APPENDIX G1: GEOTECHNICAL HAZARDS REVIEW SUMMARY AND LETTER REPORT

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August 11, 2020 (Revised March 8, 2021)

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Howard Industrial Partners
1944 North Tustin Street, Suite 122
Orange, California 92865

Attention: Mr. Michael Tunney
Vice President

Project No.: **20G172-1R**

Subject: **Geotechnical Hazards Review Summary and Letter Report**
Proposed Bloomington Master Development
Sites 1 through 4 and Extended Study Area
NEC Locust Avenue and Jurupa Avenue
Bloomington (Unincorporated San Bernardino County), California

Gentlemen:

In accordance with your request, we have conducted a geotechnical hazards review summary at the subject site. We are pleased to present this letter report summarizing our research.

Site Location and Proposed Development

The site consists of four (4) contiguous areas (identified as Site 1 through Site 4), approximately 213 acres in size, in an unincorporated portion of San Bernardino County, California. This study includes Site 1 through Site 4 and the extended specific plan area of influence. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 of this letter report.

Site 1

Site 1 is located at the northeast corner of Maple Avenue and Jurupa Avenue in the Bloomington area of unincorporated San Bernardino County, California. The site is bounded to the north by single-family residences, to the west by Maple Avenue, to the south by Jurupa Avenue, and to the east by Linden Avenue.

The site consists of twelve (12) rectangular-shaped parcels, which total 17.72± acres in size. The site is developed with numerous single-family residences. The ground surface cover consists of exposed soil with sparse to moderate native grass and weed growth, turf grass, and concrete flatwork.

Based on the conceptual master plan, Site 1 will be developed with a commercial/industrial building, 383,000± ft² in size. The building will be constructed with dock-high doors along a portion of the south building wall. It is also assumed that the building will be a tilt-up concrete structure, supported on conventional shallow foundations with a concrete slab-on-grade floor. The building will be surrounded by asphaltic concrete pavements in the parking and drive lanes, Portland cement concrete in the loading dock areas, and landscape planters throughout.

Site 2

Site 2 is located at the northwest corner of Maple Avenue and Jurupa Avenue in Bloomington, an unincorporated portion of San Bernardino County, California. The site is bounded to the north by single-family residences and a vacant lot, to the west by Locust Avenue and single-family residences, to the south by Jurupa Avenue, and to the east by Maple Avenue.

The site consists of multiple contiguous rectangular-shaped parcels which total 57.60± acres in size. The site is developed with numerous single-family residences, commercial/industrial buildings, trailer storage yards, and a nursery.

Based on the conceptual master plan, Site 2 will be developed with a commercial/industrial building, 1,251,640± ft² in size. The building will be constructed with dock-high doors located along the east and west sides of the building. It is also assumed that the building will be a tilt-up concrete structure, supported on conventional shallow foundations with a concrete slab-on-grade floor. The building will be surrounded by asphaltic concrete pavements in the parking and drive lanes, Portland cement concrete in the loading dock areas, and landscape planters throughout.

Site 3

Site 3 is located on the west side of Locust Avenue, south of Santa Ana Avenue in Bloomington area of unincorporated San Bernardino County, California. The site is bounded to the north by Santa Ana Avenue and single-family residences, to the west by Laurel Avenue, to the south by single-family residences, and to the east by Locust Avenue.

The site consists of multiple contiguous rectangular-shaped parcels which total 30.61± acres in size. The site is developed with several single-family residences, commercial/industrial buildings, and trailer storage yards.

Site 3 will be developed with a commercial/industrial building, 477,000± ft² in size, that will be located in the western region of the site. The building will be constructed with dock-high doors located along portions of the east and west sides of the building. The building is expected to be a tilt-up concrete structure, supported on conventional shallow foundations with a concrete slab-on-grade floor. The remainder of Site 3 will be utilized for automobile parking as well as trailer parking and storage.

Site 4

Site 4 is located on the west side of Laurel Avenue, approximately 650± feet south of Santa Ana Avenue in Bloomington area of unincorporated San Bernardino County, California. The site is bounded to the north, west, and south by single-family residences, and to the east by Laurel Avenue.

The site consists of multiple contiguous rectangular-shaped parcels which total 9.50± acres in size. The site is developed with an abandoned single-family residence.

Based on the conceptual master plan, Site 4 will be utilized for trailer parking. The trailer parking lot is expected to be either of asphaltic concrete of Portland cement concrete pavements. The parking lot will consist of 294 trailer parking stalls with associated drive lanes.

Remaining Planning Area

The remaining planning area is bounded to the north by Santa Ana Avenue, to the west by 650± feet west of Laurel Avenue, to the south by Jurupa Avenue, and to the east by Linden Avenue in the south and Maple Avenue in the north.

