conducted as part of our work.

Site Conditions and Proposed Development

The site of the proposed new warehouse building is located at 15010 and 15100 Nelson Avenue (Assessor's Parcel Numbers 8208-011-029 and 8208-011-009) in the City of Industry, California (see Figure 1, *Site Location Map*). The site is bordered to the northeast by Nelson Avenue, to the northwest and southeast by industrial development,

and to the southwest by the Southern Pacific Railroad. The site is currently occupied by existing commercial buildings and associated paved areas. Historical aerial photographs show that the site and surrounding areas were likely utilized for agricultural purposes since sometime before 1948. Development on the site began by 1964, and improvements continued, to create the current site layout used for commercial purposes and trailer parking.

Based on the *Request for Proposals* by the City of Industry, dated July 19, 2023, we understand the property is being considered for the construction of a 147,730-square-foot warehouse building with potential office space and 22 dock doors. Ancillary improvements include parking stalls, drive aisles, and associated flatwork, landscaping, and utilities.

Previous Geotechnical Report

Southern California Geotechnical conducted a geotechnical investigation and infiltration testing of selected subsurface soil zones within the project site and reported their findings and recommendations in the referenced reports (SGC, 2023a and 2023b). SCG's investigation included excavating, logging, and sampling five (5) hollow-stem auger borings reaching total depths ranging from approximately 15 to 50 feet below the ground surface (bgs) and four (4) Cone Penetration Test (CPT) soundings each reaching depths of approximately 50 feet bgs to evaluate the site subsurface soil conditions. SCG also conducted laboratory testing and engineering analysis to evaluate the site conditions and provide grading and foundation recommendations. SCG concluded in their study that construction of the proposed industrial buildings is feasible from a geotechnical standpoint, provided that the recommendations presented in their report are incorporated and implemented during design and construction.

SCG excavated, logged, and sampled two (2) additional hollow-stem auger borings to a depth of approximately 10 feet bgs for the purpose of infiltration testing. SGC's field testing resulted in raw infiltration rates of 0.0 to 1.9 inches per hour. Based on these results and considering reduction factors recommended by the County of Los Angeles for design, SCG concluded that infiltration is not feasible for this project.

The boring locations of SCG's geotechnical investigation are illustrated on Figure 2*, Geotechnical Map*.

Earth Units

The site has been regionally mapped (Tan, 2000) to be underlain by Holocene-age Young Alluvial Fan Deposits (Qyf) comprised of alluvial fan and valley deposits consisting of gravel, sand, silt, and clay (see Figure 3*, Regional Geology Map*).

SCG described the site as being underlain by artificial fill soils to a depth of approximately 3 feet below ground surface (bgs). Beneath these fill soils, SCG described near-surface, native alluvial soils onsite as consisting of loose to medium dense silty sands, clayey sands, and sandy silts, and medium stiff to stiff silty clays, sandy clays, and clayey silts. At greater depths, these native soils were described by SCG as medium dense to very dense fine to coarse sands, silty sands, and sandy silts, and stiff to very stiff clays and sandy clays.

Groundwater

SCG did not encounter groundwater in any of their borings, which extended to a maximum depth of approximately 50 feet bgs.

SCG indicated that based on their review of historic groundwater from the California Geological Survey (CGS) Open File Report 98-13, for the Baldwin Park 7.5-Minute Quadrangle, historically high groundwater was approximately 10 feet bgs. SCG also utilized the California State Water Resources Control Board, Geotracker website to determine more recent groundwater levels. Their research indicated a high groundwater level of approximately 66 feet bgs in September, 2016.

Historically high groundwater levels reported in the CGS Seismic Hazard Zone Report 022 indicated a depth to groundwater of approximately 10 feet bgs (CGS, 2001). Groundwater level data from the Los Angeles County Department of Public Works, Well ID: 3035V, State Well #1S10W31F04, shows a highest groundwater level of approximately 60 feet bgs from data taken between 1979 and 2022. Groundwater readings taken from this well from 2013 to present indicated a highest depth to groundwater of over 100 feet bgs. Our findings support SCG's opinion that groundwater is not likely to pose issues during construction of the proposed industrial building.

GEOLOGIC AND SEISMIC HAZARDS

Fault-Induced Ground Rupture

The site has been mapped to be outside of any Earthquake Fault Zones as designated by the California Geological Survey (CGS, 1999). The site has no known active faults mapped onsite (see Figure 4, *Regional Fault and Historical Seismicity Map*). The closest known active fault to the site is the Walnut Creek fault, which has been mapped approximately 0.3 mile southeast of the site. Other active or potentially active faults nearby include the Whittier section of the Elsinore fault zone mapped approximately 4.3 miles south of the site and the San Jose fault mapped approximately 5.0 miles east of the site. Considering the site's location relative to mapped faulting, the potential for fault-induced ground rupture is considered to be less than significant. SCG reported that the possibility of significant fault rupture is considered to be low at the site.