The proposed development is illustrated on the Proposed Development Plan, enclosed as Plate 2 of this letter report.

Scope of Service

The scope of services performed for this project was in accordance with our Change Order No. 20G172-CO2, dated March 5, 2021. The scope of services includes reviewing previously conducted geotechnical reports, reviewing the master plan, reviewing aerial photographs, and performing geologic research of available sources. It should be noted that this letter report does not include any field work or laboratory testing. We understand this letter report will be utilized for an associated environmental impact report (EIR).

Previous Studies

Southern California Geotechnical, Inc. (SCG) previously conducted a geotechnical investigation at Site 2. The previous report is identified as follows:

> Updated Geotechnical Investigation, Proposed Commercial/Industrial Building – Site 2, NWC of Maple Avenue and Jurupa Avenue, Bloomington (Unincorporated San Bernardino County), California, prepared by SCG for Howard Industrial Partners, SCG Project No. 18G108-4, dated February 25, 2021.

The subsurface exploration conducted for this project consisted of fifteen (15) borings advanced to depths of 5 to 30± feet below existing site grades. Artificial fill was encountered at twelve (12) of the fifteen (15) boring locations, extending to depths of 2½ to 5½± feet below the existing site grades. The fill soils generally consisted of loose to medium dense silty fine sands and fine to coarse sands with occasional fine to coarse gravel and cobbles. Occasional samples of the fill materials possessed minor debris content including wood, metal and palm roots. Soils identified as possible fill were encountered at two (2) boring locations. Native alluvial soils were encountered at most boring locations at the ground surface or beneath the fill/possible fill. The alluvium within the upper 3 to 12± feet generally consisted of loose to medium dense gravelly fine to coarse sands, fine sandy silts, and silty fine to coarse sands with varying amounts of fine to coarse gravel and cobbles. At greater depths, the alluvial soils generally consisted of dense to very dense gravelly fine to coarse sands, fine sandy silts, and silty fine to coarse sands with varying amounts of fine to coarse gravel and cobbles, extending to at least the maximum depth explored of 30± feet. Free water was not encountered during the drilling of any of the borings,

therefore, the static groundwater table was considered to have existed at depths greater than the maximum depth explored of 30± feet.

SCG previously conducted a feasibility study at Site 1. The previous report is identified as follows:

> Geotechnical Feasibility Study, Proposed Commercial/Industrial Building – Site 1, NWC of Jurupa Avenue and Linden Avenue, Bloomington (Unincorporated San Bernardino County), California, prepared by SCG for Howard Industrial Partners, SCG Project No. 20G120-1R, dated March 20, 2020 (Revised February 25, 2021).

The subsurface exploration conducted for this project consisted of three (3) borings advanced to depths of 20 to 30± feet below existing site grades. Artificial fill soils were encountered beneath the existing pavement at Boring No. B-1 and at the ground surface at Boring Nos. B-2 and B-3, extending to the depths of 1½ to 3± feet below the existing site grades. The fill soils generally consisted of loose to medium dense silty fine sands with varying medium to coarse sand and gravel content. The fill soils possessed a disturbed and mottled appearance, resulting in their classification as artificial fill. Native alluvium was encountered beneath the artificial fill soils at all of the boring locations, extending to at least the maximum depth explored of 30± feet below the existing site grades. The near-surface alluvium generally consisted of loose to medium dense silty fine sands with varying medium to coarse sand and gravel content, extending to depths of 4½ to 6½± feet. The underlying alluvium generally consists of medium dense to dense well-graded sands with varying fine gravel and silt content, extending to depths of 12 to 20± feet. At depths greater than 20± feet, the alluvial soils generally consisted of medium dense fine sandy silts with occasional medium dense silt and very stiff clayey silt strata. Free water was not encountered during the drilling of any of the borings, therefore, the static groundwater table was considered to have existed at depths greater than the maximum depth explored of 30± feet.

SCG previously conducted a geotechnical investigation at Sites 3 and 4. The previous report is identified as follows:

> Geotechnical Investigation, Proposed Commercial/Industrial Development – Sites 3 & 4, Laurel Avenue, South of Santa Ana Avenue, Bloomington (Unincorporated San Bernardino County), California, prepared by SCG for Howard Industrial Partners, SCG Project No. 20G172-5, dated February 26, 2021.

The subsurface exploration conducted for this project consisted of fifteen (15) borings advanced to depths of 10 to 30± feet below existing site grades. Artificial fill soils and possible fill soils were encountered at the ground surface at all fifteen (15) of the boring locations, extending to depths of 1½ to 5½± feet below the existing site grades. The artificial fill soils consisted of very loose to medium dense silty fine sands and medium dense fine sandy silts. Trace to little quantities of medium to coarse sands were encountered within the artificial fill soils and occasional trace quantities of fine to coarse gravel were present in the strata. Possible fill soils were also encountered at the ground surface of Boring No. B-10 and beneath the artificial fill soils at Boring Nos. B-6 and B-14, extending to depths of 3 to 6½± feet. The possible fill soils are comprised of loose silty fine sands. Native alluvium was encountered beneath the fill and possible fill soils at all of the fifteen (15) boring locations, extending to the maximum explored depth of 30± feet below existing site grades. The shallow native alluvial soils between the depths of 6½ to 10½± feet consisted of loose to medium dense fine to coarse sands, silty fine sands and fine dandy silts,

with varying amounts of fine to coarse gravel, and occasional cobbles. At greater depths, the alluvium consisted of medium dense to very dense fine to coarse sands, silty fine sands and fine sandy silts, with varying fine to coarse gravel and occasional cobbles. At Boring No. B-5, trace quantities of clays were encountered at depths of 22 to 27± feet below existing site grades. Free water was not encountered during the drilling of any of the borings, therefore, the static groundwater table was considered to have existed at depths greater than the maximum depth explored of 30± feet.

Regional Geology

The subject site is located within the Peninsular Ranges province. The Peninsular Ranges province consists of several northwesterly-trending ranges in the southwestern California. The province is truncated to the north by the east-west trending Transverse Ranges. Prior to the mid-Mesozoic, the region was covered by seas and thick marine sedimentary, and volcanic sequences were deposited. The bedrock geology that dominates the elevated areas of the Peninsular Ranges consists of high-grade metamorphic rocks intruded by Mesozoic plutons. During the Cretaceous, extensive mountain building occurred during the emplacement of the southern California batholith. The Peninsular Ranges have been significantly disrupted by Tertiary and Quaternary strike-slip faulting along the Elsinore and San Jacinto faults. This tectonic activity has resulted in the present terrain.

Geologic Conditions

The geologic conditions of the subject site were determined by research of the Preliminary Geologic Map of for the Fontana 7.5' Quadrangle, San Bernardino and Riverside Counties, California, published by the United States Geological Survey (USGS). A portion of this map is presented as Plate 3 of this report. The majority of the overall planning area is underlain by young alluvial-fan deposits of Lytle Creek (Map Symbol Qyfl). The young alluvial-fan deposits are described as unconsolidated cobbly, bouldery alluvium of the Lytle Creek fan. The southwestern and southeastern areas of the overall planning area are underlain by very old alluvial fan deposits (Map Symbol Qvof). The old alluvial fan deposits are described as mostly well-dissected, well-indurated, reddish-brown sand deposits. A small portion in the southern area of the overall planning area is mapped as Tonalite (Map Symbol Kt). The tonalite is described as a relatively uniform, medium- to coarse-grained equigranular gray biotite-hornblende tonalite.

Based on the conditions encountered during the previous geotechnical exploration at Sites 1 through 4, the subsurface conditions are consistent with the mapped geologic conditions.

Fault Rupture Hazard

Currently, there is no published Alquist-Priolo Earthquake Fault Zone Map for the Fontana Quadrangle. Therefore, the California Geologic Survey (CGS) has not mapped any active or potentially active faults with potential surface fault rupture in the Fontana Quadrangle. In addition, the Geologic Hazard Overlays map of the Fontana Quadrangle, published by San Bernardino County, does not depict any fault zones near the subject site. A portion of this map is presented as Plate 4 of this report.

The nearest known active fault zone is the San Bernardino Section of the San Jacinto Fault Zone (SJFZ) located 3.7± miles northeast of the subject site. The SJFZ is a right-lateral strike-slip fault with minor right-reverse. The SJFZ has a total length of 210 km with a slip rate ranging between 7 and 17 mm/yr. The interval between surface ruptures ranges between 100 and 300 years with a probable magnitude of M_w 6.5 to 7.5 (SCEC).

Based on the lack of a published Alquist-Priolo Earthquake Fault Zone Map for the Fontana Quadrangle, the possibility of significant fault rupture on the site is considered to be low.

Liquefaction Hazard

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Clayey (cohesive) soils or soils which possess clay particles (d<0.005mm) in excess of 20 percent (Seed and Idriss, 1982) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The California Geological Survey (CGS) has not yet conducted detailed seismic hazards mapping in the area of the subject site. The general liquefaction susceptibility of the site was determined by research of the San Bernardino County Official Land Use Plan, General Plan, Geologic Hazard Overlay. Map FH29C for the Fontana Quadrangle indicates that the subject site is not located within an area of liquefaction susceptibility. Based on the mapping performed by the county of San Bernardino and the subsurface conditions encountered at the boring locations, including the lack of a static ground water table within the upper 50± feet of the surface, liquefaction is not considered to be a design concern for this project.