Seismic Ground Shaking

Figure 4, *Regional Fault and Historical Seismicity Map* depicts recorded historical regional seismic events (those that have been recorded since the mid-1700s) with respect to the site. Based on this map, it appears that the site has been exposed to relatively significant seismic events; however, this site does not appear to have experienced more severe seismicity than compared to much of southern California in general. We are unaware of documentation indicating that past earthquake damage in the site vicinity has been significantly worse than for the majority of southern California. In addition, we are unaware of damage in the site vicinity as the result of liquefaction, lateral spreading, or other related phenomenon. However, the hazard to the site posed by seismic shaking is considered high, due to the proximity of known active faults. Therefore, seismic ground shaking is considered to be a potentially significant impact.

There is no realistic way in which the hazard of seismic shaking can be totally avoided. However, the potential for future ground shaking at the site appears no greater than at many other sites in southern California. SCG provided seismic coefficients and spectral response acceleration values in accordance with the 2019 California Building Code, including ASCE 7-16. These values should be updated as needed to reflect the latest edition of the CBC (California Building Standards Commission, 2022). Design in accordance with these standards is expected to reduce the impact of ground shaking to less than significant.

Liquefaction and Lateral Spreading

The California Geologic Survey has mapped the site to be within a liquefaction hazard Zone (CGS, 1999; see Figure 5, *Seismic Hazard Map*). SCG did not encounter groundwater during their exploration to a depth of approximately 50 feet bgs. However, the historically high groundwater level of 10 feet bgs was used in their liquefaction analysis. SCG performed a liquefaction analysis in accordance with the requirements of Special Publication 117A (CDMG, 2008), and currently accepted practice (for instance, SCEC, 1997). SCG's settlement analysis estimates the dynamic settlement to be up to 3.3 inches, with differential settlement to be on the order of 1.5 to 2 inches using PGA_m of 0.82g for a magnitude 6.8 seismic event.

Based on their analysis, SCG found liquefiable soil layers as shallow as 9.5 feet below the surface in several of their borings. SCG reported that "The presence of the recommended layer of newly placed compacted structural fill above these liquefiable soils will help reduce any surface manifestations that could occur as a result of liquefaction." SCG also concluded when discussing differential settlement that "Based on our understanding of the proposed development, it is considered feasible to support the proposed structures on shallow foundations."

Although SCG indicated that the placement of compacted fill would reduce surface manifestations relating to liquefaction, they did not indicate that the hazards relating to surface manifestations due to liquefaction are less than significant. Based on this, the impacts from liquefaction hazards for this project are considered significant.

SCG reported that the potential for lateral spreading is considered low. Liquefaction may also cause lateral spreading. Because the impacts from liquefaction hazards for this project is considered significant, the impact for lateral spreading is also considered significant.

Seismically Induced Landslides

The site has been mapped outside an earthquake-induced landslide zone as according to the California Geological Survey CGS (see Figure 5, *Seismic Hazard Map*). In addition, the site and immediately surrounding area is relatively flat, with no evidence of past landslides. Thus, the potential for landslides and slope instability onsite is considered less

than significant. SCG did not address the potential for seismically induced landslides in their 2023 report.

Seismically Induced Settlement

Based on SCG's borings and the parameters set forth in their 2023 report, we have performed independent analyses to estimate the potential for seismically induced settlement using the method of Tokimatsu and Seed (1987), and based on Martin and Lew (1999), considering the maximum considered earthquake (MCE) peak ground acceleration (PGAM). In conducting this analysis we used data from SCG's 5 borings across the site. The results of our analyses suggested that the onsite soils are susceptible to up to 3.8 inches of seismic settlement based on the MCE without mitigation. Assuming that the grading recommendations presented by SCG are followed, seismic settlement is expected to be on the order of 2 to 3 inches. SCG indicated that seismically induced settlement is expected to be within tolerable limits, provided their remedial grading recommendations are implemented and structural design considers these amounts of potential settlement. Based on our independent analysis, we agree with SCG that the seismically induced settlement onsite is expected to be less than significant, provided their remedial grading and utility connection recommendations as described in their report are implemented and foundation design recommendations provided by SCG are considered by the structural engineer.

Flooding

The Federal Emergency Management Agency (FEMA, 2008) has mapped this site to be outside of any 100-year of 500-year flood zones. Due to the zoning of the site, the potential for flooding at the site is considered to be less than significant. SCG indicated that the potential for flooding at the site is low in their 2023 report. Based on this, the impact of flooding is less than significant for this project.

Seismically Induced Flooding

Earthquake-induced flooding can be caused by failure of dams or other water-retaining structures as a result of an earthquake. The site is not located within a dam breach inundation area as delineated by the California Department of Water Resources (CDWR, 2023). Considering that the site is located outside State delineated dam inundation zones, the potential for inundation at the site from earthquake-induced dam failure is less than significant. SCG noted that the potential for inundation to occur is low in their report.

Seiches and Tsunamis

A tsunami, or seismically generated sea wave, is generally created by a large, distant earthquake occurring near a deep ocean trough. A seiche is an earthquake-induced wave in a confined body of water, such as a lake or reservoir. Damage from tsunamis is confined to coastal areas that are 20 feet or less above sea level. Since the project is not located near the coast or any confined bodies of water, the risk of inundation from a tsunami or seiche has no impact. Additionally, The State of California has mapped the site outside of any tsunami hazard zones. SCG indicated a low potential for seiches and tsunamis in their 2023 report.