Other Secondary Seismic Hazards

Secondary seismic hazards include seismic settlement of dry soils, lateral spreading, and landslides. Based on the San Bernardino County Official Land Use Plan, General Plan, Geologic Hazard Overlay (FH29C for the Fontana Quadrangle), a small portion of the southernmost extended area of Sites 2, 3, and 4 are mapped as moderate to high landslide susceptibility. A portion of this map is presented as Plate 4 of this report. A review of historic aerials, topographic maps, and Google Earth images, indicates that these slopes have been intermittently utilized for agricultural purposes since 1938. Based on the current existing grades obtained from Google Earth, the slope is approximately 4h:1v. Due to the mapped conditions, a geotechnical investigation is recommended to determine landslide potential in this area.

The remaining areas of the overall site have relatively flat topography. A review of previous geotechnical investigations indicates the subsurface soils consist of medium dense to dense sands and silty sands. Therefore, seismic settlements of dry sands and lateral spreading are considered unlikely and is not considered a design concern for this project.

Geotechnical Design Considerations

Settlement

Based on the laboratory results presented in the previous reports, the near-surface soils at Sites 1, 2, and 3 possess a potential for collapse when inundated with water. Additionally, some of those soils possess potential for consolidation when exposed to load increases in the range of those that will be exerted by the foundations of the new structure. However, the recommended remedial grading will remove most of these soils from within the zone of influence of the new foundations. The native alluvium that will remain in place below the recommended depth of overexcavation will not be significantly influenced by the foundation loads of the new structures. Provided that the recommended remedial grading is completed, the post construction settlements of the proposed structure are expected to be within tolerable limits.

Expansion

A review of the previous geotechnical investigations indicates that the near-surface soils at Sites 1 through 4 generally consist of silty sands with no appreciable clay content. These materials have been visually classified as very low to non-expansive. Therefore, no design considerations related to expansive soils are considered warranted for this site.

Shrinkage/Subsidence

Shrinkage studies were not included in the scope of services for the previous reports. However, an average shrinkage rate of 5 to 9 percent was estimated at Site 1, an average shrinkage rate of 15 to 20 percent was estimated for the near-surface soils at Site 2, and an average shrinkage rate of 9 to 17 percent was estimated for the near-surface soils at Sites 3 and 4. It should be noted that the shrinkage estimate is based on the results of dry density testing performed on small-diameter samples of the existing soils taken at the boring locations. Minor ground subsidence is expected to occur in the soils below the zone of removal due to settlement and machinery working. The subsidence is estimated to be 0.1 to 0.15± feet at Site 1, and 0.15 to 0.2 feet at Site 2, 3 and 4.

On-site Waste Water

We understand that the proposed development may include a septic system or alternative waste water disposal system to dispose of onsite waste water. A review of the previous subsurface investigation indicates that the subsurface soils within the upper 15± feet generally consist of sands and silty sands. Groundwater is expected to be at depths greater than 50± feet. Based on the subsurface soil conditions and the relatively deep groundwater, a septic system or alternative waste water disposal system is considered to be feasible.

Closure

We sincerely appreciate the opportunity to be of 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,