Slope Stability and Landslides

Due to the relatively flat nature of the site, and the absence of past landslides mapped by the State of California, the potential for landslides is considered to be less than significant. Landslides and slope stability was not addressed in SCG's 2023 report.

Soil Expansion

SCG's laboratory testing of two selected soil samples indicated soils with Expansion Indices of 75 and 57. Based on laboratory testing results presented in SCG's report, onsite soils are expected to have medium expansion potential. Considering this, the impact posed by expansive soils is considered to be significant. However, this impact may be reduced to less than significant provided that foundation design considers soils with medium expansion potential and that the construction considerations for expansive soils presented in SCG's report are implemented.

Sedimentation and Erosion

The native soils onsite, as well as fill slopes constructed with native soils, will have a high susceptibility to erosion. These materials will be particularly prone to erosion during site development, especially during heavy rains. Therefore, the impact of erosion at the site is considered to be potentially significant.

The potential for erosion can typically be reduced by appropriate paving of exposed ground surfaces, landscaping, and installing adequate storm drain systems.

Temporary erosion control measures should be provided during construction, as required by current grading codes. Such measures typically include temporary catchment basins and/or sandbagging to control runoff and contain sediment transport within the project site. Appropriate implementation of these erosion control measures is expected to reduce the impact resulting from erosion to less than significant. SCG did not address sedimentation and erosion in their 2023 report.

Regional Subsidence

USGS (2022) has reported the site to be outside a zone of historical regional subsidence from groundwater pumping, peat loss, or oil extraction. We are not aware of any reports of regional subsidence that have been reported in the site vicinity, and a lack of intense removal of significant quantities of water, peat, or oil in the area makes the potential for ground subsidence very low and less than a significant impact. SCG had reported that there is low potential for subsidence to affect the site.

Compressible Soils

SCG tested selected samples in the upper 10 feet for consolidation testing, which indicated negligible swell or collapse potential. Although, swell and collapse potential was not specifically addressed in SCG's report, based on the results of their testing, the potential for swell or collapse of onsite soils is considered less than significant.

Infiltration Testing

As part of a concurrent study with their geotechnical investigation, SCG performed infiltration testing within two (2) hollow-stem auger borings located in the northern portion of the site at depths of 10 feet for both locations. Their testing was performed in general accordance with the Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration (GS200.1) published by Los Angeles County Public Works – Geotechnical Engineering and Materials Division, dated June 30, 2021. Field measurements of the infiltration testing conducted by SCG yielded unfactored infiltration rates of 0.0 and 1.9 inches per hour. Considering reduction factors determined by the County, SCG reported a design infiltration rate of 0.0 inches per hour. Given the findings of SCG's testing, Leighton is in agreement that infiltration is not feasible for this project.

Summary of Geologic and Seismic Hazard Review

The results of our geologic and seismic hazard review are summarized below.

GEOLOGIC AND SEISMIC HAZARDS	FINDINGS
• Fault rupture	Less than Significant Impact
• Seismic Ground Shaking	Less than Significant Impact with Mitigation
• Liquefaction	Significant Impact
• Lateral Spreading	Significant Impact
• Seismically Induced Landslides	Less than Significant Impact
• Seismically Induced Settlement	Less than Significant Impact with Mitigation
• Flooding	Less than Significant Impact
• Seismically Induced flooding	Less than Significant Impact
• Seiches and Tsunamis	No Impact
• Slope Stability and Landslides	Less than Significant Impact
• Soil Expansion	Less than Significant Impact with Mitigation
• Sedimentation and Erosion	Less than Significant Impact with Mitigation
• Regional Subsidence	Less than Significant Impact
• Compressible Soils	Less than Significant Impact

Conclusions and Recommendations

In their 2023 report, SCG identified geologic and geotechnical constraints related to the proposed development of a 142,730 square-foot warehouse building with office space and associated improvements. Based on a review of their 2022 report, we have provided the following comments:

Although SCG indicated that the placement of compacted fill would reduce surface manifestations relating to liquefaction, they did not indicate that the hazards relating to surface manifestations due to liquefaction are less than significant. Liquefaction may also cause lateral spreading. We recommend that SCG address the potential for liquefaction to manifest at the surface of the project site and the potential of lateral spreading caused by liquefaction to indicate that the impact from these hazards is less than significant or to provide mitigation measures to reduce these hazards to be less than significant.

SCG provided geotechnical recommendations for the development that generally appear appropriate. However, Leighton recommends that the Asphaltic Concrete Pavement sections be revisited to account for the maximum allowed base material by the California

Department of Transportation (Cal Trans). Cal Trans limits the amount of base material used for pavement sections to 12.5 inches.

Additionally, the seismic design parameters presented in SCG's 2023 report are based on the 2019 CBC. These parameters should be reviewed and updated as needed based on the most recent edition of the CBC, which went into effect on January 1, 2023 (CBC, 2022).

We appreciate the opportunity to provide our services for this review. If you have any questions, please contact this office at your convenience.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Steven G. Okubo, CEG 2706
Associate Geologist

Jason D. Hertzberg, GE 2711
Principal Engineer

BTM/JDH/SGO/rsm

Attachments: References
Figure 1 - Site Location Map
Figure 2 - Exploration Location Map
Figure 3 - Regional Geology Map
Figure 4 - Regional Fault and Historical Seismicity Map
Figure 5 - Seismic Hazard Map

Distribution: (1) Addressee

REFERENCES

Bryant, W.A., and Hart, E.W., 2007, Fault Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps, California Geological Survey: Special Publication 42.

California Building Standards Commission, 2022, 2022 California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Based on 2021 International Building Code, Effective January 1, 2023.

California Department of Water Resources (CDWR), 2023, California Dam Breach Inundation Maps, website: https://fmds.water.ca.gov/maps/damim/, accessed February 6, 2023.

_____, 2023, Water Data Library, Interactive Website: https://wdl.water.ca.gov/waterdatalibrary, accessed February 6, 2023

California Geological Survey (CGS), 2021, EQ Zapp: California Earthquake Hazards Zone Application, interactive website; https://www.conservation.ca.gov/cgs/geohazards/eq-zapp, accessed February 6, 2023.

California Geological Survey (CGS), 1998, Seismic Hazard Zone Report for the Baldwin Park 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 022.

California Geologic Survey (CGS), 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, Revised and Re-Adopted on September 11, 2008, Laguna Beach, California.

California Geological Survey (CGS), 1999, Earthquake Zones of Required Investigation, Baldwin Park Quadrangle, released March 25, 1999, scale 1:24,000.

California Geological Survey (CGS), 2023, Landslide Inventory, website: https://maps.conservation.ca.gov/cgs/lsi/, accessed February, 2023.

California Geological Survey (CGS), 2023, Los Angeles County Tsunami Hazard Areas, Interactive Website: https://www.conservation.ca.gov/cgs/tsunami/maps/los-angeles; accessed February 6, 2023.

Federal Emergency Management Agency (FEMA), 2023, FEMA Flood Map Service Center, website: https://msc.fema.gov/portal/home, accessed February 3, 2023.

Los Angeles County, 2023, Department of Public Works, Groundwater Wells Interactive Website: https://dpw.lacounty.gov/general/wells/; accessed February 6, 2023.

Martin, G.R., and Lew, M., ed., 1999, "Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California," Southern California Earthquake Center, dated March 1999.

Nationwide Environmental Title Research (NETR), 2023, NETR Online, Historic Aerials, website: https://www.historicaerials.com, accessed February 6, 2023.

Southern California Earthquake Center (SCEC), University of Southern California, "Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California," Committee formed 1997.

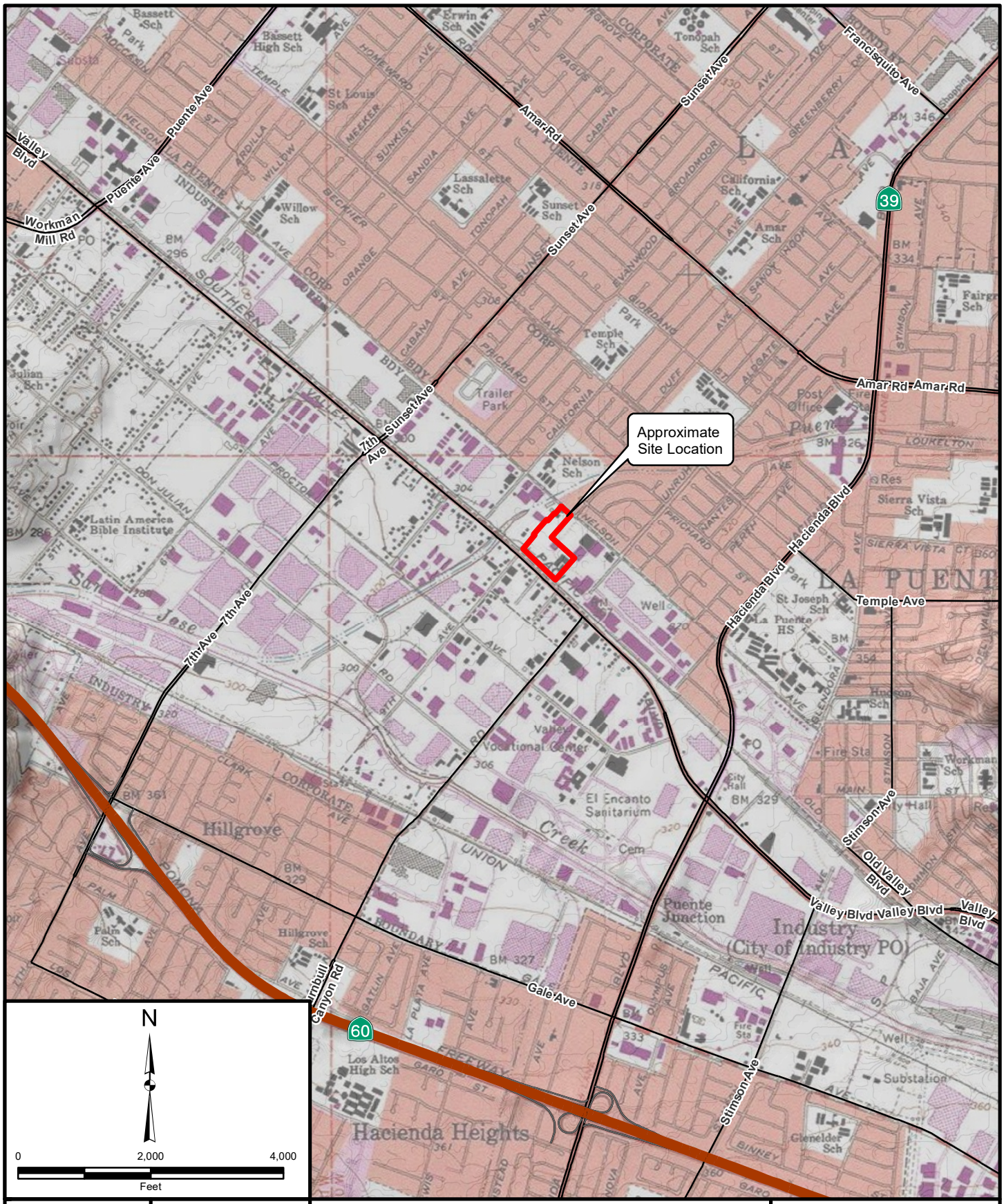
Tan, Siang, S., 2000, Digital Geologic Map of the Baldwin Park 7.5' Quadrangle, Los Angeles County, California: California Division of Mines and Geology, Open-File Report 98-13 and 98-30, scale 1:24,000.