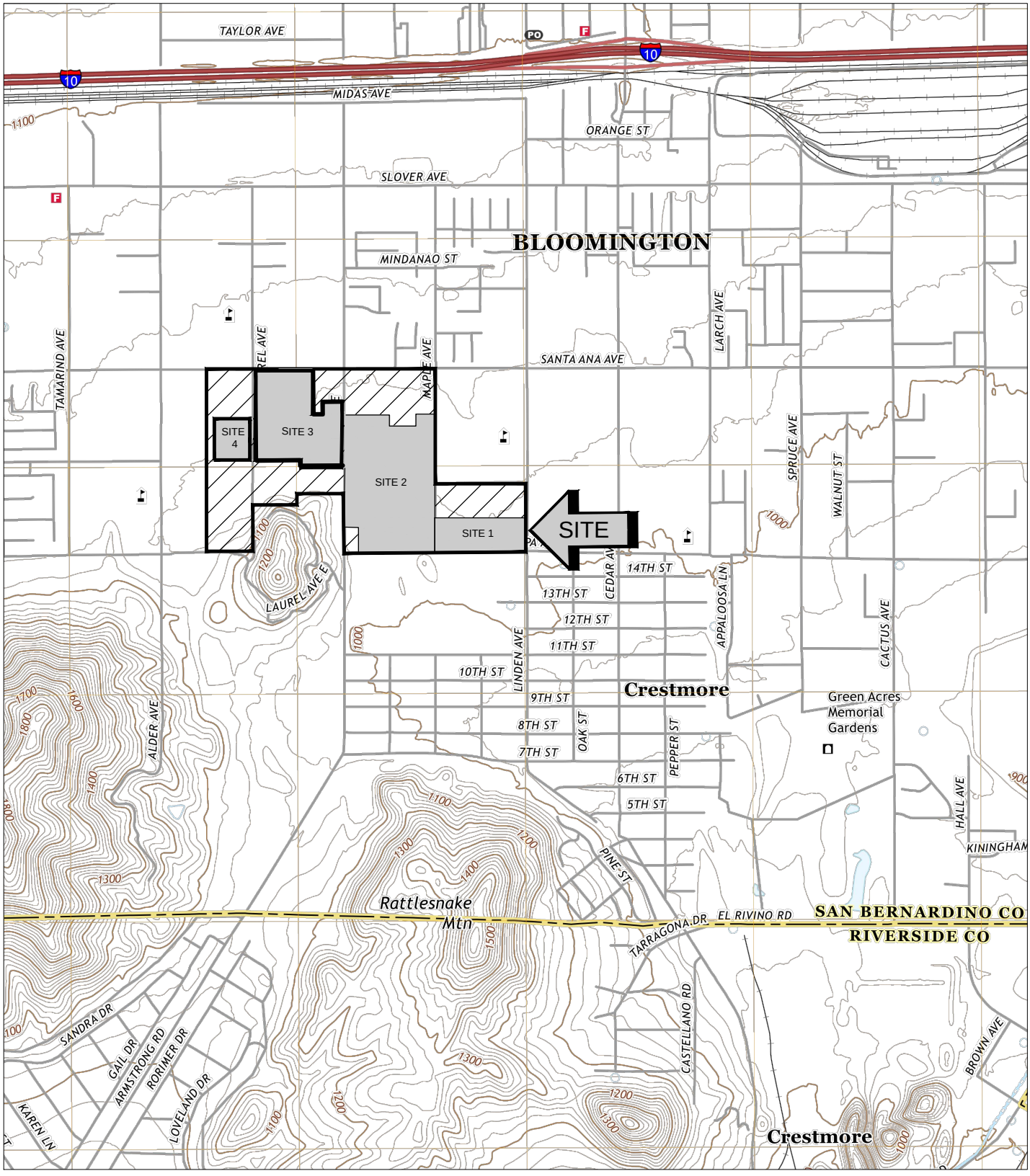
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Jamie Hayward
Staff Geologist

Daryl Kas, CEG 2467
Senior Geologist

Robert G. Trazo, GE 2655
Principal Engineer

Enclosure: Plate 1: Site Location Map
Plate 2: Proposed Development Plan
Plate 3: Geologic Map
Plate 4: San Bernardino County Geologic Hazards Map



LEGEND

EXTENDED STUDY AREA

SITES 1 THROUGH 4

SOURCE: USGS TOPOGRAPHIC MAP OF THE FONTANA QUADRANGLE, SAN BERNARDINO COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

UNINCORPORATED SAN BERNARDINO COUNTY, CALIFORNIA

SCALE: 1" = 2000'