Tokimatsu, K., Seed, H.B., 1987, "Evaluation of Settlements in Sands Due to Earthquake Shaking," Journal of the Geotechnical Engineering, American Society of Civil Engineers, Vol. 113, No. 8, pp. 861-878.

United States Geological Survey (USGS), 2023, Areas of Land Subsidence in California, website: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed February 6, 2023.

Youd, T. L., Hanson C. M., and Bartlett, S. F., 1999, Revised MLR Equations for Predicting Lateral Spread Displacement, Proceedings of the 7th U.S.-Japan Workshop on Earthquake Resistant Design of Lifeline Facilities and Countermeasures Against Soil Liquefaction, November 19, 1999, pp. 99-114.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, L., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.C., Marcuson, W.F. III, Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., Stokoe, K.H. II, 2001, “Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils”, Journal of Geotechnical and Geoenvironmental Engineering, Vol. 127, No. 10, October 2001.



Project: 13521.004	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: March 2023

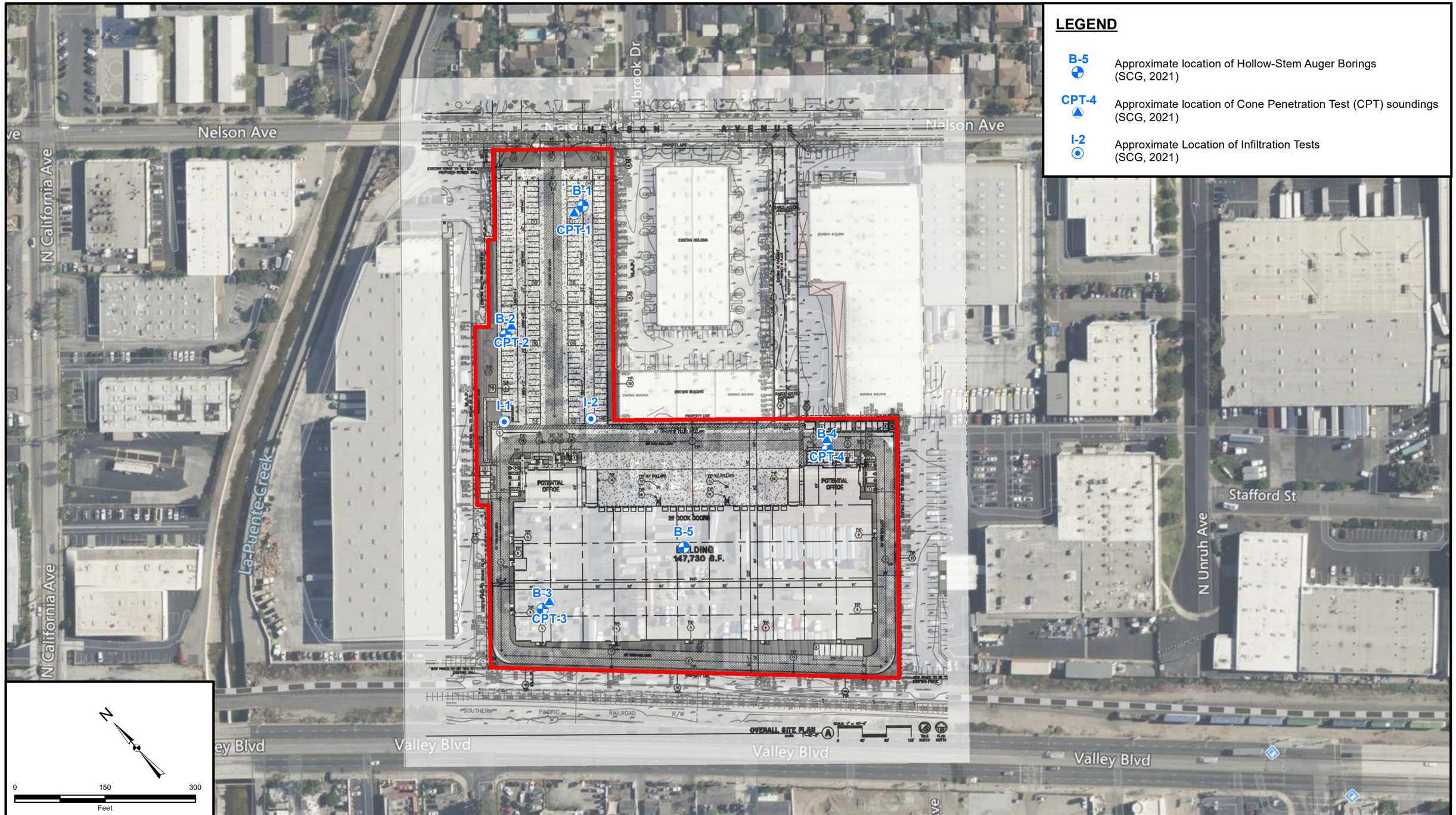
SITE LOCATION MAP

Proposed Industrial Building
15010 and 15100 Nelson Avenue
City of Industry, California

FIGURE 1

Leighton

Map Saved as J:\Drafting\13521\004\Maps\13521-004_F01_SLM_2022-11-17.mxd on 11/16/2022 2:07:07 PM Author: KVM (btran)



LEGEND

B-5	Approximate location of Hollow-Stem Auger Borings (SCG, 2021)
CPT-4	Approximate location of Cone Penetration Test (CPT) soundings (SCG, 2021)
I-2	Approximate Location of Infiltration Tests (SCG, 2021)

Project: 13521.004	Eng/Geol: JDH/SGO
Scale: 1 " = 150 '	Date: March 2023
Reference: Site Plan as shown	

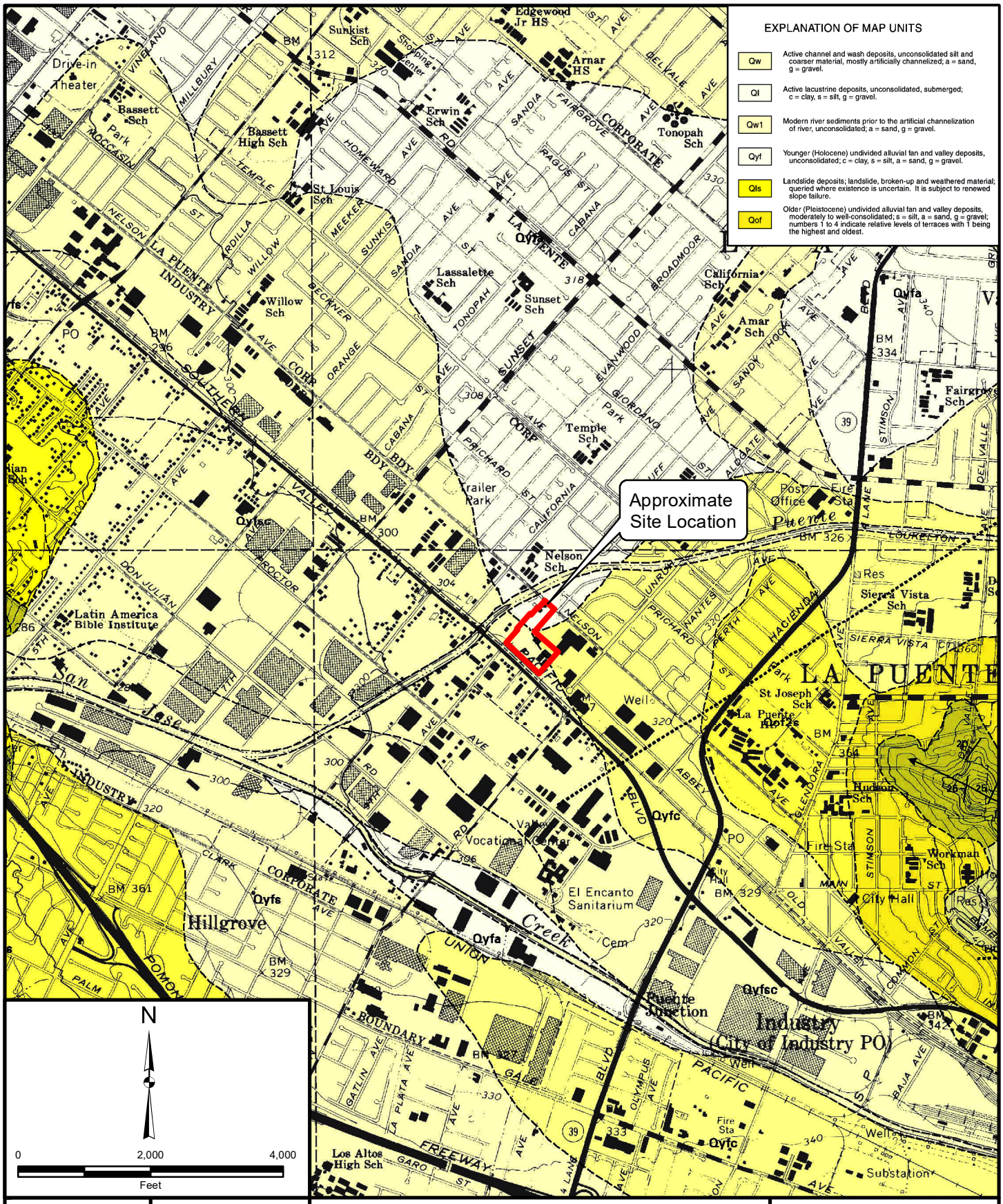
GEOTECHNICAL MAP

Proposed Industrial Building
15010 and 15100 Nelson Avenue
City of Industry, California