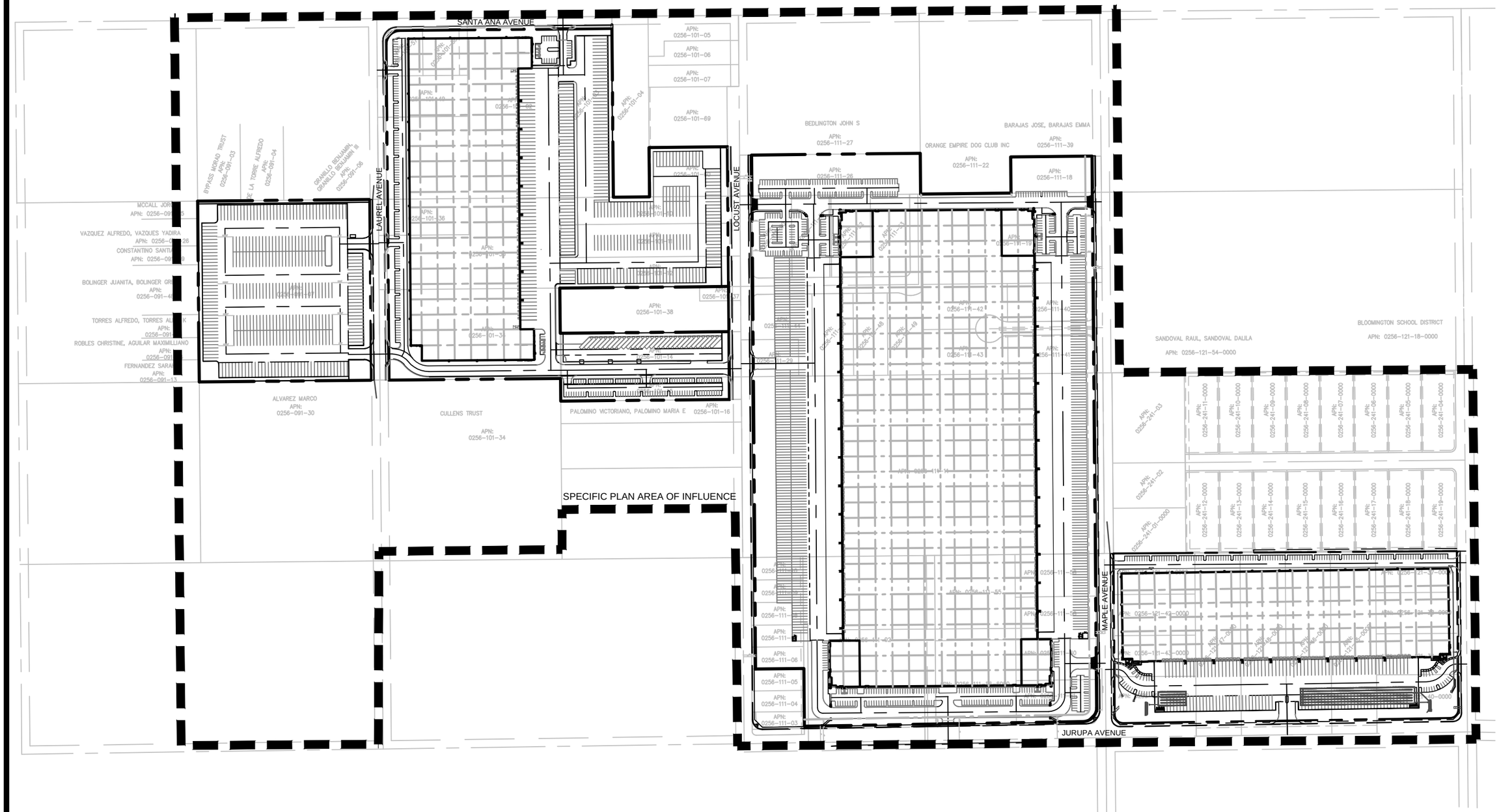
DRAWN: JLL
CHKD: RGT

SCG PROJECT 20G172-1R

PLATE 1

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



NORTH

SoCalGeo

NOTE: CONCEPTUAL SITE PLAN PREPARED BY AO.

PROPOSED DEVELOPMENT PLAN

PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

BLOOMINGTON, CALIFORNIA

SCALE: 1" = 360'