FIGURE 2

Leighton

Map Saved as J:\Drafting\13521\004\Maps\13521-004_F02_GM_2022-11-17.mxd on 11/16/2022 2:06:19 PM Author: KVM (btran)



Project: 13521.004	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: March 2023

Reference: Geologic Map of The Baldwin Park Quadrangle Los Angeles County, California by Siang S. Tan, 1997

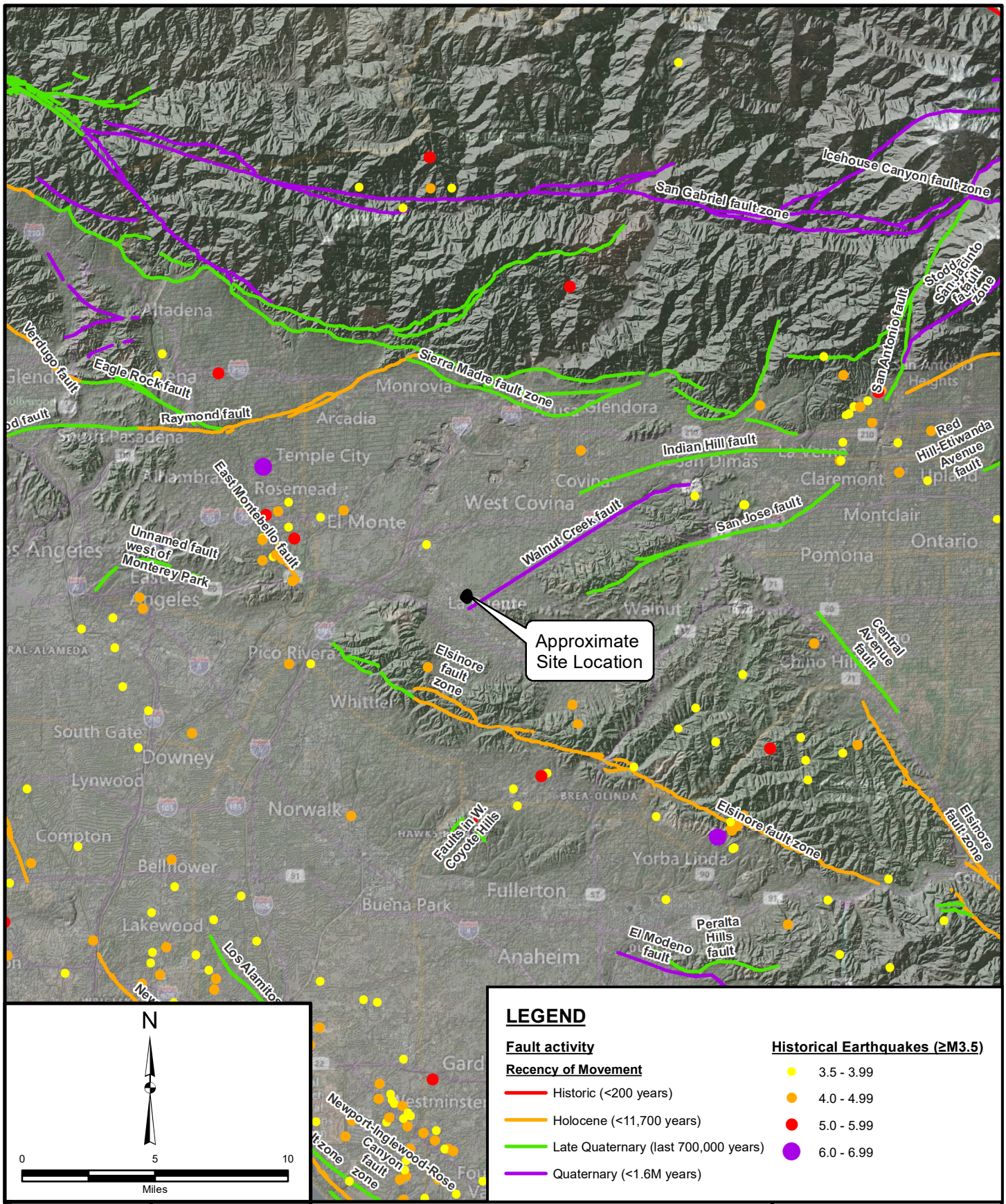
REGIONAL GEOLOGY MAP

Proposed Industrial Building
15010 and 15100 Nelson Avenue
City of Industry, California

FIGURE 3

Leighton

Map Saved as J:\Drafting\13521\004\Maps\13521-004_F03_RGM_2022-11-17.mxd on 11/16/2022 2:39:32 PM(btran)



LEGEND

Fault activity

Recency of Movement

- Historic (<200 years)
- Holocene (<11,700 years)
- Late Quaternary (last 700,000 years)
- Quaternary (<1.6M years)

Historical Earthquakes (≥M3.5)

- 3.5 - 3.99
- 4.0 - 4.99
- 5.0 - 5.99
- 6.0 - 6.99

Project: 13521.004	Eng/Geol: JDH/SGO
Scale: 1 " = 5 miles	Date: March 2023

Basemap Reference: © 2022 Microsoft Corporation
Earthstar Geographics SIO © 2022 TomTom
Seismicity Data Reference: maps.conservation.ca.gov

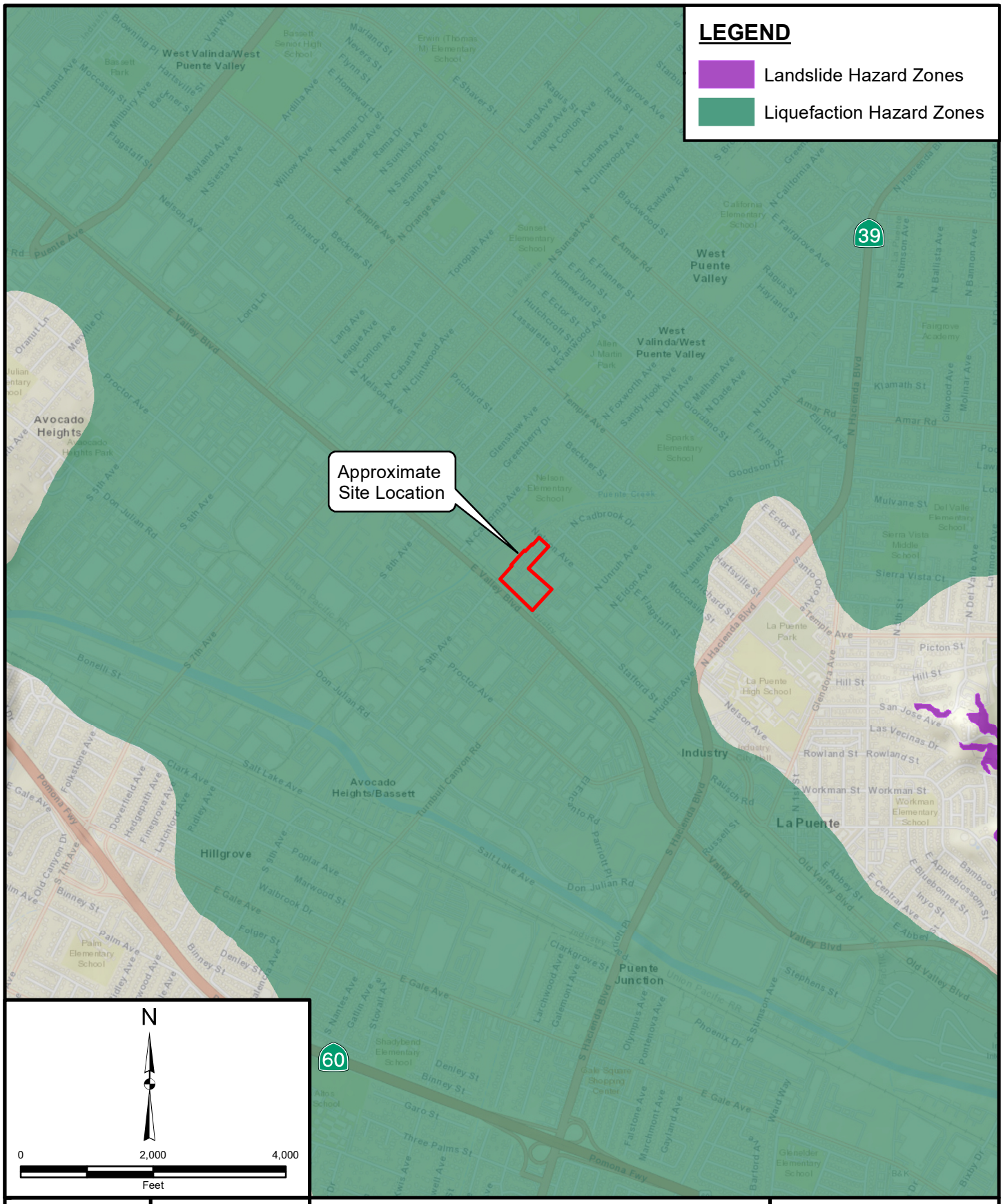
REGIONAL FAULT AND HISTORIC SEISMICITY MAP

Proposed Industrial Building
15010 and 15100 Nelson Avenue
City of Industry, California

FIGURE 4

Leighton

Map Saved as J:\Drafting\13521\004\Maps\13521-004_F04_RFHSM_2022-11-17.mxd on 11/16/2022 2:12:42 PM Author: KVM (btran)



Project: 13521.004	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: March 2023

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

SEISMIC HAZARD MAP

Proposed Industrial Building
15010 and 15100 Nelson Avenue
City of Industry, California

FIGURE 5

Leighton

Map Saved as J:\Drafting\13521\004\Maps\13521-004_F05_SHM_2022-11-17.mxd on 11/16/2022 2:15:58 PM Author: KVM (btran)