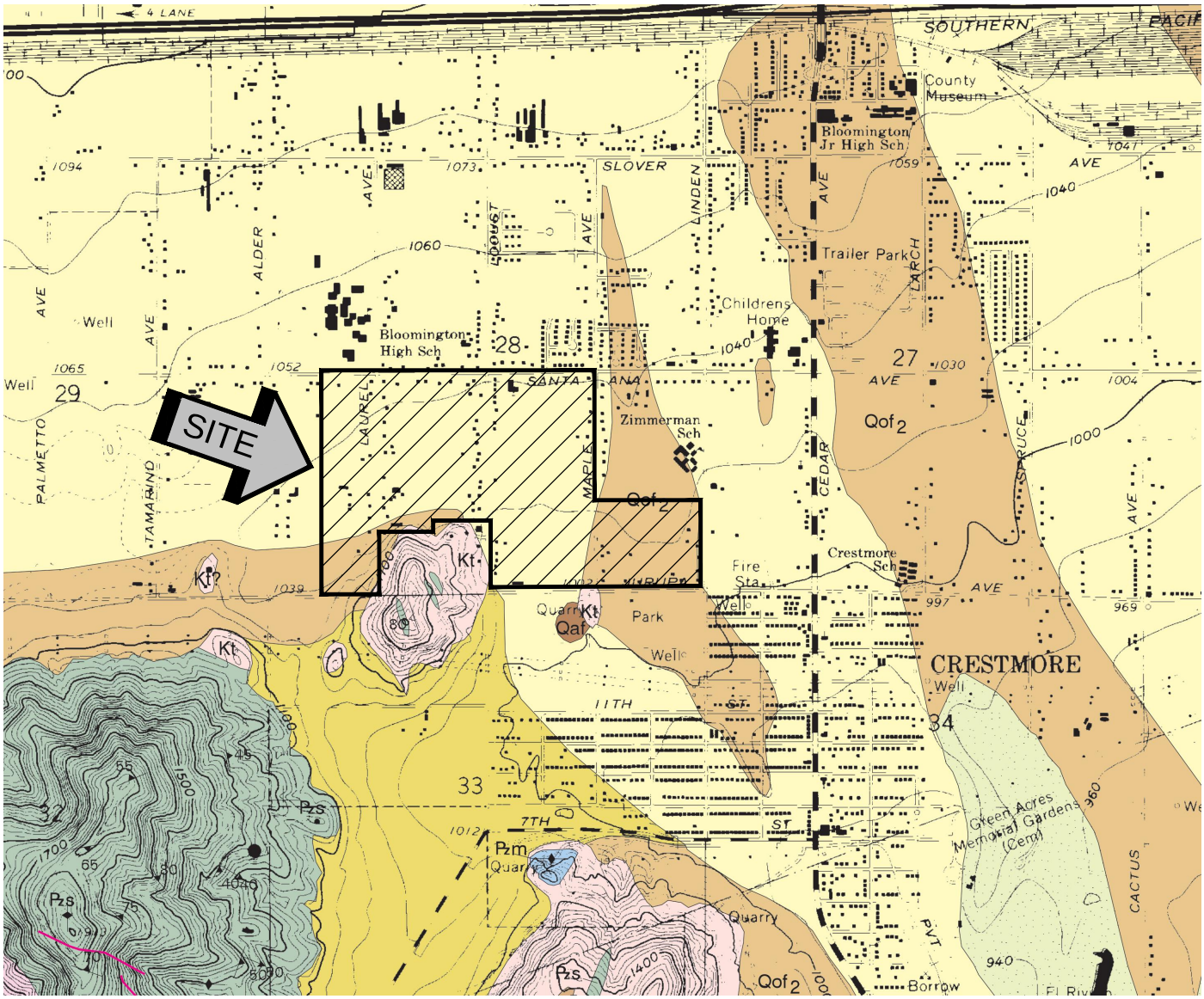
DRAWN: JLL
CHKD: RGT

SCG PROJECT 20G172-1R

PLATE 2

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



DESCRIPTION OF MAP UNITS

Qyfl — **Young alluvial-fan deposits of Lytle Creek (Holocene and late Pleistocene)**—Unconsolidated, gray, cobbly and bouldery alluvium of Lytle Creek fan. Relatively fine-grained (pebbly and cobbly) in southern extent; becomes coarser grained (cobbly and bouldery) northward. Forms broad channels west and north of Crestmore.

Qof_2 — **Old alluvial-fan deposits, Unit 2 (late to middle Pleistocene)**—Unconsolidated, tan, cobbly and bouldery alluvium of Lytle Creek fan. Slightly older than Qof_3

Contact—Solid where located within ±15 meters; dashed where located within ±30 meters

Kg—Granitic dikes

Kt — **Tonalite (Cretaceous)**—Relatively uniform, medium-to coarse-grained equigranular gray biotite-hornblende tonalite. Contains widespread and locally abundant dark inclusions

Strike and dip of igneous foliation

70 **Inclined**

Vertical

Strike and dip of metamorphic foliation

70 **Inclined**

Vertical

Strike and dip of secondary foliation in igneous rocks

50 **Inclined**

Vertical

SOURCE: "PRELIMINARY GEOLOGIC MAP OF THE FONTANA 7.5' QUADRANGLE, SAN BERNARDINO AND RIVERSIDE COUNTIES, CALIFORNIA" BY D.M. MORTON

GEOLOGIC MAP

PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

BLOOMINGTON, CALIFORNIA

SCALE: 1" = 2000'

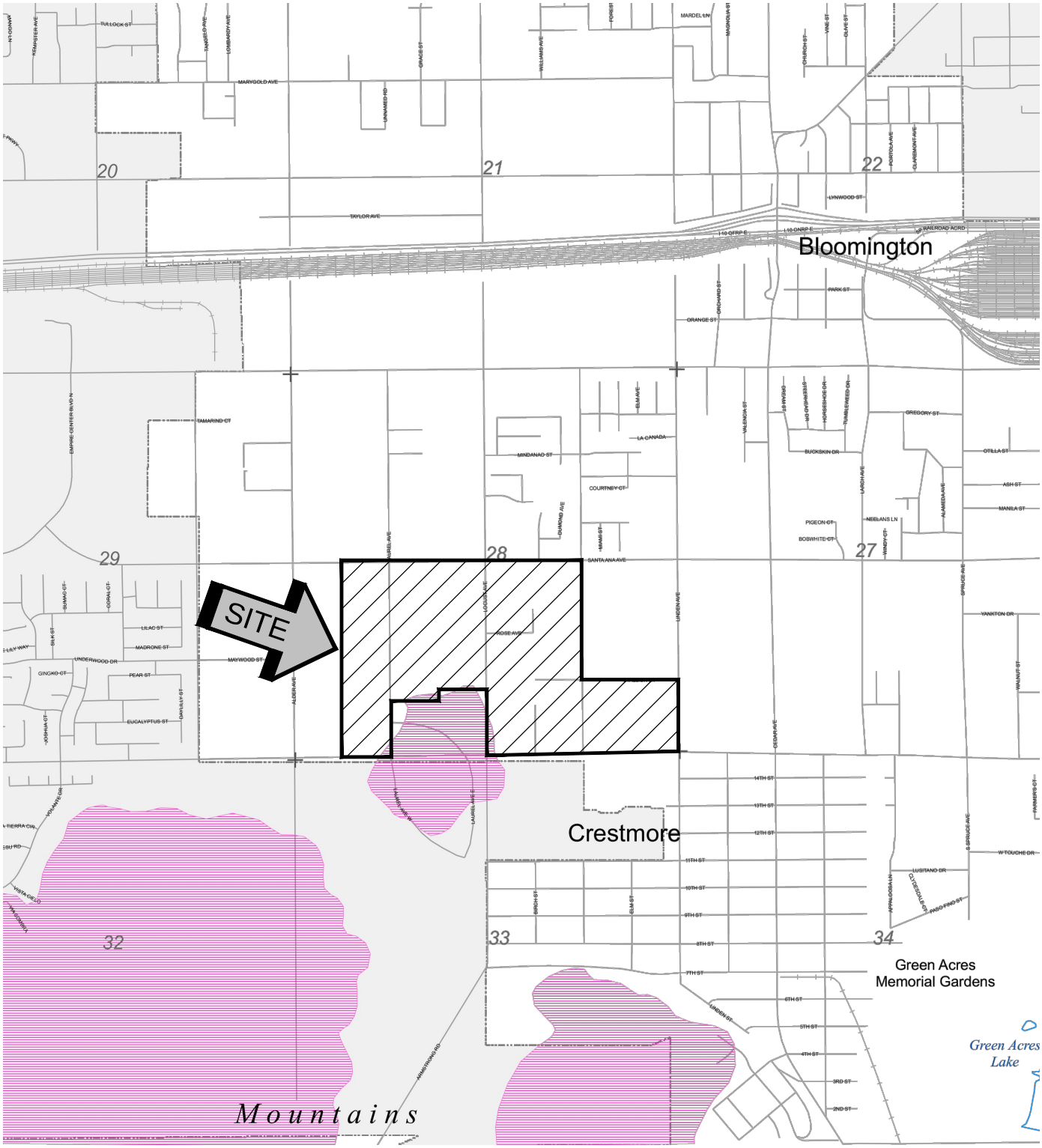
DRAWN: JLL
CHKD: RGT

SCG PROJECT 20G172-1R

PLATE 3

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



SOURCE: "SAN BERNARDINO COUNTY LAND USE PLAN, GENERAL PLAN, GEOLOGIC HAZARD OVERLAYS" FOR THE VALLEY REGION - BLOOMINGTON (FH29C)

Generalized Landslide Susceptibility

- Low to moderate
- Moderate to high
- Mapped, Existing Landslide
- Rockfall/Debris-Flow Hazard Area (Forest Falls Only)

Map data originally compiled on 1:48,000 scale mosaicked maps photo-reduced from 7-1/2 minute USGS quads by D.M. Morton, U.S. Geological Survey, 1974 and by S.S. Tan, State Division of Mines and Geology, 1989.

Positional accuracy of map data is at best plus or minus 150 feet.

Generalized Liquefaction Susceptibility

- Low
- Medium
- High

Map data originally compiled on 1:48,000 scale mosaicked maps photo-reduced from 7-1/2 minute USGS quads by J.E. Matti and S.E. Carson, 1986.

Positional accuracy of map data is at best plus or minus 150 feet.

Earthquake Fault Zones

- Earthquake Fault Zone Boundary
- County Designated Fault Zones
- Cities

SAN BERNARDINO COUNTY GEOLOGIC HAZARDS MAP

PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

BLOOMINGTON, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JLL CHKD: RGT	
SCG PROJECT 20G172-1R	
PLATE 4	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL