CITY OF DELANO COMMUNITY DEVELOPMENT DEPARTMENT
1015 11th Avenue
Delano CA 93215

CEQA MITIGATED NEGATIVE DECLARATION AND INITIAL STUDY FOR TENTATIVE TRACT MAP 7384

June 21, 2021

CITY OF DELANO
NOTICE OF PUBLIC HEARING
NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION

Notice is hereby given that the City Council will conduct public hearing on Monday, August 2, 2021 at or about 5:30 PM in the Delano City Council Chambers at City Hall at 1015 11th Avenue, Delano CA to consider approval of a development agreement and a tentative subdivision map to subdivide a 152.64-acre parcel into 4 separate tracts with 177 single family residential lots (Tentative Tract Map No. 7384). Further notice is hereby given that an Initial Study and a Mitigated Negative Declaration has been prepared for the project in conformance with the requirements of CEQA. At the hearing, the City Council intends to adopt the CEQA Mitigated Negative Declaration proposed for the project. There are no anticipated significant effects on the environmental identified in the project Initial Study and Mitigated Negative Declaration. As mandated by the California Environmental Quality Act (CEQA), the public review period for this document is 30 days (CEQA §15073 (a). the public review period begins on June 22, 2021 and will end on July 23, 2021.

COVID-19 NOTICE
IN ACCORDANCE WITH THE GOVERNOR NEWSOM'S EXECUTIVE ORDER #N-29-20, THIS MEETING WILL BE CONDUCTED FULLY VIA TELECONFERENCE, DUE TO THE CURRENT RESTRICTIONS BY SAID ORDER AND CENTERS FOR DISEASES CONTROL AND PREVENTION (CDC) GUIDELINES. THE PUBLIC WILL HAVE ACCESS TO CALL IN, LISTEN TO THE MEETING AND PROVIDE PUBLIC COMMENT. IN ACCORDANCE WITH GOVERNOR NEWSOM'S EXECUTIVE ORDER N-29-20, THERE WILL NOT BE A PHYSICAL LOCATION FROM WHICH THE PUBLIC MAY ATTEND. IN ORDER TO CALL INTO THE MEETING, PLEASE SEE THE CITY COUNCIL MEETING AGENDA TO ACCESS THE MEETING VIA A LINK AND/OR INSTRUCTIONS TO CALL INTO THE MEETING.

Project Title: Tentative Tract Map No. 7384

Applicant's Name and Address: Joseph Vineyard Estate, LLC C/O Derrill Whitten, Jr. Cornerstone Engineering 5509 Young Street, Bakersfield CA 93311

Project Location: The site is generally located on the west side of Hiett Avenue, north of Cecil Avenue. (APN 520-010-29). The property is currently unused agricultural. Fallow land is located south and east of the site. A rural residence is located at the northwest corner of the intersection of Cecil and Hiett and is not part of the proposed development.

The project application, the Initial Study and Mitigated Negative Declaration are available for review at the Community Development Department at City of Delano City Hall, 2nd Floor, 1015 11th Avenue Delano, CA 93215.

For further information contact the Community Development Department, Planning Division at 661-720-2220 or by email at bcard@cityofdelano.org

Please note that if you challenge the above matter in court, you may be limited to raising only those issues which you or someone else raised at the public hearing described in this notice, or written correspondence delivered to the City Clerk at or prior to the public hearing. All comments regarding the project must be received by the City Clerk on or before August 2, 2021. All persons are invited to attend the Public Hearing and will be given a full opportunity to be heard.

If you need special assistance to participate in this meeting, please contact the City Clerk's Office at (661) 720-2228 to make reasonable arrangements to ensure accessibility to this meeting. Telephone No. (661) 720-2228; or via California Relay Service (Hearing Impaired Only)

Type of Call	MCI California Relay Service	Sprint California Relay Service
TTY	1-800-735-2929	1-888-877-5378

Voice	1-800-735-2922	1-888-877-5379
Spanish	1-800-855-3000	1-888-877-5381
Speech to Speech		1-800-854-7784

Government Code, Section 65962.5 - Hazard Waste and Substances Statement

The project identified in this notice is not an “Identified Hazardous Waste Site” on the list shown on the latest information on the following website of the California Department of Toxic Substances Control; http://www.dtsc.ca.gov/SiteCleanup/Corteselist.cfm or http://www.envirostor.dtsc.ca.gov/public/

S:\CITY HALL\Community Development\2-22-13 Planning Division\PLANNING CASES\TRACT MAPS\TRACT MAP 7384\CEQA Initial Study - Tract 7384 6-16-2021.docx

Environmental Checklist Form

Title of Proposal: Tentative Tract Map 7384

Date Checklist Submitted: 6/21/2021

Agency Requiring Checklist: Delano Community Development Department

Agency Contact: William Card, Senior Planner **Phone:** (661) 720-2220

Description of Initial Study/Requirement

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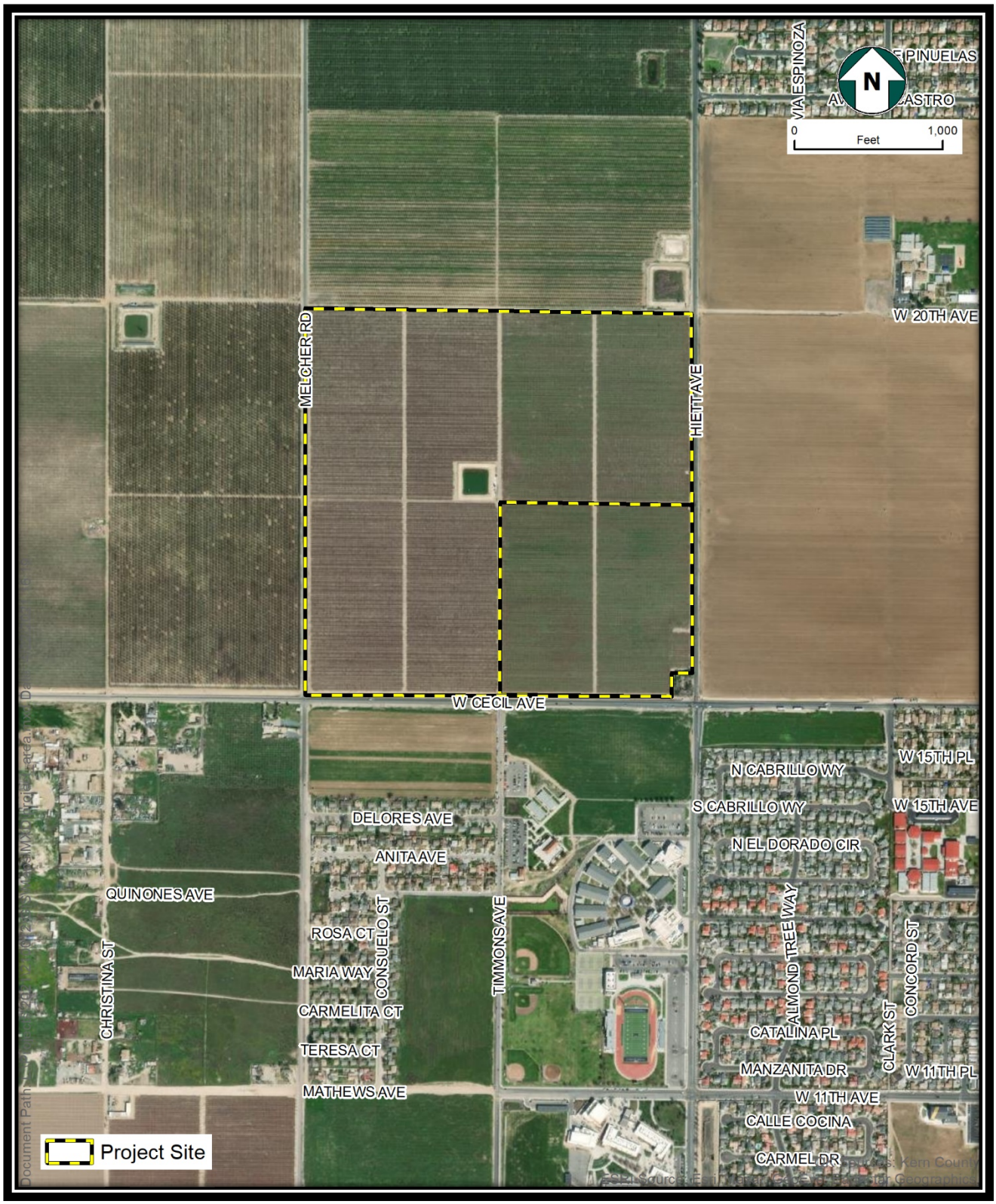
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DELORES AVE
ANITA AVE
QUINONES AVE
ROSA CT
CONSUELO ST
MARIA WAY
CARMELITA CT
TERESA CT
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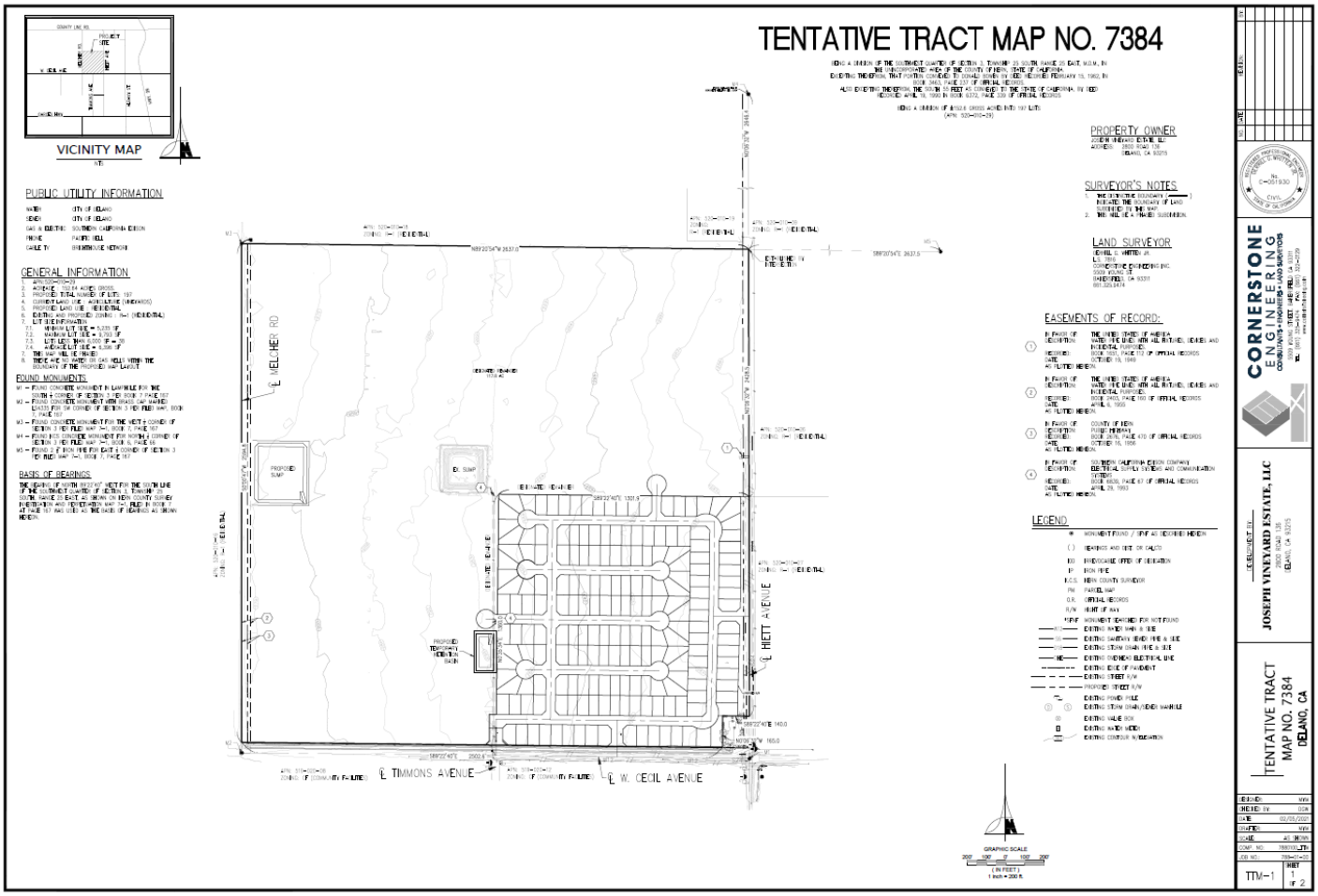
CONCORD ST
CLARK ST
CATALINA PL
MANZANITA DR
W 11TH PL
W 11TH AVE
CALLE COCINA
CARMEL DR
Project Site


TENTATIVE TRACT MAP NO. 7384
VICINITY MAP
PUBLIC UTILITY INFORMATION
GENERAL INFORMATION
FOUND MONUMENTS
BASIS OF BEARINGS
PROPERTY OWNER
SURVEYOR'S NOTES
LAND SURVEYOR
EASEMENTS OF RECORD:
LEGEND
GRAPHIC SCALE
℄ MELLHER RD
℄ HIETT AVENUE
℄ TIMMONS AVENUE
℄ W. CECIL AVENUE
PROPOSED SUMP
EX. SUMP
PROPOSED TEMPORARY DETENTION BASIN
CORNERSTONE ENGINEERING
JOSEPH VINEYARD ESTATE, LLC
TENTATIVE TRACT MAP NO. 7384
DELANO, CA
TTM-1

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
X	Biological Resources	X	Cultural Resources	☐	Geology /Soils
☐	Greenhouse Gas Emissions	X	Hazards & Hazardous Materials	X	Hydrology / Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population / Housing	☐	Public Services	☐	Recreation
X	Transportation/Traffic	☐	Tribal Cultural Resources	☐	Utilities / Service Systems
		☐	Mandatory Findings of Significance		

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

X I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Wm. J. Card — Signature

June 21, 2021 — Date

I. AESTHETICS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	X
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	X	☐	☐

Discussion:

(a) No Impact
The proposed project is not in an identified scenic corridor. However, there are faint views of the Sierra Mountain Range east of the site. The construction of the project will partially block views of the mountain range. The project is of a similar size and scale of other existing single-family developments in the area. Therefore, the project will not result in an adverse effect on a scenic vista. Therefore, there will be no impact to scenic vistas.

(b) No Impact
The development of a housing project on the site will not substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings. The site is generally level without trees, rock out croppings and devoid of any buildings, and is not adjacent to any State Scenic Highway as identified by Caltrans. There for there will be no impact to scenic resources.

(c) No Impact
The project will change the visual characteristics of the site from an existing vacant site to a single family (R-1) housing site. The project will comply with existing development and improvement requirements of the City. The development of the site from a vacant site into 196 single family dwellings and eventually 784 housing units on the 152.84 acre parcel, which would not result in a degradation of the of the visual character of the site, but bring the site into compliance with city general plan and development codes for this type of development. Therefore, the project will not degrade the existing visual characteristics of the site, resulting in no impact.

(d) Less than Significant Impact
Development of the site will introduce a new source of light and glare in the area in the form of street lighting and outdoor lighting on the residential units. With implementation of the proposed project, it is expected to result in increased light and glare in comparison with the existing undeveloped nature of the project site. The introduction of lighting would be similar to residential uses which are southeast of the site; The proposed project will be conditioned upon approval to meet the city's lighting standards of the development code. Therefore, lighting and glare from the project will be a less than significant impact.

General Information:

A nighttime sky in which stars are readily visible is often considered a valuable scenic/visual resource. In urban areas, views of the nighttime sky are being diminished by "light pollution." Light pollution, as defined by the International dark-Sky Association, is any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste. Two elements of light pollution may affect city residents: sky glow and light trespass. Sky glow is a result of light fixtures that emit a portion of their light directly upward into the sky where light scatters, creating an orange-yellow glow above a city or town. This light can interfere with views of the nighttime sky and can diminish the number of stars that are visible. Light trespass occurs when poorly shielded or poorly aimed fixtures cast light into unwanted areas, such as neighboring property and homes.

Light pollution is a problem most typically associated with urban areas. Lighting is necessary for nighttime viewing and for security purposes. However, excessive lighting or inappropriately designed lighting fixtures can disturb nearby sensitive land uses through indirect illumination. Land uses which are considered "sensitive" to this unwanted light include residences, hospitals, and care homes.

Daytime sources of glare include reflections off light-colored surfaces, windows, and metal details on cars traveling on nearby roadways. The amount of glare depends on the intensity and direction of sunlight, which is more acute at sunrise and subset because the angle of the sun is lower during these times.

III. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	X	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resource Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526) or timberland zoned Timberland Protection (as defined by Government Code section 51104(g))?	☐	☐	☐	X
d) Result in the loss of forest land or conversion of forest land to non-forest land?	☐	☐	☐	X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	X

Discussion:

(a). Less than significant
The project is within Prime Farmland according to the Farmland Mapping and Monitoring Program (California Department of Conservation, 2018). However, the parcel is currently zoned for Residential (R-1) and the existing land use will be amended from Agriculture to Low-Density Residential. As such, the project will have a less than significant impact.

(b) through (e) No Impact
The proposed project will have not have an impact to agricultural resources, including. Prime Farmland, Unique Farmland, Farmland of Statewide Importance forest land, timberland, zoned for Timberland Resources because the project is currently zoned Residential. There are no areas of forest land in the project vicinity. Therefore, there are no impacts.

General Information

The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

The Department of Conservation oversee the Farmland Mapping and Monitoring Program. The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. The program's definition of land is below:

PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

FARMLAND OF STATEWIDE IMPORTANCE (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

UNIQUE FARMLAND (U): Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non- irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

GRAZING LAND (G): Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

URBAN AND BUILT-UP LAND (D): Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	X	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	X	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	X	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	X	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	X	☐

Discussion:
An Air Quality Impact Analysis was conducted for the Project site on January 25, 2021 (EnviroTech Consultants, Inc., 2021). Air pollution emissions can be estimated by using emission factors and examining the level of activity occurring. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of Nox per horsepower hour. The ARB has published emission factors for on-road equipment and vehicles in the OFFROAD emission model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator (CalEEMod) version version 2016.3.2 is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

Significance thresholds are based on the CEQA Appendix G Environmental Checklist Form and thresholds established by the SJVAPCD. The CEQA Appendix G Environmental Checklist Form states that the project would have a potentially significant impact on air quality or greenhouse gases if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The California Air Resources Board (CARB) has divided California into 15 regional air basins according to topographic features. The project site is located within the south-western portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). The SJVAB is under the jurisdictional authority of San

Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

Table 1-1 contains the ambient air quality classifications for the SJVUAPCD. The CCAA requires that all reasonable stationary and mobile source control measures be implemented in nonattainment areas to help achieve a mandated five-percent per year reduction in ozone precursors and to reduce population exposures.

Table 1-1: Ambient Air Quality Classifications

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	Revoked in 2005	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme	Nonattainment
PM 10	Attainment	Nonattainment
PM 2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassi-
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classifica-	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

CARB has established and maintains, in conjunction with the local air districts, a network of sampling stations (called the State and Local Air Monitoring Stations Network [SLAMS]), which monitor ambient pollutant levels. The SLAMS network has 38 stations within the SJVAB that monitor various pollutant concentrations.

Table1-2 provides a summary of the maximum pollutant levels detected at the active monitoring station closest to the project site from 2017-2019.

Pollutant	Averaging Time	Units	Maximums			Standards	
			2017	2018	2019	State	National
Nitrogen Dioxide (NO2)	1 hour	ppb	66 (CA) 66 (Fed)	66 (CA) 66 (Fed)	67.1 (CA) 67 (Fed)	70	54
	Annual Average	ppb	12 (CA) 12 (Fed)	12 (CA) 12 (Fed)	11 (CA) 11 (Fed)	12	12
Particulates (PM10)	24 hour	µg/m3	143.6 (CA) 138.0 (Fed)	142.0 (CA) 136.1 (Fed)	125.9 (CA) 116.3 (Fed)	50	150
	Annual Average	µg/m3	42.6 (CA) 42.6 (Fed)	--- (CA) 42.1 (Fed)	39.0 (CA) 38.8 (Fed)	20	-
Particulates (PM2.5)	24 hour	µg/m3	80.1 (CA) 80.1 (Fed)	100.9 (CA) 100.9 (Fed	83.7 (CA) 83.7 (Fed)	-	35
	Annual Average	µg/m3	--(CA) 18.2 (Fed)	— (CA) 19.4 (Fed)	13.0 (CA) 13.0 (Fed)	12	12

The SJVUAPCD has established the following significance thresholds for criteria pollutants. A proposed project does not have a significant air quality impact unless emissions of criteria pollutants exceed the following thresholds (Table 1-3).

Table 1-3: Significance Thresholds Criteria Pollutants

Pollutant / Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tons/year)	Emissions (tons/year)	Emissions (tons/year)
CO	100	100	100
NOx	10	10	10
VOC	10	10	10
SOx	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

As shown in Table 1-4, implementation of the proposed Project will generate short-term increases in air emissions from construction activities. The major construction activities that would occur are the following:

- Demolition/Site Preparation/Grading – these activities will occur and be completed in 2021.
- Building Construction/Paving/Architectural Coatings – Each of these activities will occur over a four-year period (2021 to 2024), with 60% projected to be completed in 2021, 20% in 2022 and 10% in each of the following two years.

The construction activities would generate emissions that primarily consist of fugitive dust (PM10 and PM2.5) from soil disturbance; exhaust emissions (including NOx, SOx, CO, VOC, PM10, and PM2.5) from construction equipment and motor vehicle operation; and the release of VOC emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include delivery of building materials and supplies to the sites; and the transport of construction employees to and from the sites. The off-site activities would generate emissions that primary consist of VOC, NOx, PM10, PM2.5, and CO from motor vehicle exhaust. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic condition The short- term emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment C. Table 1-4 shows the short-term emissions for the Tract 7384. The same emissions should be expected for the other three residential tracts to be built. As shown in Table 1-4 below, Project construction related emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD.

Table 1-4: Project Construction Emissions

	VOC	NOx	CO	PM 10	PM2.5	SOx	CO2
Emissions Generated from Project Construc-	**6.81**	**0.94**	**3.46**	**0.34**	**0.13**	**0.01**	**676**
SJVAPCD Thresholds of Signifi-	**10**	**10**	**100**	**15**	**15**	**27**	**NA**

(EnviroTech Consultants, Inc., 2021)

a. Less than significant impact

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. Kern Council of Governments (Kern COG) uses the growth projections

and land use information in adopted general plans to estimate future average daily trips and then Vehicle Miles Travelled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.
The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The Project is consistent with the currently adopted General Plan Designation for the site of Low Residential and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

No mitigation is required. Impacts would be *less than significant*.

b. Less than significant impact

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. Kern Council of Governments (Kern COG) uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then Vehicle Miles Travelled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The Project is consistent with the currently adopted General Plan Designation for the site of Low Residential and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result

c. Less than significant impact

The Kern County area is nonattainment for Federal and State air quality standards for ozone and nonattainment for Federal and State standards for PM2.5. Kern County is also nonattainment for State standards for PM10. The SJVAPCD has prepared the 2016 and 2013 Ozone Plans, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Individual projects contribute cumulatively to a regions' nonattainment status and inconsistency with any of the plans would be considered a cumulatively adverse air quality impact.

Project specific emissions that exceed the thresholds of significance for criteria pollutants would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the County is in nonattainment under applicable federal or state ambient air quality standards. It should be noted that a project isn't characterized as cumulatively insignificant when project emissions fall below thresholds of significance.

Air Quality Plan

The SJVAPCD has prepared the 2016 and 2013 Ozone Plans, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. The AQP details the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The project is consistent with the currently adopted General Plan for the City of Delano and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQP. As a result, the project will not conflict with or obstruct implementation of any air quality plans.

Ozone/Particulate Matter

As shown in Table 1-4 and 1-5, project emissions would not exceed the project-level significance thresholds for ozone precursors ROG and NOx or PM10 and PM2.5 during construction and operation. Table1-5 shows long-term emissions for the Tract 7384. The same emissions should be expected for the other three residential tracts to be built. As shown in Table 1-5 below, emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD .. The project's emissions would not combine with other sources in the SJVAB to make a cumulatively considerable contribution to a violation of the ozone standards. Therefore, this impact is less than significant with implementation of MM AIR-1. As such, there would not be a significant contribution to health effects from ozone and particulate matter.

Table 1-5 Annual Project Operational Emissions

	VOC	NOx	CO	PM 10	PM2.5	SOx	CO2
Emissions Generated from Project Opera-	**2.31**	**1.62**	**9.17**	**1.97**	**0.51**	**0.02**	**2,910**
SJVAPCD Thresholds of Signifi-	**10**	**10**	**100**	**15**	**15**	**27**	**NA**

Short-Term Emissions

The annual emissions from the construction phase of the project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 1-4 for Tract 7384. The Build-out of the remainder if the housing tracts will be done so that emissions remain under thresholds of significance. It should be noted that the project is subject to the SJVAPCD's Regulation VIII control measures, which are provided below.

1. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
2. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
3. All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
4. When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
5. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
6. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
7. Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Naturally Occurring Asbestos (NOA)

The proposed project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces;
2. Rinse vehicles and equipment;
3. Wet loads of excavated material; and

4. Cover loads of excavated material.

Long-Term Impacts

Long-Term emissions from the project are generated primarily by mobile source (vehicle) emissions from the project site and area sources associated with lawn maintenance equipment. Emissions from long-term operations generally represent a project's most substantial air quality impact. Results from Table 1-5 indicate that the annual operational emissions from the project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants.

The project's long-term emissions are considered less than significant. Therefore, no mitigation is needed.

MITIGATION MEASURE(S)

MM AIR-1: The buildout of the remaining three parcels shall be phased. There shall not be construction of more than one housing tract at a time in order to keep short-term emissions at less than significant levels.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant with mitigation implemented*.

d. Less than significant impact

The sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities.

The majority of the potential ambient air quality emissions from this proposed project are related to increases in traffic. The Air Quality Study done on the proposed project concluded it is not expected to result in localized impacts such as CO "Hot Spots" and, therefore, is not expected to impact nearby sensitive receptors (EnviroTech Consultants, Inc., 2021). Therefore, the project will not expose sensitive receptors to substantial pollutant concentrations and any impacts would be less than significant. No mitigation is required. Impacts would be *less than significant*.

e. Less than significant impact

The proposed project will not generate odorous emissions given the nature or characteristics of residential developments. It should be noted that there are no existing significant odor sources in the nearby vicinity that would significantly impact the project. As a result, the project will not be evaluated for its potential to place sensitive receptors near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 1-6 below along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in Table 1-6 of the AQIA fit the characteristics of the project.

Table 1-6 Screening Levels for Potential Odor Sources

Type of Facility	Distance
Wastewater Treatment Facilities	2.5 miles
Sanitary Landfill	2.5 miles
Transfer Station	2.5 miles
Composting Facility	2.5 miles
Petroleum Refinery	3 miles

Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	2 mile
Rendering Plant	2 mile

Source: 2015 GAMAQI

Based on the assessment above, the project will not generate potential odorous emissions or attract receivers and other sensitive receptors near existing odor sources. No mitigation is required. Impacts would be *less than significant*

IV. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The conversion of native and naturalized plant communities to urban land, agriculture, and industrial facilities has significantly reduced available wildlife habitat. As a result, the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service (USFWS) have listed some species as threatened or endangered. In addition, several species, which are currently considered candidates for State or federal listing, have been included in Table 4-1 and 4-2 below. The proposed project will not directly affect any sensitive, special status, or candidate species, nor would it modify any habitat that supports them. The subject site has been highly disturbed by agriculture. Recommended avoidance and minimization measures which, when implemented, will reduce project impacts to biological resources to a *less than significant* level.

Table 4-1 Plant Species List

Common Name	**Scientific Name**
Baby Blue Eyes	*Nemophila menziesii*
Buffalo Gourd	*Cucurbita foetidissima*
California Poppy	*Eschscholtzia californica*
Centaury	*Centaurium calycosum*
Common Owl's Clover	*Orthocarpus purpuracens*
Common St. Johnswort	*Hypericum perforatum*
Common Sunflower	*Helianthus annuus*
Cowpen Daisy	*Verbesina encelioides*
Cream Cup	*Platystemon californicus*
Devils Claw	*Proboscidea altheaefolia*
Elegant Brodiaea	*Brodiaea elegans*
False Baby Stars	*Linanthus androsaceus*
Fiddleneck	*Amsinckia retrorsa*
Field Milkvetch	*Astragalus agrestis*

Flatpod	*Idahoa scapigera*
Goldfields	*Lasthenia chrysostoma*
Hooker's Evening Primrose	*Oenothera hookeri*
Idaho Fescue	*Festuca idahoensis*
Miniature Lupine	*Lupinis bicolor*
Prairie Star	*Lithophragma parviflorum*
Purple Needlegrass	*Stipa pulchra*
Rabbit Brush	*Chrysothamnus nauseosus*
Red Clover	*Trifolium pratense*
Redtop	*Agrostis alba*
Rosin Week	*Calycadenia truncata*
Showy Thistle	*Cirsium pastoris*
Shrubby Cinquefoil	*Potentilla fruticosa*
Snakehead	*Malacothrix coulteri*
Spreading Dogbane	*Apocynum androseafolium*
Spreading Fleabane	*Erigeron divergens*
Sweet Fennel	*Foeniculum vulgare*
Threadleaf Phacelia	*Phacelia linearis*
Velvet Grass	*Holcus lanatus*
Vinegar Weed	*Trichostoma lanceolatum*
White Sweet Clover	*Melilotus alba*
Wild Blue Flax	*Linium perenne*

Table 4-2 Sensitive Species of the Central Valley Which Potentially Occur Within or Near the Delano General Plan Area

Common Name	**Scientific Name**	**Status**	
Plants			
Valley Saltbrush Scrub California Jewel Flame Recurved Larkspur	 *Caulonthis Calififormucys* *Delphinium recurvatum*	FE FSC	1B
Animals			
San Joaquin kit fox Tipton kangaroo rat California tiger salamander Western burrowing owl Northern harrier Blunt nose leopard lizard	*Vulpes macrotis mutica* *Dipodymus nitratoides* *Ambystoma tigrinum californiense* *Athene cuncicularia hypugea* *Circis Cyaneus* *Gambelia silus*	FE FE FC1 FSC FSC FE	CE

Notes:
FE Federally Endangered
FC Federal Candidate; the threat and/or distribution data is sufficient to support listing.
FC1 Federal Candidate Species - Category 1
FC2 Federal Candidate Species - Category 2
FSC Federal Species of Concern; (formerly Federal Candidate Category 2 species) the threat and/or distribution data insufficient to support listing at this time.
CE California Endangered
1B California Native Plant Society (CNPS) - Plants rare and endangered in California and elsewhere

MM BIO-1: Pre-activity Surveys for Special-Status Species: Prior to ground disturbing activities, a qualified wildlife biologist shall conduct a biological clearance survey no more than 30 calendar days prior to the onset of construction. The clearance survey shall include walking transects to identify presence of San Joaquin kit fox, American badger, Swainson's hawk, burrowing owl, nesting birds and other special-status

species or signs of, and sensitive natural communities. The pre-activity survey shall be walked by no greater than 30-foot transects for 100 percent coverage of the Project site and the 250-foot buffer, where feasible. If no evidence of special-status species is detected, no further action is required but measure MM BIO-6 shall be implemented.

MM BIO-2: Avoidance of San Joaquin Kit Fox and American badger dens: If dens/burrows that could support the San Joaquin kit fox or American badger are discovered during the pre-activity surveys conducted under MM BIO-4, the avoidance buffers outlined below shall be established. No work would occur within these buffers unless the biologist approves and monitors the activity.

- Potential Den – 50 feet
- Atypical Den – 50 feet (includes pipes and other man-made structures)
- Known Den – 100 Feet
- Natal/Pupping Den – 500 feet

MM BIO-3: Avoidance and Minimization Measures for San Joaquin Kit Fox. The following avoidance and minimization measures shall be implemented during all phases of the Project to reduce the potential for impact from the Project. They are modified from the *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011).

1. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction or Project site.
2. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.
3. To prevent inadvertent entrapment of kit fox or other animals during construction, the contractor shall cover all excavated, steep-walled holes or trenches more than two feet deep at the close of each workday with plywood or similar materials. If holes or trenches cannot be covered, one or more escape ramps constructed of earthen fill or wooden planks shall be installed in the trench. Before such holes or trenches are filled, the contractor shall thoroughly inspect them for entrapped animals. All construction-related pipes, culverts, or similar structures with a diameter of four-inches or greater that are stored on the Project site shall be thoroughly inspected for wildlife before the pipe is subsequently buried, capped, or otherwise used or moved in anyway. If at any time an entrapped or injured kit fox is discovered, work in the immediate area shall be temporarily halted and USFWS and CDFW shall be consulted.
4. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.
5. No pets, such as dogs or cats, shall be permitted on the Project sites to prevent harassment, mortality of kit foxes, or destruction of dens.
6. Use of anti-coagulant rodenticides and herbicides in Project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional Project-related restrictions deemed necessary by the USFWS and CDFW. If rodent control must be conducted, zinc phosphide shall be used because of the proven lower risk to kit foxes.
7. A representative shall be appointed by the Project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS.
8. The Sacramento Fish and Wildlife Office of USFWS and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Project-related

activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFW contact can be reached at (559) 243-4014 and R4CESA@wildlifeca.gov.

9. All sightings of the San Joaquin kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the Service at the address below.
10. Any Project-related information required by the USFWS or questions concerning the above conditions, or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at: Endangered Species Division, 2800 Cottage Way, Suite W 2605, Sacramento, California 95825-1846, phone: (916) 414-6620 or (916) 414-6600.

MM BIO-4: Pre-activity Surveys for Nesting Birds. If construction is planned outside the nesting period for raptors (other than the burrowing owl) and migratory birds (February 1 to August 31), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a pre-activity survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified onsite monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds. Because nesting birds can establish new nests or produce a second or even third clutch at any time during the nesting season, nesting bird surveys shall be repeated every 30 days as construction activities are occurring throughout the nesting season.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.

MM BIO-5: Pre-activity Surveys for Swainson's Hawk Nests. If all Project activities are completed outside of the Swainson's hawk nesting season (February 15 through August 31), this mitigation measure shall need not be applied. If no Swainson's hawk nests are found, no further action is required.

If construction is planned during the nesting season, a pre-construction survey shall be conducted by a qualified biologist to evaluate the site and a 0.5-mile buffer around the site for active Swainson's hawk nests. If potential Swainson's hawk nests or nesting substrates occur within 0.5 mile of the Project site, then those nests or substrates must be monitored for Swainson's hawk nesting activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. Monitoring shall be conducted according to the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). The protocol recommends that ten visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. During the nesting period, active Swainson's hawk nests shall be avoided by 0.5 mile unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If an active Swainson's hawk nest is located within 500 feet of the Project or within the Project site, the Project proponent shall contact CDFW for guidance.

MM BIO-6: Swainson's Hawk Nest Avoidance. If an active Swainson's hawk nest is discovered at any time within 0.5-mile of active construction, a qualified biologist will complete an assessment of the potential for current construction activities to impact the nest. The assessment will consider the type of construction activities, the location of construction relative to the nest, the visibility of construction activities from the nest location, and other existing disturbances in the area that are not related to construction activities of this Project. Based on this assessment, the biologist will determine if construction activities can proceed and the level of nest monitoring required. Construction activities shall not occur within 500 feet of an active nest but depending upon conditions at the site this distance may be reduced. Full-time monitoring to evaluate the effects of construction activities on nesting Swainson's hawks may be required. The qualified biologist shall have the authority to stop work if it is determined that Project construction is disturbing the

nest. These buffers may need to increase depending on the sensitivity of the nest location, the sensitivity of the nesting Swainson's hawk to disturbances, and at the discretion of the qualified biologist.

MM BIO-7: Pre-activity Surveys for Western burrowing owl burrows. A qualified biologist shall conduct a pre-activity survey on the Project site and within 500 feet of its perimeter, where feasible, to identify the presence of the burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any western burrowing owl burrows are observed during the pre-activity survey, avoidance measures shall be consistent with those included in the CDFW staff report on western burrowing owl mitigation (CDFG 2012). If occupied western burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 250 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Western burrowing owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 500-foot (minimum) buffer zone shall be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

If western burrowing owl are found to occupy the Project site and avoidance is not possible, burrow exclusion may be conducted by qualified biologists only during the non-breeding season, before breeding behavior is exhibited, and after the burrow is confirmed empty through non-invasive methods (surveillance). Replacement or occupied burrows shall consist of artificial burrows at a ratio of one burrow collapsed to one artificial burrow constructed (1:1). Ongoing surveillance of the Project site during construction activities shall occur at a rate sufficient to detect Burrowing owl, if they return.

In addition, impacts to occupied western burrowing owl burrows shall be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

MM BIO-8: Worker Environmental Awareness Training. Prior to ground disturbance activities, or within one week of being deployed at the Project site for newly hired workers, all construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

The Construction Worker Environmental Awareness Training and Education Program shall be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of "take" under the Endangered Species Act, measures the Project operator is implementing to protect the species, reporting requirements, specific measures that each worker must employ to avoid take of the species, and penalties for violation of the Act. Identification and information regarding special-status or other sensitive species with the potential to occur on the Project site shall also be provided to construction personnel. The program shall include:

- An acknowledgement form signed by each worker indicating that environmental training has been completed.
- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities

(b) No Impact

The site is not located within proximity to any riparian habitat or natural community.

(c) No Impact
The site is not located within proximity to any federally or state protected wetland areas. The site is located within a parcel that has been used for agricultural purposes.

(d) No Impact
There is not an existing Habitat Conservation Plan adopted or being implemented covering the project site. Therefore, there is no impact.

Wildlife corridors are established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to sustain species with specific foraging requirements, preserve a species' distribution potential, and retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource. The majority of the project site has been disturbed by previous and ongoing disking or some other form of disturbance and could occasionally provide opportunity for local wildlife movement, though adjacent lands are farther removed from anthropogenic activities and offer more optimal movement opportunities. The CDFW BIOS Viewer provided the data on movement corridors and linkages. Data reviewed included the Essential Connectivity Areas [ds620] layer and the Missing Linkages in California [ds420] layer. The project site is not within or adjacent to any Essential Connectivity Areas or Missing Linkages.

(e) No Impact
The City currently does not have any preservation policies protecting biological resources. Therefore, there is no impact.

(f) No Impact
There is not an existing Habitat Conservation Plan adopted or being implemented covering the project site. Therefore, there is no impact.

General Information

Special Status Species include:

- Plants and animals that are legally protected or proposed for protection under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- Plants and animals defined as endangered or rare under the California Environmental Quality Act (CEQA) §15380;
- Animals designated as species of special concern by the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Game (CDFG);
- Animals listed as "fully protected" in the Fish and Game Code of California (§3511, §4700, §5050 and §5515); and
- Plants listed in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California.

V. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	X	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	X	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	X	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	X	☐	☐

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The project site is a disturbed, undeveloped, infill property located within a residentially developed area. No surveys or record searches have been conducted on the site, so it is unknown if any cultural or historical resources are located on-site. As a result, although unlikely, the following mitigation measures shall be applied:

MM CUL-1 – If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified professional archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.

(b) Less than Significant Impact with Mitigation Incorporated
The project site is a disturbed, undeveloped, infill property located within a residential and industrially developed area. No surveys or record searches have been conducted on the site, so it is unknown if any archeological resources are located on-site. As a result, although unlikely, **MM CUL-1** shall be applied as the mitigation for this impact.

(c) Less than Significant Impact with Mitigation Incorporated
There are no unique geological features or known fossil-bearing sediments in the vicinity of the project site. It is unlikely that any ground disturbance activities would be of a depth to uncover paleontological resources. However, there remains the possibility for previously unknown, buried paleontological resources or unique geological sites to be uncovered during subsurface construction activities. Therefore, this would be a potentially significant impact. Mitigation is proposed requiring standard inadvertent discovery procedures to be implemented to reduce this impact to a level of less than significant.

MM CUL-2 – During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County or other appropriate facility regarding any discoveries of paleontological resources.

If the qualified paleontologist determines that the discovery represents a potentially significant paleontological

resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency.

(d) Less than Significant Impact with Mitigation Incorporated
As previously noted, a search or survey has not been conducted so it is not known if sensitive cultural resources exist in the vicinity of the project area. Human remains are not known to exist within the project area. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. MM CUL-3 has been included in the unlikely event that human remains are found during ground-disturbing activities. Impacts would be less than significant with implementation of mitigation.

MM CUL-3 – If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

General Information

Public Resource Code 5021.1(b) defines a historic resource as “any object building, structure, site, area or place which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.” These resources are of such import, that it is codified in CEQA (PRC Section 21000) which prohibits actions that “disrupt, or adversely affect a prehistoric or historic archaeological site or a property of historical or cultural significance to a community or ethnic or social groups; or a paleontological site except as part of a scientific study.”

Archaeological importance is generally, although not exclusively, a measure of the archaeological research value of a site which meets one or more of the following criteria:

- Is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory.
- Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions.
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind.
- Is at least 100 years old and possesses substantial stratigraphic integrity (i.e. it is essentially undisturbed and intact).
- Involves important research questions that historic research has shown can be answered only with archaeological methods.

Reference CEQA Guidelines §15064.5 for definitions.

VI. Energy -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion:

(a) Less than Significant Impact
Energy demand during the construction phase would result from the transportation of materials, construction equipment, and construction worker vehicle trips. Construction equipment includes scrapers, motor graders (blades), vibrators and static compactors, 3,500-gallon water trucks, track excavators, graders, off-highway trucks, rubber-tired loaders and backhoes, concrete trucks tractors, concrete extrusion machine, cranes, forklifts, generator sets, pavers, air compressors and rollers.

The project would comply with the SJVAPCD requirements regarding the limitation of vehicle idling, and the use of fuel-efficient vehicles and equipment, to the extent feasible. Using a typical fuel efficiency of 5.85 miles per gallon, the delivery of building materials is expected to require approximately 49,000 gallons of diesel per construction phase. The project will not use natural gas during the construction phase. Compliance with standard regional and local regulations, the project would minimize fuel consumption during construction. By complying with standard regional and local regulations, the project would minimize fuel consumption during construction. Construction related fuel consumption is not expected to result in inefficient, wasteful, or unnecessary energy use. Thus, construction-related fuel consumption at the project would not result in inefficient, wasteful, or unnecessary energy use.

Operation

The project will use a variety of energy-saving components to reduce energy consumption. These include, but are not limited to dual-pane glass, low-flow toilets, tankless water heaters, and Energy Star rated insulation and appliances. In addition, solar panels, while not standard, are available for installation on the house rooftops to offset electrical costs and reduce the impact to the Delano PG&E electrical grid. The project will comply with all applicable standards and building codes included in the 2019 California Green Building Standards Code. Therefore, the project would have a less-than-significant impact.

(b) Less than Significant Impact
The project must comply with Title 24, Chapter 4 of the California Green Building Standards Code for residential development and Part 6, of the California Energy Code (CEC) the California Code of Regulations (CCR), Title 20 with adoptions of the California Energy Commission (California Building Standards Commission, 2019).

The project would result in the construction of a residential subdivision consisting of 197 single-family residences. Energy saving strategies will be implemented where feasible to reduce the project's energy consumption during the construction and post-construction phases. Strategies being implemented include those recommended by the California Air Resources Board (CARB) that may reduce both the project's construction energy consumption, including diesel anti-idling measures, light-duty vehicle technology, usage of alternative fuels such as biodiesel blends and ethanol, and heavy-duty vehicle design measures to reduce energy consumption. Additionally, as outlined in the SJVAPCD's GAMAQI, the project includes recommendations to reduce energy consumption by shutting down equipment when not in use for extended periods, limiting the usage of construction equipment to eight cumulative hours per day, usage of electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment, and encouragement of employees to carpool to retail establishments or to remain onsite during lunch breaks.

VI. GEOLOGY AND SOILS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	X	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	X	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	X

Discussion:

(a-i) Less than Significant Impact
The closest known faults to the project are subsurface faults located at the Fruitvale Oil Field. These faults cut the older sediments and are not though to be active in the last two million years (Krazan & Associates, Inc., 2021).Additionally, the site is not within an Earthquake Fault Zone. Therefore, there would be a less than significant impact.

(a-ii) Less than Significant Impact
There are no faults within the direct proximity of the project site that would expose people or structures to strong seismic ground shaking. Additionally, as discussed in a-i, the site is not within an Earthquake Fault Zone, Therefore, there is a less than significant impact.

(a-iii) Less than Significant Impact
Ground borings of depths ranging from 10 to 50 feet were taken from the site for the Geotechnical Engineering Investigation. Free groundwater was not encountered and is not anticipated that ground water will rise. Therefore, the possibility of liquefaction is very low. Therefore, there would be a less than significant impact.

(a-iv) No Impact
The project site is flat and not an area prone to any sort of landslides. Therefore, there is no impact.

(b) Less than Significant Impact
The development of the proposed project is not expected to subject the site to any extreme erosion problems. As is noted in Response 3.4.9 (a), the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit (No. 2012-0006-DWQ) for stormwater discharges associated with construction and land disturbance activities, The project applicant must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants, including erosion of soils (such as topsoil), from moving offsite. MM HYD-1 within the Hydrology

section below requires the preparation and implementation of a SWPPP to comply with the Construction General Permit requirements. Therefore, the project would have a less-than-significant impact on soil erosion and loss of topsoil with implementation of both **GEO-1** and **HYD-1.**

MM GEO-1 –Recommendations of the geotechnical study shall be incorporated into final design of the project. A copy of the report shall be submitted to the Community Development Department for review.

(c) Less than Significant Impact with Mitigation Incorporated
The project is potentially located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project given that there are loose surface soils that are disturbed, have low strength characteristics, and are highly compressible when saturated. Furthermore, the structures would be subject to all applicable ordinances of the DMC Title 14 – Building and Construction, as well as all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. In addition, the implementation of **MM GEO-1**, which requires the implementation of the recommendations from the geotechnical study, would reduce project impacts to a less than significant.

(d) Less than Significant Impact with Mitigation Incorporated
Expansive clay soils are subject to shrinking and swelling due to changes in moisture content over the seasons. These changes can cause damage or failure of foundations, utilities, and pavements. During periods of high moisture content, expansive soils under foundations can heave and result in structures lifting. In dry periods, the same soils can collapse and result in settlement of structures. Implementation of **MM GEO-1** would reduce potential site-specific impacts to less than significant levels.

(e) No Impact
The project would be served by existing sewer which is located within the adjacent right of way. Therefore, there is no impact.

General Information

Delano is located in the northwestern part of Kern County. According to Delano's General Plan, three minor earthquake epicenters have been designated ten miles southwest of the City. The Pond-Poso Fault Line has been identified six miles southwest of the City. This fault line traverses the area in a northwesterly-southeasterly direction. Although the Pond-Poso Fault has been associated with seismic activity, all of the recorded activity has been to the southwest of the fault line and, therefore, not in the Delano area. The magnitude of these tremors has been in the relatively mild range of 3 to 4 on the Richter Scale. It is thought that this fault represents no serious threat to the activities in the area.

Two minor sub-surface faults running in a northwest-southeast direction through Delano have been identified by William H. Park, Registered Geologist. These two sub-surface faults are located 6,000 and 7,000 feet below sea level. There is no evidence that either of these faults exists on the surface or will have any adverse effects on urban development. As a result, ground shaking potential and fault displacement potential are both low.

Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking. Liquefaction does not pose a serious threat in the Delano area. There are no known shallow water tables in the area and no significant ground motion activity. There have been no reported incidents of liquefaction hazards in the Delano Planning Area.

According to Delano's General Plan, the hazardous potential of soil erosion is minimized by the low slope grades in the Delano area. The land is flat and no hills or mountains are found in the immediate area. Most of the land has been cultivated and used for urban development or agricultural production. However, wind erosion is prominent in the area due to the agricultural activities in the area.

Delano is situated at the base of the Sierra Nevada Foothills. While the geographical setting of the community reduces the significance of flood hazard in the area, flooding problems do exist in certain sections of the community. According to Delano's General Plan, ponding is the major flooding problem in Delano with the High Street Pool, the 20th Avenue Pool, the Rag Gulch being identified as flood hazard areas. As the storm water flows through the city in an east to west direction, the elevated Southern Pacific Railroad that runs north to south obstructs water movement from continuing westward. Thus, water is collected in these areas east of the railroad tracks.

According to Delano's General Plan, land subsidence activity in the Delano area is quite limited. Of the four identified subsidence classifications, only subsidence caused by withdrawal of groundwater is significant. Tectonic subsidence, oil and gas-extracted subsidence, and subsidence caused by hydro compaction of moisture-deficient alluvial deposits is minimal or non-existent.

VII. GREENHOUSE GAS EMISSIONS - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	X	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	X	☐

(a)

Less than Significant Impact

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and addressing whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in AB 32. AB 32 sets target emissions and requires that GHG emitted in California be reduced to 1990 levels by the year 2020, which is 427 million metric tons of carbon dioxide equivalent emissions (MMTCO2e). The year 2020 reduction target equates to a decrease of approximately 29 percent in GHG emissions below year 2020 "business as usual" (BAU) emissions (or approximately 15 percent below the current GHG emissions). "Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today.

Short-Term Construction GHG Emissions

The implementation of the proposed project would generate short-term increases in air emissions from construction activities that would occur as a result of the proposed development. These construction activities have the potential to generate GHG Emissions of CO2, CH4, and N2O primarily from vehicle and construction equipment. The other GHG emissions defined under AB 32, which include HFCs, PFCs, and SF6, would only consist of trace emissions, if any, during construction associated with the proposed project.

The major construction activities that would occur are the following:

- Land clearing and grading
- Excavation, earthmoving, and grading for construction of utilities, on-site and off-site roads, parking areas, residence foundations, and landscape
- Housing construction
- Asphalt paving of on-site roadways
- Application of architectural coatings

The construction activities would generate dust emissions primarily from soil disturbance; exhaust emissions from construction equipment and motor vehicle operation; and the release of emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include delivery of building materials and supplies to the sites and the transport of construction employees to and from the sites. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic conditions. It is anticipated that future construction activities associated with the proposed project would have the potential to result in short-term increases in air emissions during construction activities that would generate GHG emissions that could contribute to global climate change.

The CalEEMod model run was used to estimate the GHG emissions due to construction activities as a result of the proposed project with "business as usual" conditions. The CalEEMod outputs are included in Exhibit H of Attachment A for reference. The construction activities for the proposed project would generate a maximum of 676 metric tons per year of CO2e of GHG emissions. This represents 0.0002 percent of the 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO2e). Therefore, the GHG emissions as a result of the proposed project will be *less than significant.*

Long-Term Operational GHG Emissions

It is anticipated that the operation of the proposed project would have the potential to result in long-term increases in air emissions that would generate GHGs that could contribute to global climate change. The majority of the long-term GHG emissions would be generated by motor vehicles traveling to and from the project site. Area source emissions would result from fuel combustion, landscape maintenance equipment, and consumer products. The daily operational activities as a result of the proposed project would have the potential to generate GHG emissions of CO2, CH4, N2O, HFCs, PFCs, and SF6. Since there is an international ban on CFCs, it is not anticipated that this GHG would occur. SF6 is primarily used in electronics manufacturing and as an insulation medium in large electrical transformers. It is not anticipated that there will be SF6 emissions from the proposed project.

The CalEEMod model was used to estimate the GHG emissions due to mobile source emissions and area source emissions as a result of the proposed project with "business as usual" conditions. The outputs are included in Exhibit H of Attachment A. The operation of the proposed project based on "business as usual" conditions" would result in 2,734 metric tons per year of CO2e of GHG emissions. This represents 0.0006 percent of the CO2e of 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO2e). Therefore, the GHG emissions as a result of the proposed project will be *less than significant*.

Potential Impacts to Sensitive Receptors

Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. Albany Park Elementary School is the nearest sensitive receptor and is located approximately miles from the proposed project site.

The project does not include any project components identified by the California Air Resources Board that could potentially impact any sensitive receptors (such as heavily traveled roads, distribution centers, fueling stations, and dry-cleaning operations). Based on the operational emissions estimates and nature of the proposed project, the proposed project is not anticipated to negatively impact any sensitive receptors.

Potential Odor Impacts

Although some typical construction-related odors would be generated during project construction, these odors are not anticipated to affect a substantial number of people or be particularly adverse. The project does not include any uses known to be a source of nuisance odors (listed in Table 6 of the SJVAPCD's GAMAQI). The impact is expected to be *less than significant.*

CONCLUSIONS

Construction and operation of the proposed project would result in criteria pollutant and GHG emissions, however these emissions would not exceed the thresholds of significance established by reduction targets set in AB 32. Impacts to air quality from the proposed project would be less than significant.

(a) Less than Significant Impact

No mitigation is required. There would be a *less than significant impact*.

(b) Less than Significant Impact

Based on the assessment above, the project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The project would further the achievement of the City's and the County's greenhouse gas reduction goals. Therefore, any impacts would be less than significant. No mitigation is required. There would be a *less than significant impact*.

VIII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	X	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	X	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	X
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	X
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	X
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	X
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The project includes the construction of a residential subdivision which will likely use and/or sell various chemicals in volumes above 55 gallons that may be hazardous. As a result, the project shall comply with MM HAZ-1. **MM HAZ-1**: Prior to commencement of construction, the project proponent shall submit to Kern County Department of Environmental Health Services, a Hazardous Materials Business Plan (HMBP) pursuant to Health and Safety Code Chapter 6.95, sections 25500 to 25520. The HMBP shall outline the types and quantities of hazardous materials used onsite and indicate onsite safety measures to ensure such materials are properly handled and stored. A copy of the approved HMBP shall be submitted to the Community Development Department.

(b) Less than Significant Impact with Mitigation Incorporated
As discussed above, the storage of chemicals and other items at the retail store for use or purchase could foreseeably upset and accident conditions that involve the release of potentially hazardous chemicals that impact the environment. The implementation of **MM HAZ-1** would mitigate these associated impacts.

(c) No Impact
The project is located approximately 0.3 miles southwest of the nearest existing school, Albany Park Elementary. As a result, there is no potential impact.

(d) No Impact
The project site is not listed on the hazardous material sites (Cortese List) associated with Government Code Section 65962.5. The nearest hazardous materials site, which is still currently active, is located at 811 11th Avenue at the former National Cleaners site.

e) No Impact
The project site is not located within the locally adopted local airport land use plan. Additionally, the site is located approximately 3 miles from the City's Municipal Airport. Therefore, there is no impact.

(f) No Impact
The City currently is subject to the County's Hazard Mitigation Response Plan. However, the development of this site would no conflict with any aspects of that plan's implementation. Therefore, there is no impact.

(g) No Impact
The project site is zoned for residential use within the city limits of Delano. The surrounding area does not consist of wildlands and is not subject to wildfires. Therefore, there is no impact.

General Information

Any hazardous material because of its quantity, concentration, physical or chemical properties, pose a significant present or potential hazard to human health and safety, or the environment the California legislature adopted Article I, Chapter 6.95 of the Health and Safety Code, Sections 25500 to 25520 that requires any business handling or storing a hazardous material or hazardous waste to establish a Business Plan. The information obtained from the completed Business Plans will be provided to emergency response personnel for a better-prepared emergency response due to a release or threatened release of a hazardous material and/or hazardous waste.

Business owners that handle or store a hazardous material or mixtures containing a hazardous material, which has a quantity at any one time during the year, equal to or greater than:

1) A total of 55 gallons,
2) A total of 500 pounds,
3) 200 cubic feet at standard temperature and pressure of compressed gas,
4) Any quantity of Acutely Hazardous Material (AHM).

Assembly Bill AB 2286 requires all business and agencies to report their Hazardous Materials Business Plans to the Certified Unified Program Agency (CUPA) information electronically at http://cers.calepa.ca.gov

IX. HYDROLOGY AND WATER QUALITY – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	X	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	X	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on or offsite?				
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite?	☐	☐	X	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;				
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	X

Discussion:

(a) **Less than Significant Impact**
The project site is not proposing to discharge any water that violate the standards allowed by the local or state agencies. Therefore, the impact is considered less than significant.

(b) **Less than Significant Impact**
The proposed project will connect to the City of Delano municipal systems, which is regulated by the Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board (SWRCB). The City, as the water purveyor, provides domestic water service to residential, commercial, and industrial users within the City. As an urban community, the City is required to prepare an Urban Water Management Plan (UWMP) that develops long-term planning strategies and discusses the deliveries and uses of water including supply sources, efficiencies, and demands. The City developed the 2010 UWMP (2011), to comply with the Urban Water Management Plan Act (California Water Code Section A0610) and the Water Conservation Bill of 2009 (SB X7-7) requirements (City of Delano, 2011b; pg. ix). The City water system consists of groundwater wells, a treatment facility, storage tanks, and distribution lines. Water is supplied entirely by groundwater, which is extracted from the Kern County sub basin groundwater aquifers and then is treated, stored, and delivered through a grid distribution system.

The RWQCB is responsible for protecting water resources in the region. As such, the project would be required to comply with State Water Resource regulations including preparation of a Storm water Pollution Prevention Plan. The proposed project would not include activities that would substantially deplete groundwater Supplies or interfere substantially with groundwater recharge resulting in a net deficit of the local groundwater table level. Impacts would be considered less than significant.

(c)(i) **Less than Significant Impact**
The project site is relatively flat. There are no streams, rivers, or other waterways on site. Runoff from precipitation

currently percolates into the ground or drains into the City's storm drains. According to the Natural Resources Conservation Service Web Soil Survey website, the soils on the project site have a ponding frequency class of "none" meaning that ponding is not probable; the chance of ponding is nearly 0 percent in any year. All drainage generated will be collected within the city's stormwater drainage system and comply with all local development and operational standards.

(c)(ii) **No Impact**
Due to the proposed project site's level terrain, existing drainage patterns will not be altered in a manner which would result in substantial erosion, siltation or flooding on or off-site. Watercourses (streams/rivers) do not exist within, or near the project site.

(e) **No Impact**
The project will not create or contribute to runoff water which would exceed the capacity of existing or planned storm water drainage systems. In addition, the proposed project will not provide substantial sources of polluted runoff to the adjacent areas. Therefore, there is no impact.

(f) **Less than Significant Impact with Mitigation Incorporated**
Construction activities are subject to National Pollutant Discharge Elimination System (NPDES) general permit regulations, which include clearing, grading, stockpiling, and excavation that would result in soil disturbances to at least 1 acre of the total land area. The grading permit requires the development and implementation of a Storm water Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants from contacting storm water, with the intent of keeping all products of erosion from moving off site. Construction-related erosion and sedimentation impacts as a result of soil disturbance would also be considered less than significant after implementation of a SWPPP.

MM HYD-1 – Prior to issuance of grading or building permits, the applicant must obtain an approved SWPPP from the Regional Water Control Board.

(g) **No Impact**
The proposed project is located outside the 100-year flood plain; therefore, there is no impact.

(h) **No Impact**
The proposed project is located outside the 100-year flood plain, therefore, there is no impact.

(i) **No Impact**
The project is located outside a significant flood plain, and does not propose to house people in an area prone to flooding. Therefore, there is no impact.

(j) **No Impact**
Tsunamis, seiche or mudflows are not likely to occur at the proposed project site. The project site is located over 60.0 miles away from the Pacific Ocean. The proposed project area is flat thus eliminating the possibility of mudflow. Therefore, there is no impact.

General Information

The primary source of domestic water for the City of Delano is groundwater. According to the Delano General Plan, in general, the groundwater quality of the City is relatively high. Production is generally low east of the community based on recent test wells east of Browning Road. Two existing wells and new well sites in the City will require treatment to remove DBCP, most likely using carbon filters. Other than this contaminant, the City's groundwater supply is suitable for domestic purposes without treatment. Prior to agricultural and urban development, groundwater moved from areas of recharge along the eastern rim of the Valley to areas of discharge along the Valley axis. Recharge was primarily by seepage from stream flows. Under present conditions, groundwater is recharged primarily from stream flow percolation, from percolation basins developed by agricultural irrigation districts, by percolation from treated wastewater disposal facilities and from percolation attributed to excess applied surface irrigation water. Data from the regional map produced by the State of California, Department of Water Resources (DWR), San Joaquin District, entitled Lines of Equal Depth to Water in Wells, San Joaquin Valley, depicts groundwater flowing toward the southwest.

A seiche is an occasional and sudden oscillation of the water of a lake, bay or estuary producing fluctuations in the water level and caused by wind, earthquakes or changes in barometric pressure. A tsunami is an unusually

large sea wave produced by seaquake or undersea volcanic eruption (from the Japanese language, roughly translated as “harbor wave”). According to Delano’s General Plan, the Pond-Poso Fault Line has been identified six miles southwest of the City. Although the Pond-Poso Fault has been associated with seismic activity, all of the recorded activity has been to the southwest of the fault line and, therefore, not in the Delano area.

Flood hazard areas are determined by calculating the number of occurrences of flood events at a certain magnitude during designated recurrence intervals. Subsequently, the recurrence interval represents the long-term, average period between floods of a specific magnitude. Hence, a flood hazard area denoted as having 100-year flood capabilities is expected to be equaled or exceeded once on the average during a 100-year period. As the City of Delano is not located near any bodies of water, no seiche, tsunami, or mudflow impacts are identified.

X. LAND USE AND PLANNING – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	X	☐

Discussion:

(a) No Impact
The project is located on a single piece of property and therefore could not divide an established community.

(b) No Impact
The project tract map proposes to subdivide the property into housing tracts. This project is consistent with development policies of the City General Plan Designation for residential uses. The project would be consistent with applicable policies and regulations of the general plan and zoning ordinance. The project would need to implement all recommended mitigation measures identified in this environmental document in order to mitigate impacts to a less than significant level.

XI. MINERAL RESOURCES – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation In-corporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	X
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	X

Discussion:

(a) No Impact
The project site is a designated area for development of a single facility residential site, with an existing residence located on the southeast corner of the project site. Additionally, the area is not a known for extraction for any mineral resources.

(b) No Impact
The project site was not identified in the general plan as a mineral resource deposit area. Therefore, there is no impact.

XII. NOISE – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	X	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	X	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact
There is a residence located on the southeast corner of the project site. The construction of the site will temporarily increase ambient noise levels to the adjacent properties. However, the Delano Municipal Code limits the time which construction may occur, which mitigates the associated temporary noise increases. Therefore, this impact is considered less than significant.

(b) Less than Significant Impact
There is a residence located on the southeast corner of the project site. The construction of the site will temporarily increase in vibration levels to the adjacent properties. However, the Delano Municipal Code limits the time which construction may occur, which mitigates the associated temporary vibration increases. Additionally, the project proposed the construction of permanent block walls to mitigate the increases in noise levels. Therefore, this impact is considered less than significant.

(c) No Impact
The City has an adopted airport land use plan, the site of the project is located approximately 3 miles from the airport and not within any of the designated safety zone near the airport. Therefore, there is no impact. The project is not within the vicinity of a private airstrip. Therefore, there is no impact.

General Discussion
The Noise Element of the Delano General Plan provides the ranges of noise exposure from transportation and non-transportation noise sources, which are considered acceptable, conditionally acceptable, or conditionally unacceptable for the development of different land uses.

Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g. demolition/land clearing, grading and excavation, erection). The United States Environmental Protection Agency has found that the average noise levels associated with construction activities typically range from approximately 76 dBA to 84 dBA Leq, with intermittent individual equipment noise levels ranging from approximately 75 dBA to more than 88 dBA for brief periods.

Short Term Noise

Noise from localized point sources (such as construction sites) typically decreases by approximately 6 dBA with each doubling of distance from source to receptor. Given the noise attenuation rate and assuming no noise shielding from either natural or human-made features (e.g. trees, buildings, fences), outdoor receptors within approximately 400 feet of construction site could experience maximum noise levels of greater than 70 dBA when onsite construction-related noise levels exceed approximately 89 dBA at the project site boundary. Construction activities that occur during the more noise-sensitive eighteen hours could result in increased levels of annoyance and sleep disruption for occupants of nearby existing residential dwellings. As a result, noise-generating con-

struction activities would be considered to have a potentially significant short-term impact. However with implementation of mitigation measures, this impact would be considered less than significant.

Long Term Noise

Mechanical building equipment (e.g. heating, ventilation and air conditioning systems, and boilers), associated with the proposed structures, could generate noise levels of approximately 90 dBA at 3 feet from the source. However, such mechanical equipment systems are typically shielded from direct public exposure and usually housed on rooftops, within equipment rooms, or within exterior enclosures.

Landscape maintenance equipment, such as leaf blowers and gasoline powered mowers, associated with the proposed operations could result in intermittent noise levels that range from approximately 80 to 100 dBA at 3 feet, respectively. Based on an equipment noise level of 100 dBA, landscape maintenance equipment (assuming a noise attenuation rate of 6 dBA per doubling of distance from the source) may result in exterior noise levels of approximately 75 dBA at 50 feet.

MAXIMUM ALLOWABLE NOISE EXPOSURE FOR
NON-TRANSPORTATION NOISE SOURCES*

		Residential	Commercial	Industrial (L)	Industrial (H)	Agricultural
Residential	AM	50	60	55	60	60
	PM	45	55	50	55	55
Commercial	AM	60	60	60	65	60
	PM	55	55	55	60	55
Industrial (L)	AM	55	60	60	65	60
	PM	50	55	55	60	55
Industrial (H)	AM	60	65	65	70	65
	PM	55	60	60	65	60
Agricultural	AM	60	60	60	65	60
	PM	55	55	55	60	55

*As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers at the property line.

AM = 7:00 AM to 10:00 PM
PM = 10:00 PM to 7:00 AM
L = Light
H = Heavy

Note: Each of the noise levels specified above shall be lowered by 5 dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).

Vibration perception threshold: The minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of one-tenth (0.1) inches per second over the range of one to one hundred Hz.

Reaction of People and Damage to Buildings from Continuous Vibration Levels		
Velocity Level, PPV (in/sec)	**Human Reaction**	**Effect on Buildings**
0.006 to 0.019	Threshold of perception; possibility of intrusion	Damage of any type unlikely

0.08	Vibration readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Continuous vibration begins to annoy people	Virtually no risk of architectural damage to normal buildings
0.20	Vibration annoying to people in buildings	Risk of architectural damage to normal dwellings such as plastered walls or ceilings
0.4 to 0.6	Vibration considered unpleasant by people subjected to continuous vibrations	Architectural damage and possibly minor structural damage
Source: Whiffen and Leonard 1971		

XIII. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	X	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact
The proposed project is intended to construct 196 single residential units. These new dwelling units would induce population growth in the area. The site is designated by the City General Plan for this type of residential use. The new units will aid in the City's Housing Element's Goal to meet its portion of their Regional Housings Needs Allocation (RHNA). This site has been anticipated to accommodate the type of housing proposed by the project in the City's General Plan Land Use Element and as such including the above stated, the impact is less than significant.

(b) No Impact
There is an existing residence located on the southeast portion of the project site; however, this residence will remain on site. Therefore, no displacement of people or housing units will result because of implementation of the project. Therefore, there are not impacts.

General Information

The City's population is 53,573 with a total of 11,745 housing units. This works out to an average of 3.84 persons per owner-occupied unit (United States Census Bureau, 2019).

XIV. PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	X	☐
ii) Police protection?	☐	☐	X	☐
iii) Schools?	☐	☐	X	☐
iv) Parks?	☐	☐	X	☐
v) Other public facilities?	☐	☐	X	☐

Discussion:

(a-i) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

a-ii) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

(a-iii) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

(a-iv) Less than Significant Impact
The project will be required to its fair share portion of park impact fees. In addition, the project will pay impact fees during the building permit review process. These fees will provide ample funding for these services. Therefore, impacts are considered less than significant.

a-v) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for any other services. Therefore, impacts are considered less than significant.

General Information

The proposed project site is within the jurisdiction of the Kern County Fire Department. Crime and emergency response is provided by the Delano Police Department.

The Kern County Fire Department is an organization comprised of over 625 permanent employees serving an area which spans over 8,000 square miles. They provide fire protection services for over 500,000 citizens living in the unincorporated areas of Kern County and the cities of Arvin, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi and Wasco. Over 546 uniformed firefighters are stationed in 46 fire stations throughout Kern County.

Single Family Residences have the potential for adding to school populations. The average per Single Family Residence is:

Grade	Student Generation per Single Family Residence
K – 6	0.425
7 – 8	0.139
9 – 12	0.214

The Delano General Plan allocates three acres of park available land per 1,000 residents' population.

XV. RECREATION	Potentially Significant Impact	Less Than Significant with Mitigation In-corporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	X	☐
b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	X	☐

Discussion:

(a) Less than Significant Impact
The proposed residential project will generate an estimated population of 784 persons. There will be less than significant impact due to the payment of park facilities fee.

(b) No Impact
The project does not include any recreational facilities or expansion of recreational facilities. Therefore, there would be no impact.

General Information

The Delano General Plan allocates three acres of park available land per 1,000 residents' population.

XVI. TRANSPORTATION -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with program, plane, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	X	☐
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)?	☐	☒	☐	☐
c) Substantially increase hazards due to geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	X
d) Result in inadequate emergency access?	☐	☐	☐	X

Discussion:

A traffic study was conducted (Ruettgers & Schuler, 2021), to report upon the impacts of traffic in the vicinity and found that the project would have a less than significant impact to the surrounding area as long as mitigation measures are met. Proposed mitigation measures are included at the end of this section.

General Information

According to the Delano General Plan, the City has set its level of service standard at LOS "C," except at freeway interchanges and other high volume locations, where LOS "D" is used. Caltrans adopted level of service standard is LOS "C" The following charts show the significance of those levels.

Level of Service	Description	Average Control Delay (sec./car)
A	Little or no delay	0 – 10
B	Short traffic delay	>10 – 15
C	Medium traffic delay	> 15 – 25
D	Long traffic delay	> 25 – 35
E	Very long traffic delay	> 35 – 50
F	Excessive traffic delay	> 50

Unsignalized intersections.

Level of Service	Description	Average Control Delay (sec./car)
A	Uncongested operations, all queues clear in single cycle	< 10
B	Very light congestion, an occasional phase is fully utilized	>10 – 20
C	Light congestion; occasional queues on approach	> 20 – 35
D	Significant congestion on critical approaches, but intersection is functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing queues formed.	> 35 – 55
E	Severe congestion with some long-standing queues on critical approaches. Traffic queues may block nearby intersection(s) upstream of critical approach(es)	> 55-80

F	Total breakdown, significant queuing	> 80

Signalized intersections.

Level of service	Freeways	Two-lane rural highway	Multi-lane rural highway	Expressway	Arterial	Collector
A	700	120	470	720	450	300
B	1,100	240	945	840	525	350
C	1,550	395	1,285	960	600	400
D	1,850	675	1,585	1,080	675	450
E	2,000	1,145	1,800	1,200	750	500

Capacity per hour per lane for various highway facilities

According to Delano's General Plan, growth projections adopted by the Kern Council of Governments (COG) indicates that population growth in Delano will be greater than occurred in the 1990s (1,602 persons annually or 6.8%). Kern COG's population projections show the City growing by approximately 3,668 persons annually through 2020, more than double the average annual population growth of the 1990s. Additionally, the City's population growth includes the growth of the prison population within the City. The number of housing units will also increase accordingly (930 housing units annually or 10.5 percent).

(a) Less than Significant Impact

The City provides fixed route bus service for the citizens of Delano and immediate county area residents called the Delano Area Rapid Transit (DART). The DART provides bus service on four different routes. One of the stops is a quarter mile south of the Project site. However, the Project will not impact the stop or the route. According to the Kern County Bicycle Master Plan, the Project streets are not designated bike routes (Kern Council of Governments, 2012). The Project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for traffic improvements needed to serve the Project.

(b) Less than Significant Impact with Mitigation Incorporated

The level of service standard (LOS) for the City is typically a "C" except near high traffic areas and interchange ramps to the highway. As shown in Appendix C, and in Table 16-1, the Project LOS will exceed the standard of C. A volume-to-capacity ratio of greater than 0.80 corresponds to a LOS of less than C. Therefore, MM TRANS-1 through TRANS-3 will be implemented in order to reduce potentially significant impacts below the threshold. Additionally, the Project will be required to pay a fair share contribution of this fee to offset its impacts and allow for the construction of the intersection. Therefore, impacts are considered less than significant with mitigation incorporated.

Table 16-1 Roadway Capacity

Roadway Segment	Existing Capacity	Mitigated Capacity	v/c 2020	v/c 2020+Proj	v/c 2040	v/c 2040+Proj	v/c (Mit) 2040+Proj
Cecil Ave: Hiett Ave to Albany St	13,100	27,360	0.79	**0.87**	**1.22**	**1.30**	0.41
Cecil Ave: Albany St to Ellington St	27,360	-	0.49	0.52	0.66	0.68	-
Cecil Ave: Ellington St to Freemont St	27,360	-	0.63	0.64	0.76	0.78	-

Existing Capacity (vehicles/day) taken from Table 3-2, City of Delano General Plan Circulation Element (page 3-9)

VMT Analysis

An evaluation of vehicle miles traveled (VMT) for project traffic was conducted based on applicable California Environmental Quality Act (CEQA) guidelines. The analysis involved comparing an estimate of VMT attributable

to the project to a baseline VMT for the greater Delano area and assessing whether project VMT would result in a significant transportation impact (Ruettgers & Schuler, 2021).

VMT data was obtained from the Kern Council of Governments (KernCOG) in order to establish a baseline for daily vehicle miles traveled in the Kern County area. Based on household and employment populations in the greater Kern County area, as well as travel patterns throughout the region, KernCOG data shows an average VMT per trip of 9.76 miles (Ruettgers & Schuler, 2021).

Several factors were taken into consideration when estimating project VMT, including project trip generation and distribution, trip type and probable trip destination. As shown below, it is anticipated that the project would result in an average VMT per trip of 6.56 miles.

Trip Type	Daily Project Trips	Average Trip Length (Miles)	Daily Miles Traveled
AM Commuter	144	21	3,024
PM Commuter	194	21	4,074
Other Trips	1,593	4	5,576
		Average:	**6.56**

Average commuter trip length based on trip generation/distribution and probable destinations
Assumed majority of commuter trips are work trips and half of work trips travel outside of Delano Average trip length for other trips assumes majority of trips remain within greater Delano area

The Project average VMT of 6.56 miles is approximately 33% lower than the average regional VMT of 9.76 miles. Therefore, the Project will not result in a significant transportation impact under CEQA.

(c) No Impact
The site does not require the improvement or alteration of any design features that would increase hazards or include sharp curves in the roadway or streets. Additionally, the site already proposes to improve adjacent off-street requirements which would improve compatibility for road circulation with adjacent land uses. Therefore, there is no impact.

(d) No Impact
The Project will provide appropriate emergency access to the site in accordance with fire and building code requirements. The site will not impede pedestrian or vehicular access along any of the adjacent roadways and would likely improve some access to the area through additional paving of local roadways and construction of sidewalks. Therefore, there is no impact

MM TRANS-1 Intersection and roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project as presented in the table below. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.

Road Segment	Total Improvements Required by 2040
Cecil Ave: Heitt Ave to Albany St	Add two lanes

MM TRANS-2 Following conditions shall be incorporated into Tentative Tract Map 7384:

- The intersection signalization at Cecil and Hiett Avenues shall be constructed to the ultimate right of way location, 110 ft on Cecil Ave. and 90 ft. on Hiett Ave., plus adequate right turn lanes. The cost of work limited to the full intersection improvements shall be reimbursed to the Developer as credits up to the amount of Local Circulation Impact Fees due at time of building permit issuance.

- The Developer shall install half of the 110 ft. right of way (55 ft. half street) plus 12 ft of the road improvements on Cecil Ave. between the eastern and western boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

- The Developer shall install half of the 90 ft. right of way (45 ft half street) of Hiett Ave. between Cecil Avenue and the northern boundary of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

MM TRANS-3 Subsequent tract maps submitted on the project site shall comply with the following requirements to reduce traffic impacts:

- The Developer shall install half of the 60 ft. right of way (30 ft. half street) plus 12 ft of the road improvements on 20th Ave. along the boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

- The Developer shall install half of the 90 ft. right of way (45 ft half street) of Hiett Ave. along the boundary of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

- The Developer shall install half of the 90 ft. right of way (45 ft half street) of Melcher Ave. along the boundary of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

- The Developer shall install half of the 110 ft. right of way (55 ft. half street) plus 12 ft of the road improvements on Cecil Ave. along the boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.

XVIII. TRIBAL CULTURAL RESOURCES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	X
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	X

Discussion:

(a-i) No Impact
The project site is not listed on the California Register of Historical Resources or in any local register of historical resources in Public Resources Code Section 5020.1(k). The site is a fallow, vacant piece of land that has not had any structures built and is regularly disked for weed management purposes.

(a-ii) Less than Significant Impact
The project site is not listed as being a historical resource. Additionally, cultural records search within the area have not revealed any resources in need of preservations (City of Delano , 2005). On May 24, 2021, notices of Tribal Consultation letter were mailed and included a brief Project description and location maps. To date, no responses have been received. Therefore, the Project would have no impact.

XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require of result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	X
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	X	☐
c) Result in	☐	☐	X	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	X	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	X	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	X	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	X	☐

Discussion:

(a) No Impact
The project is a residential project that would discharge into the City's wastewater treatment infrastructure. The discharge of wastewater would comply with these requirements as the City's treatment facility is currently in compliance with the Regional Water Quality Control Board and no violations are active. Therefore, the impact is considered less than significant.

(b) Less than Significant Impact
The project will be required to construction appropriate wastewater and water facilities within proximity of the project. This construction likely includes installation of appropriate sewer and water laterals and/or lines to existing systems in proximity to the project. Therefore, the impact is considered less than significant.

(c) Less than Significant Impact
The project will be required to construction appropriate storm water facilities within proximity of the project. This construction likely includes curb and gutter only as this area is a surface draining zone of the City. Therefore, the impact is considered less than significant.

(d) Less than Significant Impact
The project would be serviced by the existing water system of the City of Delano. According to recent project analysis, the City has supplies to service the site and will issue appropriate permits and/or will serve letters to the site. Therefore, the impact is considered less than significant.

(e) Less than Significant Impact
The project would be serviced by the existing wastewater system of the City of Delano. According to recent project analysis, the City has ample capacity to service the site and will issue appropriate permits and/or will serve letters to the site. Therefore, the impact is considered less than significant.

(f) Less than Significant Impact
The site would be required to implement a recycling program and provide a refuse container in accordance with Delano Municipal Code requirements. The site is serviced by multiple landfills in the area and would be subject to the requirements of the franchise hauler for the City. Therefore, the impact is considered less than significant.

g) Less than Significant Impact
The project, as stated previously, is required to comply with all local requirements for refuse disposal of solid waste. The project is a typical residential use that would be required to have weekly pickups by the City's franchise hauler. Therefore, this impact is considered less than significant.

General Discussion

Edison International is the primary provider of electricity for the City of Delano. All electrical services for the City are provided by a combination of inter-ties and substations. There are currently no locally-produced power sources in Delano. Natural gas is provided to urbanized areas of Delano by The Gas Company of Southern California. This service can be provided only where natural gas pipelines have been installed. The rural outskirts of the City do not have this service.

The City of Delano is the water purveyor within the City. The Kern County Water Basin is the subbasin from which the City draws its water. This portion of the water basin historically has been considered to be in an overdraft condition. According to the most recently adopted Delano General Plan, the City currently has nine wells in production, but only eight are available to meet the water needs of the general City population. The ninth, Well 23, located at North Kern State Prison, serves only the prison and is not connected to the City system. Capacities range from 775 gallons per minute (gpm) to 2,000 gpm with an average of 1,284 gpm. Recently, two wells, Well 5 and Well 18 have been taken out of production due to the presence of DBCP and hydrogen sulfide, respectively, in the water. This creates an odor and taste problem that requires treatment with chlorination prior to being distributed for use.

According to Delano's General Plan, the City of Delano well system has the capacity of pumping 14.8 million gallons per day (mgd; the equivalent of 10,275 gpm) for domestic use and fire suppression. The current water demand of the City is 220 gallons per capita per day. The City is able of storing 4.6 million gallons in aboveground storage tanks. In addition, 4.4 million gallons of storage is located at North Kern Prison.

The City of Delano collects and transmits all domestic and industrial wastewater to the City's wastewater treatment plant located west of Delano on Lytle Avenue between Garces Highway and Cecil Avenue. The plant also accepts the influent from North Kern State Prison, who funded a 0.8 mgd expansion to the treatment plant in the early 1990s. The current treatment plant, which provides primary and secondary treatment of wastewater, has a capacity of 4.4 mgd and receives 3.9 mgd from both the City of Delano and North Kern State Prison. The City of Delano generates 114 gallons per capita per day of wastewater to be treated.

According to Delano's General Plan, the City of Delano provides twice-a-week pickup of solid waste within the City limits. Further, the possible closure of the McFarland/Delano Transfer Station at Stradley and Woollomes Avenues will require the city to deliver its solid waste to the Shafter Landfill.

XIV. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	X	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	X	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	X	☐	☐

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
Mitigation measures have been included to lessen the significance of potential impacts. The developer has has agreed to implement all required mitigation measures; therefore, less than significant impacts from the Project implementation would occur.

(b) Less than Significant Impact with Mitigation Incorporated
As described in the impact analyses in Sections 3.1 through 3.17 of this IS, any potentially significant impacts of the proposed Project would be reduced to a less than significant level following incorporation of the mitigation measures listed herein. Projects completed in the past have also implemented mitigation as necessary. Accordingly, the proposed project would not otherwise combine with impacts of related development to add considerably to any cumulative impacts in the region, and impacts would be considered less than significant.

(c) Less than Significant Impact with Mitigation Incorporated
The proposed project would not directly or indirectly cause substantial adverse effects on human beings. All identified impacts within the IS which all could have a substantial effect on human beings have been mitigated to a less than significant impact.

General Information

CEQA defines three types of impacts or effects:

- Direct impacts are caused by a project and occur at the same time and place (CEQA §15358(a)(1).
- Indirect or secondary impacts are reasonably foreseeable and are caused by a project but occur at a different time or place. They may include growth inducing effects and other effects related to changes in the pattern of land use, population density or growth rate and related effects on air, water and other natural systems, including ecosystems (CEQA §15358(a)(2).
- Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (CEQA §15355(b)). Impacts from individual projects may be considered minor, but considered retroactively with other projects over a period of time; those impacts could be significant, especially where listed or sensitive species are involved.

REFERENCES

California Department of Conservation. (2018). *FMMP*.

City of Delano . (2005). *City of Delano General Plan .*

EnviroTech Consultants, Inc. (2021). *Air Quality Impact Analysis.*

Kern Council of Governments. (2012). *Kern County Bucycle Master Plan and Complete Streets Recommendations.*

Krazan & Associates, Inc. (2021). *Geotechnical Engineering Investigation for Proposed Delano Tentative Tract.*

Ruettgers & Schuler. (2021). *Proposed Single-Family Residential Development Cecil Avenuw and Hiett Avenue City of Delano.*

United States Census Bureau. (2019). *QuickFacts.* Retrieved from City of Delano, California: https://www.census.gov/quickfacts/delanocitycalifornia

Appendix

A. Mitigation Monitoring Program MMRP

B. Air Quality Impact Analysis

C - Geotechnical Engineering Investigation

D - Traffic Study

Appendix A
Mitigation Monitoring and Reporting Plan for
Tract 7384

Impact	Mitigation Measures	Implementation	Monitoring
Biological Resources	**MM BIO-1:** Pre-activity Surveys for Special-Status Species: Prior to ground disturbing activities, a qualified wildlife biologist shall conduct a biological clearance survey no more than 30 calendar days prior to the onset of construction. The clearance survey shall include walking transects to identify presence of San Joaquin kit fox, American badger, Swainson's hawk, burrowing owl, nesting birds and other special-status species or signs of, and sensitive natural communities. The pre-activity survey shall be walked by no greater than 30-foot transects for 100 percent coverage of the Project site and the 250-foot buffer, where feasible. If no evidence of special-status species is detected, no further action is required but measure MM BIO-6 shall be implemented. **MM BIO-2:** Avoidance of San Joaquin Kit Fox and American badger dens: If dens/burrows that could support the San Joaquin kit fox or American badger are discovered during the pre-activity surveys conducted under MM BIO-4, the avoidance buffers outlined below shall be established. No work would occur within these buffers unless the biologist approves and monitors the activity. • Potential Den – 50 feet • Atypical Den – 50 feet (includes pipes and other man-made structures) • Known Den – 100 Feet • Natal/Pupping Den – 500 feet	Project Applicant and Construction Company	City of Delano Community Development

	MM BIO-3: Avoidance and Minimization Measures for San Joaquin Kit Fox. The following avoidance and minimization measures shall be implemented during all phases of the Project to reduce the potential for impact from the Project. They are modified from the *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011). 1. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction or Project site. 2. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site. 3. To prevent inadvertent entrapment of kit fox or other animals during construction, the contractor shall cover all excavated, steep-walled holes or trenches more than two feet deep at the close of each workday with plywood or similar materials. If holes or trenches cannot be covered, one or more escape ramps constructed of earthen fill or wooden planks shall be installed in the trench. Before such holes or trenches are filled, the contractor shall thoroughly inspect them for entrapped animals. All construction-related pipes, culverts, or similar structures with a diameter of four-inches or greater that are stored on the Project site shall be thoroughly inspected for wildlife before the pipe is subsequently buried, capped, or otherwise used or moved in anyway. If		

	at any time an entrapped or injured kit fox is discovered, work in the immediate area shall be temporarily halted and USFWS and CDFW shall be consulted. 4. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS and CDFW has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. 5. Use of anti-coagulant rodenticides and herbicides in Project sites shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional Project-related restrictions deemed necessary by the USFWS and CDFW. If rodent control must be conducted, zinc phosphide shall be used because of the proven lower risk to kit foxes. 6. A representative shall be appointed by the Project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured		

	or entrapped kit fox. The representative shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS. 7. The Sacramento Fish and Wildlife Office of USFWS and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Project-related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFW contact can be reached at (559) 243-4014 and R4CESA@wildlifeca.gov. 8. All sightings of the San Joaquin kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the Service at the address below. Any Project-related information required by the USFWS or questions concerning the above conditions, or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at: Endangered Species Division, 2800 Cottage Way, Suite W 2605, Sacramento, California 95825-1846, phone: (916) 414-6620 or (916) 414-6600. **MM BIO-4:** Pre-activity Surveys for Nesting Birds. If construction is planned outside the nesting period for raptors (other than the burrowing owl) and migratory birds (February 1 to August 31), no mitigation shall be required. If construction is planned during the nesting season for		

	migratory birds and raptors, a pre-activity survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified onsite monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds. Because nesting birds can establish new nests or produce a second or even third clutch at any time during the nesting season, nesting bird surveys shall be repeated every 30 days as construction activities are occurring throughout the nesting season. No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease. **MM BIO-5:** Pre-activity Surveys for Swainson's Hawk Nests. If all Project activities are completed outside of the Swainson's hawk nesting season (February 15 through August 31), this mitigation measure shall need not be applied. If no Swainson's hawk nests are found, no further action is required. If construction is planned during the nesting season, a pre-construction survey shall be conducted by a qualified biologist to evaluate the site and a 0.5-mile buffer around the site for active Swainson's hawk nests. If potential Swainson's hawk nests or nesting substrates occur within		

	0.5 mile of the Project site, then those nests or substrates must be monitored for Swainson's hawk nesting activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. Monitoring shall be conducted according to the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). The protocol recommends that ten visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. During the nesting period, active Swainson's hawk nests shall be avoided by 0.5 mile unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If an active Swainson's hawk nest is located within 500 feet of the Project or within the Project site, the Project proponent shall contact CDFW for guidance. **MM BIO-6:** Swainson's Hawk Nest Avoidance. If an active Swainson's hawk nest is discovered at any time within 0.5-mile of active construction, a qualified biologist will complete an assessment of the potential for current construction activities to impact the nest. The assessment will consider the type of construction activities, the location of construction relative to the nest, the visibility of construction activities from the nest location, and other existing disturbances in the area that are not related to construction activities of this Project. Based on this assessment, the biologist will determine if construction activities can proceed and the level of nest monitoring required. Construction activities shall not occur within 500		

	feet of an active nest but depending upon conditions at the site this distance may be reduced. Full-time monitoring to evaluate the effects of construction activities on nesting Swainson's hawks may be required. The qualified biologist shall have the authority to stop work if it is determined that Project construction is disturbing the nest. These buffers may need to increase depending on the sensitivity of the nest location, the sensitivity of the nesting Swainson's hawk to disturbances, and at the discretion of the qualified biologist. **MM BIO-7:** Pre-activity Surveys for Western burrowing owl burrows. A qualified biologist shall conduct a pre-activity survey on the Project site and within 500 feet of its perimeter, where feasible, to identify the presence of the burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any western burrowing owl burrows are observed during the pre-activity survey, avoidance measures shall be consistent with those included in the CDFW staff report on western burrowing owl mitigation (CDFG 2012). If occupied western burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 250 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Western burrowing owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 500-foot (minimum) buffer zone shall be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.		

If western burrowing owl are found to occupy the Project site and avoidance is not possible, burrow exclusion may be conducted by qualified biologists only during the non-breeding season, before breeding behavior is exhibited, and after the burrow is confirmed empty through non-invasive methods (surveillance). Replacement or occupied burrows shall consist of artificial burrows at a ratio of one burrow collapsed to one artificial burrow constructed (1:1). Ongoing surveillance of the Project site during construction activities shall occur at a rate sufficient to detect Burrowing owl, if they return.

In addition, impacts to occupied western burrowing owl burrows shall be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
lesting sites	April 1-Aug 15	200 m	500 m	500 m
lesting sites	Aug 16-Oct 15	200 m	200 m	500 m
lesting sites	Oct 16-Mar 31	50 m	100 m	500 m

MM BIO-8: Worker Environmental Awareness Training. Prior to ground disturbance activities, or within one week of being deployed at the Project site for newly hired workers, all construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

	The Construction Worker Environmental Awareness Training and Education Program shall be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of "take" under the Endangered Species Act, measures the Project operator is implementing to protect the species, reporting requirements, specific measures that each worker must employ to avoid take of the species, and penalties for violation of the Act. Identification and information regarding special-status or other sensitive species with the potential to occur on the Project site shall also be provided to construction personnel. The program shall include: • An acknowledgement form signed by each worker indicating that environmental training has been completed. • A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities		
Cultural Resources	**MM CUL-1** – If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified professional archaeologist determines	Project Applicant and Construction Company	City of Delano Community Development

	that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met. **MM CUL-2** – During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County or other appropriate facility regarding any discoveries of paleontological resources. If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than		

	significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency. **MM CUL-3** – If human remains are discovered during construction or operational activities, further excavation, or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.		
Hazardous Materials	**MM HAZ-1**: Prior to commencement of construction, the project proponent shall submit to Kern County Department of Environmental Health Services, a Hazardous Materials Business Plan (HMBP) pursuant to Health and Safety Code Chapter 6.95, sections 25500 to 25520. The HMBP shall outline the types and quantities of hazardous materials used onsite and indicate onsite safety measures to ensure such materials are properly handled and stored. A copy of the approved HMBP shall be submitted to the Community Development Department	Project Applicant and Construction Company	City of Delano
Geology And Soils	**MM GEO-1** – Prior to final design and issuance of grading permits, a geotechnical study shall be prepared for the project site and recommendations of the study shall be incorporated into final design of the project. A copy of the report shall be submitted to the Community Development Department for review	Project Applicant and Construction Company	City of Delano
Traffic	**MM T-1** Intersection and roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project. All improvements		

<table>
<tr><td></td><td>recommended as mitigation are included in the Delano Transportation Impact Fee Program.</td><td></td><td></td></tr>
<tr><td>Hydrology</td><td>MM HYD-1 – Prior to issuance of grading or building permits, the applicant must obtain an approved SWPPP from the Regional Water Control Board.</td><td>Project Applicant and Construction Company</td><td>City of Delano</td></tr>
<tr><td>Transportation</td><td>MM TRANS-1 Intersection and roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project as presented in the table below. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.
<table>
<tr><td>Road Segment</td></tr>
<tr><td>Cecil Avenue to Albany Street</td></tr>
<tr><td>Total Improvements Required by 2040</td></tr>
<tr><td>Add two lanes</td></tr>
</table>
MM TRANS-2 Following conditions shall be incorporated into Tentative Tract Map 7384:

The intersection signalization at Cecil and Hiett Avenues shall be constructed to the ultimate right of way location, 110 ft on Cecil Ave. and 90 ft. on Hiett Ave., plus adequate right turn lanes. The cost of work limited to the full intersection improvements shall be
</td><td>Project Applicant and Construction Company</td><td>City of Delano</td></tr>
</table>

	reimbursed to the Developer as credits up to the amount of Local Circulation Impact Fees due at time of building permit issuance. • The Developer shall install half of the 110 ft. right of way (55 ft. half street) plus 12 ft of the road improvements on Cecil Ave. between the eastern and western boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot. • The Developer shall install half of the 90 ft. right of way (45 ft half street) of Hiett Ave. between Cecil Avenue and the northern boundary of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot. **MM TRANS-3** Subsequent tract maps submitted on the project site shall comply with the following requirements to reduce traffic impacts: • The Developer shall install half of the 60 ft. right of way (30 ft. half street) plus 12 ft of the road improvements on 20th Ave. along the boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot. • The Developer shall install half of the 90 ft. right of way (45 ft half street) of Hiett Ave. along the boundary of the		

	subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot. • The Developer shall install half of the 90 ft. right of way (45 ft half street) of Melcher Ave. along the boundary of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot. • The Developer shall install half of the 110 ft. right of way (55 ft. half street) plus 12 ft of the road improvements on Cecil Ave. along the boundaries of the subdivision (Refer to City of Delano Subdivision Standard ST0), plus the seven (7) ft. landscape lot.		

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Air Quality Impact Analysis

Project Title

Cecil Avenue & Hiett Avenue
Residential Development
GPA/ZC No. TBD

Project Location

NE corner of W. Cecil Avenue and Hiett Avenue.
Delano, Kern County, California
APN: 520-010-29

January 25, 2021
Revision June 10, 2021

Submitted to:

Cornerstone Engineering
208 Oak Street
Bakersfield, CA 93304

Appendix B

Table of Contents

TABLES

EXHIBITS

Exhibit A	Location Map
Exhibit B	Project Location Map
Exhibit C	Project Site Plan
Exhibit D	Assessor's Parcel Maps
Exhibit E	Air Basin Monitoring Stations
Exhibit F	Topographic Map
Exhibit G	Air Monitoring Station Data
Exhibit H	CalEEMod® Emission Modeling
Exhibit I	Traffic Report (Excerpts)

1.0 INTRODUCTION

This Air Quality Impact Analysis (AQIA) identifies the potential impacts on air quality resulting from the proposed residential development, consisting of 196 single-family houses. The proposed project occupies 37.1 gross acres.

The project site is located within the City of Delano in central Kern County. The project site is located within the San Joaquin Valley Air Basin (SJVAB). The SJVAB is under the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

This document was prepared using methodology described in the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD's) *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), March 19, 2015 Revision.

2.0 PROJECT DESCRIPTION

The Project site occupies 37.1 gross acres (APN 520-010-29) and is currently being used for agriculture. The adjacent lots are zoned residential to the east, north and west, and commercial to the southeast, with 'community facilities' to the south. The Project site is located at the northeast corner of the intersection of W. Cecil Avenue and Hiett Avenue in the City of Delano, Kern County, California. The Project site is accessible from W. Cecil Avenue to the south and Hiett Avenue from the east. The current and proposed City of Delano zoning is (APN: 520-010-29) is R-1 (Residential). The proposed change in land use is from current 'agriculture' to proposed 'residential'.

Table 2-1: Assessor's Parcel Numbers and Area for Project Site

Assessor's Parcel Number	Acreage
520-010-29	37.1
Total Acreage	**37.1**

3.0 AIR QUALITY STANDARDS

There are three categories of air pollutants that are regulated by federal, State, and/or regional governmental agencies: criteria pollutants; hazardous air pollutants (HAPs), and greenhouse gases (GHGs). These air pollutants, which are emitted as a result of everyday activities, can pose significant health and environmental risks. The following provides a discussion of each air pollutant category.

3.1 Criteria Pollutants

The Federal Clean Air Act (FCAA) of 1970, and the subsequent Federal Clean Air Act Amendments (FCAAA) of 1977 and 1990, required the establishment of National Ambient Air Quality Standards (NAAQS) for widespread pollutants considered harmful to public health and the environment. These pollutants are commonly referred to as criteria pollutants. The NAAQS establish acceptable pollutant concentrations which may be equaled continuously or exceeded only once per year. The California Ambient Air Quality Standards (CAAQS) are limits set by the California Air Resources Board (CARB) that cannot be equaled or exceeded. An air pollution control district must prepare an Air Quality Attainment Plan if the standards are not met. The NAAQS and CAAQS are shown in Table 3-1.

The following is a summary of the characteristics of the criteria pollutants and their potential physical and health effects.

Ozone Emissions - Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The ground level, or "bad" ozone layer, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically nitrogen oxide (NO_x) and reactive organic gases (VOC). Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

In 1994, approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the northeastern United States.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

Table 3-1: Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards** [1]		**National Standards** [2]		
		Concentration [3]	**Method** [4]	**Primary** [3,5]	**Secondary** [3,6]	**Method** [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page …

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Health Effects

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant; it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard could lead to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

Particulate Matter (PM10 and PM2.5) - Particulate Matter: Also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. In the western United States, there are sources of PM in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM. EPA groups particle pollution into three categories based on their size and where they are deposited:

> "Inhalable coarse particles ($PM_{2.5-10}$)," such as those found near roadways, and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
>
> "Fine particles ($PM_{2.5}$)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
>
> “Ultrafine particles (UFP),” are very, very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossils fuels, meat, wood and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area,

deep lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to their mass.

$PM_{2.5-10}$, $PM_{2.5}$, and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM 10 sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust in the Valley.

Health Effects

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children.

Carbon Monoxide (CO) - Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust that contributes more than two-thirds of all CO emissions nationwide. In urban areas, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

Health Effects

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected, but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include: an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

Nitrogen Oxides (NO_x) - Nitrogen oxides (NO_x) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_x is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO_x is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

Health Effects

NO_x is an ozone precursor that combines with VOC to form ozone. Refer to the discussion of ozone above regarding the health effects of ozone.

Direct inhalation of NO_x can also cause a wide range of health effects. NO_x can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO_2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO_x can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO_x can also impair visibility.

NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO_2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO_2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies. In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO_x contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

Sulfur Dioxide (SO_2) - The major source of sulfur dioxide (SO_2) is the combustion of high-sulfur fuels for electricity generation, petroleum refining, and shipping.

Health Effects

High concentrations of SO_2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO_2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other

effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of particulate matter, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to $PM_{2.5}$, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

Lead (Pb) - Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Since this has occurred, the ambient concentrations of lead have dropped dramatically.

Health Effects

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

Visibility-Reducing Particles - This standard is a measure of visibility. The entire State of California has been labeled unclassified for visibility. CARB has not established a method for measuring visibility with the necessary accuracy or precision needed to designate areas in the State as attainment or nonattainment.

Sulfates - Sulfates are particulate products from combustion of sulfur-containing fossil fuels. When sulfur dioxide (SO_2) is exposed to oxygen, it oxidizes into sulfates (SO_3 or SO_4). Through a variety of chemical and photochemical reactions in the atmosphere, the sulfates can combine with ammonia to form ammonium sulfate particulate. Data collected in the SJVAB has demonstrated that levels of sulfates are significantly less than the applicable health standards. However, sulfates are still one of the wintertime particulate concerns due to secondary formation of ammonium sulfate.

Sulfates (SO_4) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or Hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California, due to regional meteorological features.

Health Effects

The health effects associated with SO_2 and sulfates more commonly known as sulfur oxides (SO_x) include respiratory illnesses, decreased pulmonary disease resistance, and aggravation of cardiovascular diseases. When acidic pollutants and particulates are also present, sulfur dioxide tends to have an even more toxic effect.

Increased particulate matter derived from sulfur dioxide emissions also contributes to impaired visibility. In addition to particulates, SO_3 and SO_4 are also precursors to acid rain. In the SJVAB, SO_x and NO_x are the leading precursors to acid rain. Acid rain can lead to corrosion of man-made structures and cause acidification of water bodies.

The State standard for SO_2 is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide - Hydrogen sulfide (H_2S) emissions are often associated with geothermal activity, oil, and gas production, refining, sewage treatment plants, and confined animal feeding operations. H_2S in the atmosphere will likely oxidize into SO_2 that can lead to acid rain.

Health Effects

Exposure to low concentrations of H_2S may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Exposure to higher concentrations (above 100 ppm) can cause olfactory fatigue, respiratory paralysis, and death. Brief exposures to high concentrations of H_2S (greater than 500 ppm) can cause a loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in many individuals, there may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function. No health effects have been found in humans exposed to typical environmental concentrations of H_2S (0.00011 ppm to 0.00033 ppm). Deaths due to breathing large amounts of H_2S have been reported in a variety of different work settings, including sewers, animal processing plants, waste dumps, sludge plants, oil and gas well drilling sites, and tanks and cesspools. Occupational Safety and Health Administrations (OSHA) has the primary responsibility for regulating workplace exposure to H_2S. The entire SJVAB is unclassified for H_2S.

Vinyl Chloride - Vinyl chloride monomer is a sweet-smelling, colorless gas at ambient temperature. Landfills, publicly-owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, and plastics. In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers. There are currently no adopted ambient air standards for vinyl chloride.

Health Effects

Short-term exposure to vinyl chloride has been linked with the following acute health effects (Agency for Toxic Substances and Disease Registry 2004; U.S. Department of Health and Human Services 1993):

- Acute exposure of humans to high levels of vinyl chloride via inhalation in humans has resulted in effects on the central nervous system, such as dizziness, drowsiness, headaches, and giddiness.
- Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Acute exposure to extremely high levels of vinyl chloride has caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans and cardiac arrhythmias in animals.
- Tests involving acute exposure of mice have shown vinyl chloride to have high acute toxicity from inhalation exposure.

Long-term exposure to vinyl chloride concentrations has been linked with the following chronic health effects (Agency for Toxic Substances and Disease Registry 2004; U.S. Department of Health and Human Services, Registry of Toxic Effects of Chemical Substances [RTECS, online database] 1993; U.S. Department of Health and Human Services 1993; U.S. Environmental Protection Agency 2000):

- Liver damage may result in humans from chronic exposure to vinyl chloride, through both inhalation and oral exposure.

A small percentage of individuals occupationally exposed to high levels of vinyl chloride in air have developed a set of symptoms termed “vinyl chloride disease,” which is characterized by Raynaud’s phenomenon (fingers blanched and numbness and discomfort are experienced upon exposure to the cold), changes in the bones at the end of the fingers, joint and muscle pain, and scleroderma-like skin changes (thickening of the skin, decreased elasticity, and slight edema).

Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling, numbness, weakness, and pain in fingers) have also been reported in workers exposed to vinyl chloride.

Reactive Organic Gases (VOC) - Reactive Organic Gases (VOC) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions.

Organic chemicals are widely used as ingredients in household products. Paints, varnishes, and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing, and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.

Health Effects

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics. At present, not much is known about what health effects occur from the levels of organics usually found in homes. Many organic compounds are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans.

3.2 Toxic Air Contaminants

Toxic pollutants in California are identified as toxic air contaminates (TACs) and are listed in the Air Toxic “Hot Spots” and Assessment Act’s “Emissions Inventory Criteria and Guideline Regulation“(AB2588). A subset of these pollutants has been listed by the Office of Environmental Health Hazard Assessment (OEHHA) as having acute, chronic, and/or carcinogenic effects, as defined by California Health and Safety Code (CH&SC) §39655.

Governor Deukmejian signed AB2588 into law in 1987. The purpose of the Act is to inventory the emissions of air toxics, determine if these emissions are high enough to expose individuals or groups to significant health risk, and to inform the public where there is a significant health risk. The SJVUAPCD has established the following levels of risk determined to be significant for purposes of AB2588:

1. A cancer risk exceeding 10 in 1 million, or
2. A ratio of the chronic or acute exposure to the reference exposure level ("hazard index") exceeding 1.0.

The requirements of AB2588 apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of AB 2588 must prepare and submit toxic emission inventory plans and reports and periodically update those reports.

3.3 Greenhouse Gas Emissions

For the purposes of the following discussion, greenhouse gases are considered as the cause of global climate change. Climate change is a shift in the "average weather" that a given region experiences. Regional "average weather" is measured by changes in temperature, wind patterns, precipitation, and storms. Global climate is the change in the climate of the earth as a whole.

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent GHG contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and hydrofluorocarbons (HFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate.

Anthropogenic (caused or produced by humans) emissions of these GHG in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or global climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's GHG emissions, followed by electricity generation. Emissions of CO_2 and nitrogen oxide (NO_x) are byproducts of fossil fuel combustion. Emissions of CH_4 result from off-gassing associated with agricultural practices and landfills. Sinks of CO_2 include uptake by vegetation and dissolution into the ocean.

An individual project cannot generate enough GHG emissions to effect a discernible change in the global climate. However, a proposed project may participate in this potential impact by its incremental contribution combined with the cumulative contribution combined with the cumulative increase of all other sources of GHGs which, when taken together, may influence global climate change.

The following provides a description of each of the GHGs and their global warming potential:

Water Vapor (H_2O) - Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved in is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is

evaporated from ground storage (i.e., rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide (CO_2) - The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid 1700s, each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). However, the Intergovernmental Panel on Climate Change (IPCC), established by the United Nations in 1988, indicates that concentrations were 379 ppm in 2005, an increase of more than 30 percent. The IPCC projects that, left unchecked, the concentration of CO_2 in the atmosphere would increase to a minimum of 540 ppm by the year 2100 as a direct result of anthropogenic sources. This could result in an average global temperature rise of at least two degrees Celsius.

Methane (CH_4) - CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years) compared to some other GHGs such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric (man-made) sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O) - Concentrations of N_2O began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant (i.e., in whipped cream bottles), in potato chip bags, in rocket engines, and in racecars.

Chlorofluorocarbons (CFCs) - CFCs are gases formed synthetically by replacing all Hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs have no natural source, but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken. This effort was extremely successful and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFCs) - HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, hydrofluorocarbons are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric

abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs) - Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

Sulfur Hexafluoride (SF_6) - SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols - Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel with sulfur within it is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Although particulate matter regulation has been lowering aerosol concentrations in the United States, global concentrations are likely increasing.

Global Warming Potential

GHGs have varying global warming potentials (GWPs) and are one type of simplified index, based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases on the climate in a relative sense. GWP is based on a number of factors, including radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2.

The EPA defies GWP as "the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas," the reference gas in this case being CO_2. One ton of CO_2 equivalent (or CO_2e) is essentially the emissions of the gas multiplied by the GWP. The CO_2 equivalent is a good way to assess emissions because it gives weight to the GWP of the gas. A summary of the atmospheric lifetime and the GWP of selected gases are summarized in Table 3-2. As shown in Table 3-2, the GWP of GHGs ranges from 1 to 23,900.

Data compiled by the United Nations Framework Convention on Climate Change (UNFCCC) indicates that, in 2006, total worldwide GHG emissions were 22,170 million metric tons of carbon dioxide equivalent ($MMTCO_2e$), emissions in the U.S. were 7054.2 $MMTCO_2e$, and emissions in California were 483.9 $MMTCO_2e$ (source: United Nations Framework Convention on Climate Change 2009 and California Air Resources Board 2009).

Table 3-2: Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime	Global Warming Potential (100-Year Horizon)

Carbon Dioxide (CO_2)		1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1	124
PFC: Tetrafluoromethane	50,000	7,390
PFC: Hexafluoroethane	10,000	12,200
Sulfur Hexafluoride	3,200	22,800

Source: California Air Resources Board based on the Intergovernmental Panel on Climate Change fourth assessment report (AR4). June 22, 2018.

HFC = Hydrofluorocarbons

PFC = Perfluorocarbons

4.0 ENVIRONMENTAL SETTING AND CLIMATE

4.1 Project Location and Setting

The project site is located in the City of Delano (City) in northern Kern County. The project site is located within the San Joaquin Valley Air Basin (SJVAB). The SJVAB is under the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

This AQIA identifies the potential impacts on air quality resulting from the proposed commercial development consisting of general industrial. The proposed project occupies 4.1 gross acres.

The project site is located in northern Kern County and in the northern portion of the City of Delano. The elevation is approximately 289 ft above sea level. (Exhibit F)

4.2 Climate

According to US Climate Data, average temperatures in Bakersfield range from 69 degrees Fahrenheit (F) to 97 degrees F in July to 39 degrees F to 56 degrees F in January. The wet season is generally from December to March, with an annual average of 6.45 inches of rainfall.

4.3 San Joaquin Valley Air Basin

The California Air Resources Board (CARB) has divided California into 15 regional air basins according to topographic features. The project site is located within the south-western portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). The SJVAB is under the jurisdictional authority of San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

Table 4-1 contains the ambient air quality classifications for the SJVUAPCD. The CCAA requires that all reasonable stationary and mobile source control measures be implemented in nonattainment areas to help achieve a mandated five-percent per year reduction in ozone precursors and to reduce population exposures.

Table 4-1: Ambient Air Quality Classifications

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - One hour	Revoked in 2005	Nonattainment/Severe
Ozone - Eight hour	Nonattainment/Extreme	Nonattainment
PM 10	Attainment	Nonattainment
PM 2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Notes:

National Designation Categories

Nonattainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Nonattainment: A pollutant is designated nonattainment if there was at least one violation of a State standard for that pollutant in the area.

Nonattainment/Transitional: A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for the pollutant.

4.4 Existing Air Quality

CARB has established and maintains, in conjunction with the local air districts, a network of sampling stations (called the State and Local Air Monitoring Stations Network [SLAMS]), which monitor ambient pollutant levels. The SLAMS network has 38 stations within the SJVAB that monitor various pollutant concentrations. (Exhibit E)

The closest active monitoring station is located at 410 E. Planz Road (Site# 15258 – Bakersfield Municipal Airport) in Bakersfield, approximately 2.5 miles southwest of the site. Due to the close proximity to the site, this station provides the most applicable air quality monitoring data available for NOx and PM2.5. For the PM10 monitoring data, the monitoring station located at 5558 California Avenue (Site #15255) in Bakersfield, which is about 4.8 miles to the west of the site, provides the most applicable data.

Table 4-2 provides a summary of the maximum pollutant levels detected at this monitoring stations during 2017 through 2019. Exhibit G contains copies of reports for each monitoring station.

Table 4-2: Maximum Pollutant Levels

Pollutant	Averaging Time	Units	Maximums			Standards	
			2017	2018	2019	State	National
Nitrogen Dioxide (NO_2)	1 hour	ppb	66 (CA) 66 (Fed)	61.5 (CA) 61 (Fed)	67.1 (CA) 67 (Fed)	70	54
	Annual Average	ppb	12 (CA) 12 (Fed)	12 (CA) 12 (Fed)	11 (CA) 11 (Fed)	12	12
Particulates (PM10)	24 hour	µg/m^3	143.6 (CA) 138.0 (Fed)	142.0 (CA) 136.1 (Fed)	125.9 (CA) 116.3 (Fed)	50	150
	Annual Average	µg/m^3	42.6 (CA) 42.6 (Fed)	--- (CA) 42.1 (Fed)	39.0 (CA) 38.8 (Fed)	20	—
Particulates (PM2.5)	24 hour	µg/m^3	80.1 (CA) 80.1 (Fed)	100.9 (CA) 100.9 (Fed)	83.7 (CA) 83.7 (Fed)	—	35
	Annual Average	µg/m^3	— (CA) 18.2 (Fed)	— (CA) 19.4 (Fed)	13.0 (CA) 13.0 (Fed)	12	12

Source: CARB Website, (01/11/2019)
Notes: ppm = parts per million
µg/m^3 = micrograms per cubic meter
— = not reported

4.5 Sensitive Receptors

Some groups of people are more affected by air pollution than others. CARB has identified the following people who are likely to be affected by air pollution: children under 14; the elderly over 65; athletes; and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. The proposed project may contain sensitive receptors.

The majority of the potential ambient air quality emissions from this proposed project are related to increases in traffic. The proposed project is not expected to result in localized impacts, such as CO “Hot Spots”, and therefore, is not expected to impact nearby sensitive receptors. Therefore, the impact to sensitive receptors is considered less than significant.

5.0 REGULATORY SETTING

5.1 Air Quality Regulations

Air quality within southern Kern County is addressed through the efforts of various federal, State, and regional and local government agencies. These agencies work together, as well as individually, to improve air quality through legislation, regulations, planning, and policy-making aimed at regulating air pollutants of concern as defined under the Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA). The agencies and legislation responsible for improving air quality within the SJVAB are discussed below.

Federal

The FCAA governs air quality in the United States and is administered by the U.S. Environmental Protection Agency (EPA). In addition to administering the FCAA, the EPA is also responsible for setting and enforcing the NAAQS for atmospheric pollutants as discussed above. As a part of its enforcement responsibilities, the EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution. These measures need to incorporate performance standards and market-based programs that can be met within the timeframe identified in the SIP.

State

CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs in California. In this capacity, the CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, and prepares the SIP. For example, the CARB establishes emissions standards for motor vehicles sold in California, consumer products (e.g., hair spray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. In addition, CARB oversees the functions of the local air pollution control districts and the air quality management districts, which in turn administer air quality at the regional and county level.

Regional

The SJVUAPCD is the primary agency responsible for comprehensive air pollution control in the SJVAB. The SJVUAPCD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines. In addition, the SJVUAPCD is tasked with addressing the State's requirements established under the CCAA (e.g., bringing the SJVAB into attainment).

Local

Local jurisdictions, including Kern County and the Kern Council of Governments (KernCOG), have the authority and responsibility to reduce air pollution through its policies and decision-making authority. Specifically, Kern County is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. As a result, the currently adopted Kern County General Plan and other planning documents identify goals, policies, and implementation measures that help Kern County contribute to efforts to improve regional air quality.

It should be noted that the City has developed a General Plan dated September 2009 containing a Conservation Element which includes applicable goals, objectives, or policies that directly address air quality in the City. The Conservation Element contains objectives that promote the conservation of natural and energy resources as well as energy efficiency and the use of renewable energy resources which would have beneficial effects on the City's air quality.

5.2 Greenhouse Gas Emissions

The regulatory setting related to GHG emissions and global climate change includes international, federal, state, regional, and local governmental agencies and organizations and their respective regulations as discussed below.

International

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHG in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere, consisting of CFCs, halons, carbon tetrachloride, and methyl chloroform, were to be phased out, with the first three by the year 2000 and methyl chloroform by the year 2005.

Federal

The EPA is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, CH_4, and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The EPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions.

In February 2002, the federal government announced a strategy to reduce the GHG intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012. GHG intensity measures the ratio of GHG emissions to economic output. Meeting this commitment will prevent the release of more than 100 million metric tons of carbon-equivalent emissions to the atmosphere (annually) by 2012 and more than 500 million metric tons (cumulatively) between 2002 and 2012. This strategy has three basic objectives: slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation.

As discussed above, the EPA is responsible for setting and enforcing the NAAQS for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate GHG emissions, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other GHGs as pollutants under the Section 202(a) of the federal Clean Air Act (CAA). The U.S. Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more environmental, renewable energy, and other organizations.

On April 17, 2009, the EPA Administrator signed a proposed endangerment finding that GHGs contribute to air pollution that may endanger public health or welfare. The EPA held a 60-day

public comment period during the review of the proposed finding that ended June 23, 2009. During the public comment period, over 380,000 comments were received in the form of written comments and through testimony provided at two public hearings. The EPA reviewed, considered, and incorporated the public comments into the final findings that were issued January 14, 2010.

The EPA's proposed endangerment finding stated that, "In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger both the health and public welfare within the meaning of the Clean Air Act." These findings were based on careful consideration of the full weight of scientific evidence and the public comments that were received.

The specific GHG regulations that have been adopted by the EPA are:

- 40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule. This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year. In addition, the reporting of emissions is required of owners of SF6 and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.
- 40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. This rule was mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose CO_2e emissions exceed 75,000 tons per year.

These rules are not applicable to the proposed project.

State

Assembly Bill 1493

Assembly Bill (AB) 1493 is the successor bill to AB 1058 and was enacted on July 22, 2002 by Governor Gray Davis. AB 1493 mandates that CARB develop and implement GHG limits for vehicles beginning in model Year 2009. Subsequently, as directed by AB 1493, on September 24, 2004, CARB approved regulations limiting the amount of GHG that may be released from new passenger cars, sport utility vehicles, and pickup trucks sold in California in model Year 2009. The automobile industry subsequently sued and claimed AB 1493 was a measure designed to impose gas mileage standards on automobiles. A federal district court ruled on December 12, 2007 that the State and federal laws could co-exist. However, on December 19, 2007, the EPA denied California's request for the necessary waiver to implement its law, claiming that local emissions had little effect on global climate change and that the conditions in California were not "compelling and extraordinary" as required by law. California intends to sue the EPA to force reconsideration, given the precedent of Massachusetts v. EPA[1], which as discussed above, ruled that CO_2 was an air pollutant that the EPA had authority to regulate. Arizona, Colorado, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, and Washington are also interested in adopting California's automobile emissions standards.

Executive Order S-20-04

In December 2004, Governor Schwarzenegger signed Executive Order S-20-04 (The California Green Building Initiative) establishing the State's priority for energy and resource-efficient high performance buildings. The Executive Order sets a goal of reducing energy use

[1] Massachusetts v. Environmental Protection Agency, 549 U.S.; 127 S. Ct. 1438 (2007).

in State-owned and private commercial buildings by 20 percent in 2015 using non-residential Title 20 and 24 standards adopted in 2003 as the baseline. The California Green Building Initiative also encourages private commercial buildings to be retrofitted, constructed, and operated in compliance with the State's Green Building Action Plan.

Executive Order S-3-05

In June 2005, Governor Schwarzenegger issued Executive Order S-3-05 that established California's GHG emissions reduction targets. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. In addition, to meet these reduction targets, the Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate with the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Natural Resources Agency, the Chairperson of CARB, the Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary of CalEPA leads this Climate Action Team (CAT) made up of representatives from these agencies as well as numerous other Boards and Departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the State's Climate Reduction Strategy. The CAT is also responsible for reporting on the progress made toward meeting the statewide GHG targets that were established in the Executive Order and further defined under the Global Warming Solutions Act of 2006 (Assembly Bill 32).

The first Climate Action Team (CAT) Assessment Report to the Governor and the Legislature was released in March 2006 and will be updated and issued every two years. The 2006 CAT Assessment Report has been followed by the release of the 2008 CAT Assessment Report. The 2008 CAT Assessment Report expands on the policy oriented 2006 CAT Assessment Report and provides new information and scientific findings. A discussion of the GHG emission reduction strategies provided in the 2006 CAT Assessment Report is provided further below.

Assembly Bill 32

The Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (Nunez, 2006), which Governor Schwarzenegger signed on September 27, 2006 to further the goals of Executive Order S-3-05. AB 32 represents the first enforceable statewide program to limit greenhouse gas emissions from all major industries with penalties for noncompliance. CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. The foremost objective of CARB is to adopt regulations that require the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. The first GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020 (a reduction of approximately 25 percent from forecast emission levels). CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost effective GHG emission reductions by updating with scoping plans. Since 2008, there have been two updates to the Scoping Plan in 2013 and 2017. AB 32 allows CARB to adopt market based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market based compliance mechanism adopted. In order to advise CARB, it must convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee. CARB has approved a 2020 emissions limit of 427 metric tons of CO_2 equivalent and has updated, through the 2017 scoping plan, which has a 2030 target of 40% emission reduction below 1990 levels.

Executive Order S-1-07

Under the AB 32 Scoping Plan, the Board identified the Low Carbon Fuel Standard (LCFS) as

one of the nine discrete early action measures to reduce California's greenhouse gas (GHG) emissions that cause climate change. The LCFS is a key part of a comprehensive set of programs in California to cut GHG emissions and other smog-forming and toxic air pollutants by improving vehicle technology, reducing fuel consumption, and increasing transportation mobility options. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits.

The Board approved the LCFS regulation in 2009 and began implementation on January 1, 2011. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. The LCFS standards are expressed in terms of the "carbon intensity" (CI) of gasoline and diesel fuel and their respective substitutes. The program is based on the principle that each fuel has "life cycle" greenhouse gas emissions that include CO_2, CH_4, N_2O, and other GHG contributors. This life cycle assessment examines the GHG emissions associated with the production, transportation, and use of a given fuel. The life cycle assessment includes direct emissions associated with producing, transporting, and using the fuels, as well as significant indirect effects on GHG emissions, such as changes in land use for some biofuels. The carbon intensity scores assessed for each fuel are compared to a declining CI benchmark for each year. Low carbon fuels below the benchmark generate credits, while fuels above the CI benchmark generate deficits. Credits and deficits are denominated in metric tons of GHG emissions. Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS carbon intensity standards, or benchmarks, for each annual compliance period.

California Air Pollution Control Officers Association “White Paper”

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a “white paper” (CEQA and Climate Change) on evaluating GHG emissions under CEQA. The CAPCOA “white paper” strategies serve as guidelines and have not been adopted by any regulatory agency. The “white paper” serves as a resource to assist lead agencies in evaluating GHG emissions in environmental information documents. The methodologies used in this GHG emissions analysis are consistent with the CAPOCA guidelines.

The CAPCOA “white paper” specifically includes a disclaimer on the first page that states:

> This paper is intended to serve as a resource, not a guidance document. It is not intended and should not be interpreted, to dictate the manner in which an air district or Lead agency chooses to address GHG emissions in the context of its review of projects under CEQA. This paper has been prepared at a time when California law has been recently amended by the Global Warming Solutions Act of 2006 (AB 32) and the full programmatic implications of this new law are not yet fully understood.

In addition, page 33 of the CAPCOA "white paper" provides the following statement:

> This threshold approach would require a project to meet a percent reduction target based on the average reductions needed from business-as-usual emissions for all GHG sources. Using the 2020 target, this approach would require all discretionary projects to achieve a 33 percent reduction from the projected business-as-usual emission from all GHG sources in order to be considered less than significant.

While significance was not determined based on a hypothetical "business as usual" standards, any mitigation measures identified in a project-specific CEQA analyses will utilize the 29 percent GHG standards identified in AB 32 which establishes a target reduction of GHG emissions to 1990 levels by the year 2020. State and federal regulations are constantly changing as more and more information is made available regarding GHG emissions and their impact on global climate change. Additionally, SB 375 which requires the development of a GHG emission reduction target for specific metropolitan areas have not been identified.

Senate Bill 97

Senate Bill (SB) 97 enacted in 2007 required the California Office of Planning and Research (OPR) to develop amendments to the California Environmental Quality Act (CEQA) Guidelines to address the effects of GHG emissions. OPR was required to prepare and transmit the recommended amendments to the Natural Resources Agency by July 1, 2009. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing GHG emissions as required by SB 97. The recommended amendments were developed to provide guidance to public agencies regarding the analysis of the effects of GHG emissions and mitigation provided in draft CEQA documents.

On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code Section 21083.05. Following a 55-day public review period, including two public hearings and responses to comments, the Natural Resources Agency proposed revisions to the text of the proposed amendments to the CEQA Guidelines.

On December 31, 2009, the Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law. The Office of Administrative Law approved the amendments on February 16, 2010 and filed them with the Secretary of State for inclusion into the California Code of Regulations. The amendments became effective on March 18, 2010.

Assembly Bill 1358

In October 2008, Governor Schwarzenegger signed Assembly Bill 1358 (AB 1358 or the California Complete Streets Act of 2008). AB 1358 requires a city or county's general plan to identify how they will accommodate the circulation of all users of the roadway, including motorists, pedestrians, bicyclists, children, seniors, individuals with disabilities, and users of public transportation. The new general plan provisions would be required when the local government revises their circulation element. The accommodations under AB 1358 may include, but not be limited to, sidewalks, bike lanes, crosswalks, wide shoulders, medians, bus pullouts, and audible pedestrian signals.

Senate Bill 375

Senate Bill 375 (SB 375) enacted in August 2008 requires metropolitan planning organizations (MPOs) to include strategies for sustainable communities in their regional transportation plans. The purpose of SB 375 is to: reduce GHG emission reduction targets from automobiles and

light trucks; require CARB to provide GHG emission reduction targets from the automobile and light truck sector for 2020 and 2035 by January 1, 2010; and update the regional targets until 2050. SB 375 requires certain transportation planning and programming activities to be consistent with the sustainable communities strategies contained in the regional transportation plan (RTP). In addition, the SB 375 requires affected regional agencies to prepare an alternative planning strategy to the sustainable communities' strategies if the sustainable communities' strategies are unable to achieve the GHG emission reduction targets.

The timeline for the implementation of SB 375 is as follows:

- January 1, 2009 - CARB adopts AB 32 Scoping Plan that includes the total reduction of carbon in million metric tons from regional transportation planning.
- January 31, 2009 - CARB appoints a Regional Targets Advisory Committee (RTAC) to recommend factors to be considered and methodologies to be used for setting reduction targets.
- September 30, 2009 - The RTAC must report its recommendations to the CARB.
- June 30, 2010 - CARB must provide draft targets for each region to review.
- September 30, 2010 - CARB must provide each affected region with a GHG emissions reduction target.
- October 1, 2010 - Beginning this date, MPOs updating their RTP will begin an eight-year planning cycle that includes the Sustainable Community Strategy (SCS).

Local

Kern Council of Governments

The Kern Council of Governments (KernCOG) is the Metropolitan Planning Organization (MPO) for Kern County. In addition, KernCOG is the Regional Transportation Planning Agency (RTPA) and the agency responsible for the Regional Housing Needs Allocation Plan (RHNA). In these roles, KernCOG is responsible for providing Kern County with the guidance documents identified in SB 375. The guidance documents are being developed in conjunction with and input from all cities within Kern County and the Kern County government. Future land use approvals will be the responsibility of the local governments and, therefore, those agencies would be responsible for ensuring conformance with the Sustainable Community Strategy (SCS) as it relates to the requirements of SB 375 and AB 32.

As discussed above, SB 375 was introduced as a result of AB 32, the climate change legislation signed into California law in 2006. SB 375 builds on the existing regional transportation planning process to connect the reduction of GHG emissions from cars and light trucks to land use and transportation policy. SB 375 requires all MPOs to update their Regional Transportation Plans (RTPs) so that resulting development patterns and supporting transportation networks can reduce GHG emissions by the target amounts set by CARB. Related to this, an additional component of KernCOG's responsibility under SB 375 is the development of a Sustainable Community Strategy (SCS) for Kern County.

KernCOG is working within the timeline and milestones established by the State legislation in SB 375 as discussed above. KernCOG has already initiated the regional planning, housing and transportation planning process into a strategy to meet the requirements of SB 375.

6.0 IMPACTS OF THE PROPOSED PROJECT

This document was prepared using methodology described in the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD's) *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), March 19, 2015 Revision.

6.1 Thresholds of Significance

Criteria Pollutants

The SJVUAPCD has established the following significance thresholds for criteria pollutants. A proposed project does not have a significant air quality impact unless emissions of criteria pollutants exceed the following thresholds (Table 6-1).

Table 6-1: Significance Thresholds Criteria Pollutants

Pollutant / Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tons/year)	Emissions (tons/year)	Emissions (tons/year)
CO	100	100	100
NOx	10	10	10
VOC	10	10	10
SOx	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Odors

The proposed project is not a source of odors; however, facilities that are located near the project may be a source of odors. The project is located within the City of Delano , which has varying sized commercial strip malls. Odors from these operations may be apparent on occasion.

CEQA Thresholds of Significance for GHG Emissions and Global Climate Change

There are no thresholds of significance that have been established by the SJVUAPCD for GHG emissions and global climate change. Based on the March 2010 amendments to the *Guidelines for the Implementation of the California Environmental Quality Act* (State CEQA Guidelines), the proposed project could potentially have a significant impact related to GHG and global climate change if it would:

- Generate GHGs, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emission of GHGs.

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental

contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and address whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in Assembly Bill 32 (AB 32). The 2017 AB 32 update sets target emissions and requires that GHG emitted in California be reduced to 40% below 1990 levels by the year 2030, which is 256 million metric tons of carbon dioxide equivalent ($MMTCO_2e$).

6.2 Model Assumptions

Short-term construction emissions and long-term operational emissions were determined utilizing the latest version of the CalEEMod version 2016.3.2 model based on the assumptions summarized below.

Short-term Construction Assumptions

- Construction of the residential site would take place over four years (2021 to 2024). The first year is expected to develop 60% of the houses with 20% in 2022 and 10% in each year of 2023 and 2024.
- 196 Single-family housing units will be constructed per the tentative tract map (Exhibit C).
- The other paved surfaces consist of residential streets and will occupy 285,000 sqft of the total project area.
- The number and type of construction equipment was determined by the CalEEMod defaults based on the size of the proposed project and mitigation is provided by using Tier 4 diesel equipment.
- The VOC g/l content of the paint was updated to 50 VOC g/L to match the SJVUAPCD Rule 4601 requirements.
- The residences will only have natural gas fired fireplaces, if any. The houses will not be constructed with woodstoves.

Long-term Operational Assumptions

- Operation of the proposed project would begin in 2021.
- Operational emissions were determined for vehicle traffic in and out the site. Maximum operational emissions will occur in 2021 and are equivalent to the emissions calculated using CalEEMod for vehicle traffic in and out of the site for 2021.
- The vehicle mix was updated to reduce HHD by 11% and increase LHD2 by 11% to match the expected traffic.
- The traffic study was prepared for the CO emissions. The preliminary 3.37 vehicle trips/1,000 ft was based on engineering calculations using *Trip Generation Manual, 10th Edition.*

6.3 Short-Term Construction Air Emissions

The implementation of the proposed project would generate short-term increases in air emissions from construction activities that would occur as a result of the proposed project. These construction activities have the potential to result in air emissions that could exceed the SJVUAPCD's thresholds of significance.

The major construction activities that would occur are the following:

- Demolition/Site Preparation/Grading – these activities will occur and be completed in 2021.
- Building Construction/Paving/Architectural Coatings – Each of these activities will occur over a four year period (2021 to 2024), with 60% projected to be completed in 2021, 20% in 2022 and 10% in each of the following two years.

The construction activities would generate emissions that primarily consist of: fugitive dust (PM10 and PM2.5) from soil disturbance; exhaust emissions (including NOx, SOx, CO, VOC, PM10, and PM2.5) from construction equipment and motor vehicle operation; and the release of VOC emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include: delivery of building materials and supplies to the sites; and the transport of construction employees to and from the sites. The off-site activities would generate emissions that primary consist of VOC, NOx, PM10, PM2.5, and CO from motor vehicle exhaust. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic conditions.

Table 6-2 provides the annual short-term construction emissions generated by the construction activities. The construction equipment used in the CalEEMod model and the CalEEMod model outputs are included in Exhibit H. As seen in Table 6-2, the annual emissions from the construction activities would not exceed the SJVUAPCD thresholds of significance in any construction year. Therefore, the short-term impacts to regional air quality as a result of the construction will be *less than significant*. Sections 8.1 and 8.2 below provide mitigation set forth in the GAMAQI guidance document and SJVUAPCD's Rules that would further reduce the construction equipment exhaust and PM10 and PM2.5 emission levels.

Table 6-2: Annual Short-term Construction Emissions (2021 – max year) After Mitigation

Source	Pollutant (tons/year)						
	VOC	NO_x	CO	PM10	PM2.5	SO_x	CO_{2e}
Construction Emissions	6.81	0.96	3.47	0.34	0.13	0.01	683
Total 2021	**6.81**	**0.96**	**3.47**	**0.34**	**0.13**	**0.01**	**683**
SJVUAPCD Threshold	10	10	100	15	15	27	NA
Is Threshold Exceeded After Mitigation?	**No**	**No**	**No**	**No**	**No**	**No**	**NA**

Notes: VOC = Reactive Organic Gases
CO = Carbon Monoxide
NO_x = Nitrogen Oxides
PM_{10} = Particulate Matter < 10 microns
$PM_{2.5}$ = Particulate Matter < 2.5 microns
SO_x = Sulfur Oxides
Refer to Exhibits for a printout of the computer model used in this analysis.

6.4 Long-Term Operational Air Emissions

The implementation of the proposed project would generate long-term emissions caused by mobile sources (vehicle emissions), from energy consumption (related to heating and cooling), landscape maintenance, and consumer products. The following provides a discussion of the long-term operational emissions of the proposed project.

The predicted emissions associated with vehicular traffic (mobile sources) are not subject to the SJVUAPCD's permit requirements. However, the SJVUAPCD is responsible for

overseeing efforts to improve air quality within the SJVAB. The SJVUAPCD reviews land use changes to evaluate the potential impact on air quality. The SJVUAPCD has established a CEQA significance level for criteria pollutants as shown in Table 6-1.

Operational emissions have been estimated using the CalEEMod.2016.3.2 computer model. CalEEMod predicts operational emissions of CO, VOC, NO_x, SO_x, PM10, PM2.5 and CO2e associated with new or modified land uses. CalEEMod modeling results are contained in Exhibit H and summarized in Table 6-3 below.

Table 6-3: Annual Long-term Operational Emissions

Source	Pollutant (tons/year)						
	VOC	NO_x	CO	PM10	PM2.5	SO_x	CO_{2e}
2022	2.31	1.62	9.17	1.97	0.51	0.02	2,910
SJVUAPCD Threshold	10	10	100	15	15	27	NA
Is Threshold Exceeded After Mitigation?	No	No	No	No	No	No	NA

As seen in Table 6-3, the annual total long-term emissions from the operation of the proposed project will not exceed the SJVUAPCD thresholds of significance for VOC and NOx. The highest operational emissions occur in 2022, the first year after the development's construction has been completed. Therefore, the long-term impacts to regional air quality from operation of the proposed project will be *less than significant.*

Mobile Source - Carbon Monoxide Local Emissions

CO emissions are a function of vehicle idling time and, thus, under normal meteorological conditions, depend on traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations close to a congested roadway or intersection may reach unhealthful levels affecting sensitive receptors (residents, school children, hospital patients, the elderly, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the proposed project will reduce the LOS on one or more streets to E or F; or, if the proposed project will worsen an existing LOS F.

A traffic study was prepared to detail the LOS change associated with the project. With the recommended mitigation measures, the proposed project is not expected to reduce or worsen the composite LOS to E or F at any of the impacted intersections or road segments.

- All intersections currently operate at an acceptable level of service prior to, and with the addition of project traffic, are anticipated to continue to do so through 2040.
- The segment of Cecil Avenue between Hiett Avenue and Albany Street currently operates below LOS C with the addition of project traffic and is shown to continue to operate below an acceptable level of service through the year 2040, both with and without project traffic. This segment can be mitigated to operate above LOS C with roadway widening.

Therefore, the long-term impacts to local air quality due to CO concentrations will be *less than significant with mitigation*.

6.5 Potential Effect on Sensitive Receptors

The air quality impact of the proposed project is not likely to affect sensitive receptors. Sensitive receptors are areas where young children, chronically ill individuals, or other

individuals more sensitive than the general population are located. Examples of sensitive receptors are schools, day care centers, and hospitals. Some residents in nearby residential areas may also be considered sensitive.

The majority of the potential ambient air quality emissions from this proposed project are related to increases in traffic. As discussed above, the proposed project is not expected to result in localized impacts such as CO "Hot Spots" and, therefore, is not expected to impact nearby sensitive receptors. Therefore, the potential impacts to sensitive receptors will be *less than significant.*

6.6 Odors

The generation of odors may be associated with certain types of small industrial sources, which are regulated by the SJVUAPCD. The incidence of odors from this facility is expected to be less than significant.

6.7 Hazardous Air Pollutants

The proposed project is not a significant source of hazardous air pollutants (HAPS). This facility has the potential to emit HAPs from the operation of stationary source equipment. The SJVUAPCD has established rules that limit the emissions of HAPs from stationary sources such that the excess cancer risk to the nearest receptor is less than 10 in one million, and the non-carcinogenic Hazard Index is less than 1, therefore the risk to the nearest receptor is expected to be *less than significant*.

6.8 Greenhouse Gas Emissions

In order to determine whether or not a proposed project would cause an incremental contribution resulting in a significant effect on global climate change, the incremental contribution of the proposed project must be determined quantitatively and qualitatively by examining the types and levels of GHG emissions that would be generated directly and indirectly and addressing whether the proposed project would comply with the provisions of an adopted greenhouse reduction plan or strategy. If no such plan or strategy is applicable or has been adopted, the analysis must determine if the proposed project would significantly hinder or delay California's ability to meet the reduction targets contained in AB 32. As discussed above, AB 32 sets target emissions and requires that GHG emitted in California be reduced to 1990 levels by the year 2020, which is 427 million metric tons of carbon dioxide equivalent emissions ($MMTCO_2e$).[2] The year 2020 reduction target equates to a decrease of approximately 29 percent in GHG emissions below year 2020 "business as usual" (BAU) emissions (or approximately 15 percent below the current GHG emissions).

"Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today. Specifically, BAU conditions do not include future General Plan goals, policies, or implementation measures that address GHG emissions, GHG reduction strategies included in the 2006 CAT assessment Report, CARB's expanded list of Early Action Measures to Reduce GHG Emissions in California, or mitigation provided by the California Attorney General's Office.

Short-Term Construction GHG Emissions

[2] GHG emissions other than CO_2 are commonly converted into CO_2 equivalents that take into account the differing GWP of different gases.

The implementation of the proposed project would generate short-term increases in air emissions from construction activities that would occur as a result of the proposed development. These construction activities have the potential to generate GHG Emissions of CO_2, CH_4, and N_2O primarily from vehicle and construction equipment. The other GHG emissions defined under AB 32, which include HFCs, PFCs, and SF_6, would only consist of trace emissions, if any, during construction associated with the proposed project.

The major construction activities that would occur are the following:

- Land clearing and grading
- Excavation, earthmoving, and grading for construction of utilities, on-site and off-site roads, parking areas, residence foundations, and landscaping
- Housing construction
- Asphalt paving of on-site roadways
- Application of architectural coatings

The construction activities would generate dust emissions primarily from soil disturbance; exhaust emissions from construction equipment and motor vehicle operation; and the release of emissions during the finishing phase including paving and the application of architectural coatings.

The construction activities that would occur off-site could include delivery of building materials and supplies to the sites and the transport of construction employees to and from the sites. The construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and the climatic conditions.

It is anticipated that future construction activities associated with the proposed project would have the potential to result in short-term increases in air emissions during construction activities that would generate GHG emissions that could contribute to global climate change.

The CalEEMod model was used to estimate the GHG emissions due to construction activities as a result of the proposed project with "business as usual" conditions. The CalEEMod outputs are included in Exhibit H for reference and summarized in Table 6-2 above. The construction activities for the proposed project would generate a maximum of 676 metric tons per year of CO_2e of GHG emissions. This represents 0.0002 percent of the 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO_2e). Therefore, the GHG emissions as a result of the proposed project will be *less than significant.*

Long-Term Operational GHG Emissions

It is anticipated that the operation of the proposed project would have the potential to result in long-term increases in air emissions that would generate GHGs that could contribute to global climate change. The majority of the long-term GHG emissions would be generated by motor vehicles traveling to and from the project site. Area source emissions would result from fuel combustion, landscape maintenance equipment, and consumer products. The daily operational activities as a result of the proposed project would have the potential to generate GHG emissions of CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since there is an international ban on CFCs, it is not anticipated that this GHG would occur. SF_6 is primarily used in electronics manufacturing and as an insulation medium in large electrical transformers. It is not anticipated that there will be SF_6 emissions from the proposed project.

The CalEEMod model was used to estimate the GHG emissions due to mobile source emissions and area source emissions as a result of the proposed project with "business as

usual" conditions. The outputs are included in Exhibit H and summarized in Table 6-3 above. The operation of the proposed project based on "business as usual" conditions" would result in 2,734 metric tons per year of CO_2e of GHG emissions. This represents 0.0006 percent of the CO_2e of 2016 GHG emissions in the State of California (which is 429,400,000 metric tons of CO_2e).[3] Therefore, the GHG emissions as a result of the proposed project will be *less than significant*.

Mitigation from the California Attorney General's Office

The Office of the California Attorney General maintains a list of "CEQA Mitigations for Global Warming Impacts" on their website. This list, which is not intended to be exhaustive, includes examples of types of mitigation measures and policies that local agencies may consider offsetting or reducing impacts related to global climate change. The Attorney General's Office acknowledges that the measures cited may not be appropriate for every project and that the lead agency undertaking a CEQA analysis should use its own informed judgment in deciding which measures it would analyze and which measure it would require for a given project. These include measures that are "Generally Applicable" in the areas of energy efficiency, renewable energy, water conservation and efficiency, solid waste measures, land use measures, transportation and motor vehicles, and carbon offsets.

The proposed project would incorporate the applicable measures and policies provided by the Attorney General's Office. This includes energy efficiency, water conservation and efficiency, solid waste recycling, and access to transit. Therefore, the proposed project would comply with the applicable mitigation provided by the Attorney General's Office and impacts are considered to be *less than significant*.

7.0 CUMULATIVE IMPACTS

The GAMAQI, under CEQA, defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The document also states that *"if a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant. If the combined impacts of such projects cause or worsen an exceedance of the concentration standards, the project would have a cumulatively significant impact under CEQA."*

Regionally, the SJUAPCD has annual VOC emissions of 302,200 tons and annual NO_x emissions of 223,800 tons from all sources. The proposed project represents approximately 0.002% of the VOC and 0.003% of the NO_x emissions in the SJVUAPCD. These amounts are not individually considerable because emissions within the SJVUAPCD Air Basin will be essentially the same regardless of whether or not the proposed project is built.

As stated in page 22 of the SJVUAPCD CEQA Guidelines, "a project's potential contribution to cumulative impacts shall be assessed utilizing the same significance criteria as those for project specific impacts." Since the proposed project would not have a significant long-term air quality impact, the proposed project would not have a significant cumulative impact to regional air quality. Therefore, the cumulative impacts to the regional air quality with implementation of the proposed project would be *less than significant.*

Hazardous Air Pollutants (HAPs)

The GAMAQI also states that when evaluating potential impacts related to HAPs, *"impacts of*

[3] California Air Resources Board, 2016 GHG Inventory, *California Greenhouse Gas Inventory (millions of metric tonnes of CO2 equivalent) — By IPCC Category,* Updated July 11, 2018

local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards." The proposed project does not have significant sources of HAPs. Therefore, the cumulative impact as a result of HAPs would be *less than significant*.

Carbon Monoxide (CO) from Mobile Sources

Based on the CO Protocol Analysis developed by the California Department of Transportation (CalTrans), and due to the fact that increased CO concentrations are usually associated with roadways that are congested and with heavy traffic volume, the District has established that preliminary screening can be used to determine with fair certainty that the effect a project has on any given intersection would not result in a CO hotspot. Therefore, the District has established that if neither of the following criteria are met at all intersections affected by the developmental project, the project will result in no potential to create a violation of the CO standard:

A. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or

B. A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity.

If either of the above criteria can be associated with any intersection affected by the project, the applicant/consultant would need to conduct a CO analysis to determine a project's significance or provide mitigation to maintain LOS C or above.

As noted in section 6.4, the proposed project will not have a significant impact on the LOS at any intersection or road segment with mitigation. Therefore, the cumulative impact as a result of CO emissions is *less than significant with mitigation*.

8.0 EMISSION REDUCTION MEASURES

The proposed project generates air pollutant emissions associated with the construction and operation of the proposed project. Based on the analysis provided above, the potential impacts of the proposed project would be less than significant. However, to further reduce the emissions associated with the construction of the proposed project, the project will implement the following reduction measures.

8.1 Reduction Measures for Construction Equipment Exhaust

The construction activities for the proposed project shall incorporate the following measures stated in the GAMAQI guidance document as approved mitigation to reduce exhaust emissions from construction equipment:

- Properly and routinely maintain all construction equipment, as recommended by manufacturer manuals, to control exhaust emissions.
- Shut down equipment when not in use for extended periods of time to reduce emissions associated with idling engines.
- Encourage ride sharing and use of transit transportation for construction employee commuting to the project sites.
- Use electric equipment for construction whenever possible in lieu of fossil fuel-fired equipment.

8.2 Reduction Measures for Fugitive Dust Emissions

The construction activities for the proposed project shall incorporate the following measures set forth by the SJVUAPCD Fugitive Dust rules to reduce fugitive dust emissions during grading and construction:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover, or vegetative ground cover.
- All onsite unpaved roads and offsite-unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported offsite, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

9.0 REFERENCES

California Air Resources Board (CARB), website for background information, http://www.arb.ca.gov/

California Department of Transportation (Caltrans), *Transportation Project-Level Carbon Monoxide Protocol,* December 1997.

Caltrans, *Caltrans Interim Guidance: Project-Level PM_{10} Hot-Spot Analysis,* February 2000.

County of Kern, Planning Department, *County of Kern Housing Element 2002-2007*, Adopted September 10, 2002.

Kern Council of Governments (KernCOG), *Final Conformity Analysis for the 2006 Federal Transportation Improvement Program (TIP) and 2004 Regional Transportation Plan (RTP),* July 20, 2006

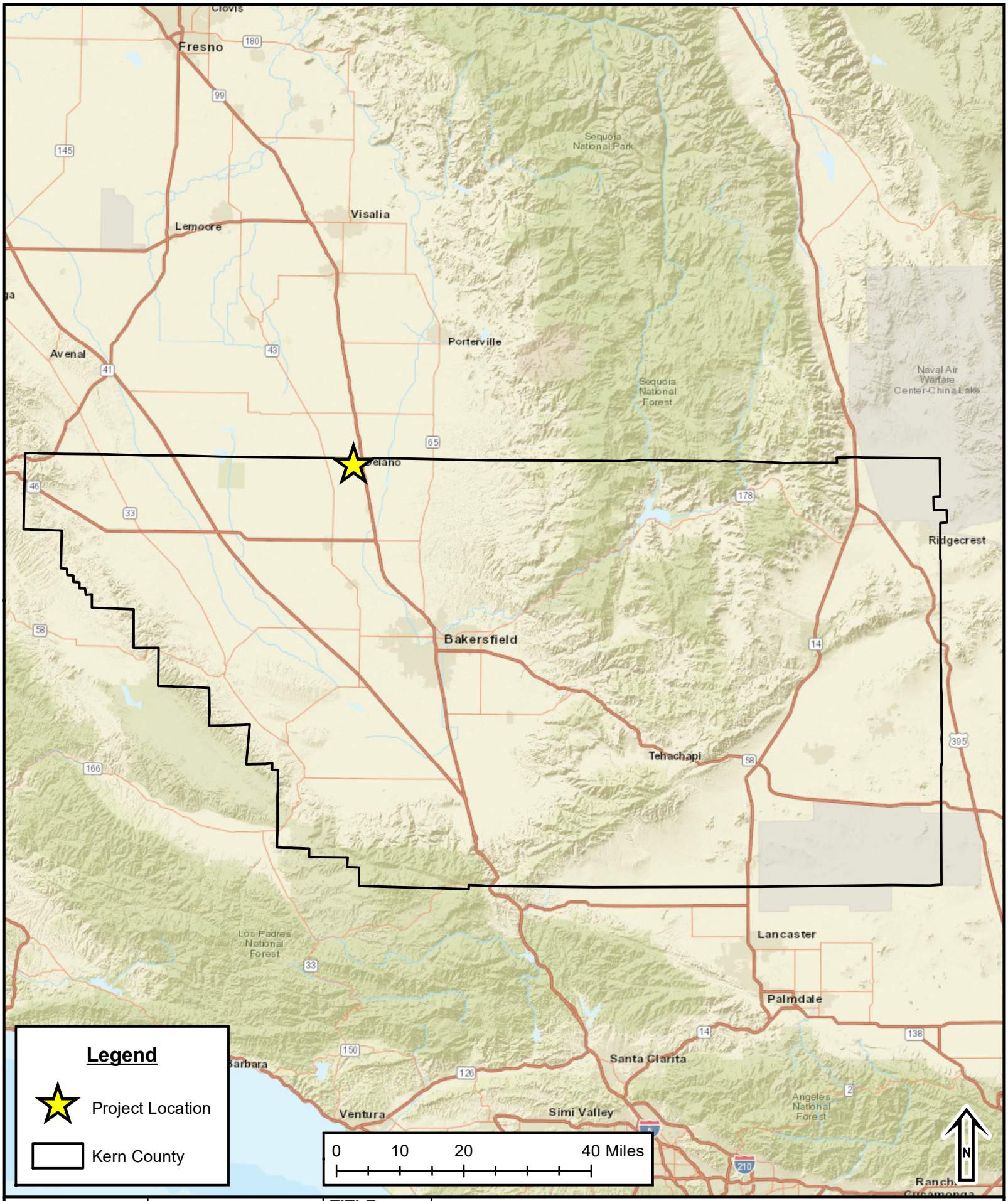
KernCOG, *2000 Regional Housing Allocation Plan*, Adopted May 17, 2001

San Joaquin Valley Unified APCD, *Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970*, as amended, July 1, 1999

SJVUAPCD, *Guide for Assessing and Mitigating Air Quality Impacts,* March 19, 2015.

EXHIBIT A

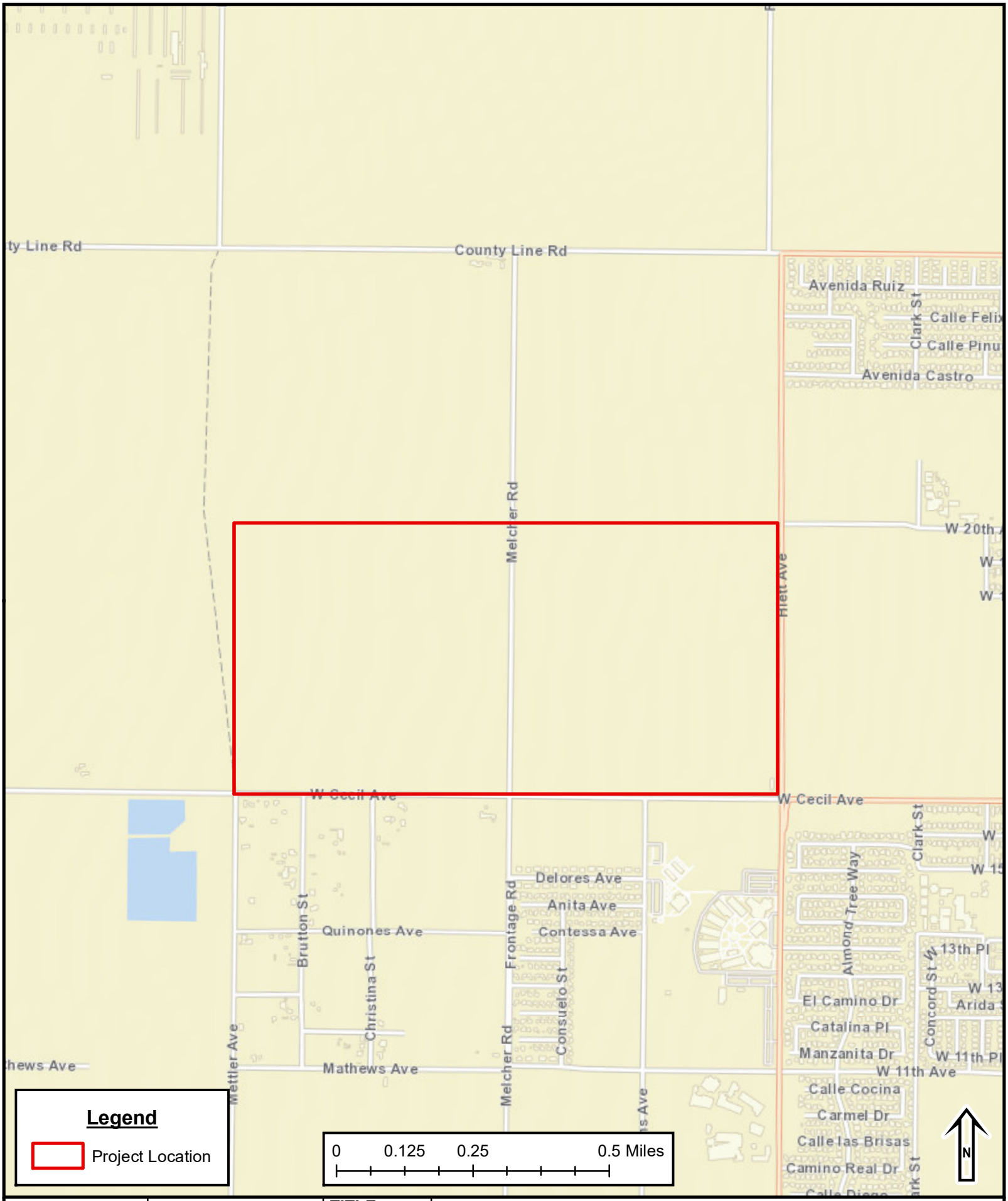
LOCATION MAP



PREPARED BY:	EnviroTech Consultants, Inc.	**TITLE:**	Cecil & Hiett		
		LOCATION:	Delano, CA		
		COMPANY:	Cornerstone Engineering	**County:**	Kern
SECTION/TOWNSHIP/RANGE	Sec 3/4 - T25S/R25E MDB&M	**DRN BY:**	Ethan Sarti		
		DATE:	22-Oct-20	**SCALE:**	1:1,200,000

EXHIBIT B

PROJECT LOCATION MAP



PREPARED BY:	EnviroTech Consultants, Inc.	**TITLE:**	Cecil & Hiett		
		LOCATION:	Delano, CA		
		COMPANY:	Cornerstone Engineering	**County:**	Kern
SECTION/TOWNSHIP/RANGE	Sec 3/4 - T25S/R25E MDB&M	**DRN BY:**	Ethan Sarti		
		DATE:	22-Oct-20	**SCALE:**	1:14,000

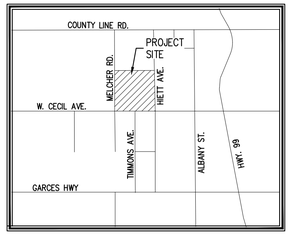
EXHIBIT C

PROJECT SITE PLAN

TENTATIVE TRACT MAP NO.

BEING A DIVISION OF THE SOUTHWEST QUARTER OF SECTION 3, TOWNSHIP 25 SOUTH, RANGE 25 EAST, M.D.M., IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA.
EXCEPTING THEREFROM, THAT PORTION CONVEYED TO DONALD BOWEN BY DEED RECORDED FEBRUARY 15, 1962, IN BOOK 3463, PAGE 237 OF OFFICIAL RECORDS.
ALSO EXCEPTING THEREFROM, THE SOUTH 55 FEET AS CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED APRIL 19, 1990 IN BOOK 6372, PAGE 339 OF OFFICIAL RECORDS

BEING A DIVISION OF ±152.6 GROSS ACRES INTO 181 LOTS
(APN: 520-010-29)



VICINITY MAP
NTS

PUBLIC UTILITY INFORMATION

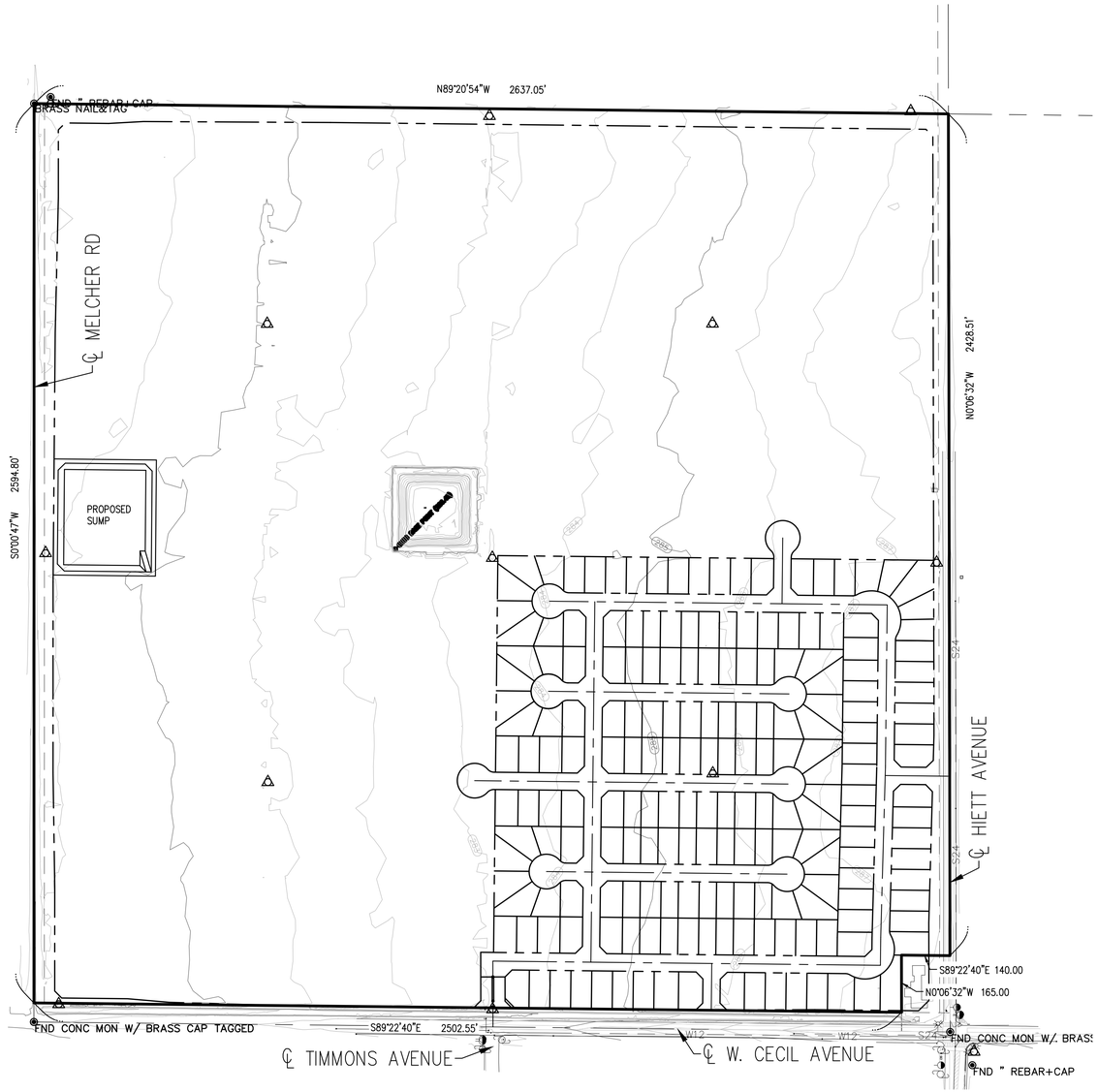
WATER	CITY OF DELANO
SEWER	CITY OF DELANO
GAS & ELECTRIC	SOUTHERN CALIFORNIA EDISON
PHONE	PACIFIC BELL
CABLE TV	BRIGHTHOUSE NETWORK

GENERAL INFORMATION

1. APN: 520-010-29
2. ACREAGE : 152.64 ACRES GROSS.
3. PROPOSED TOTAL NUMBER OF LOTS: 181
4. CURRENT LAND USE : AGRICULTURE (VINEYARDS)
5. PROPOSED LAND USE : RESIDENTIAL
6. EXISTING AND PROPOSED ZONING : R-1 (RESIDENTIAL)
7. THIS MAP WILL BE PHASED
8. THERE ARE NO WATER OR GAS WELLS WITHIN THE BOUNDARY.

LEGEND

◉	MONUMENT FOUND / SFNF AS DESCRIBED HEREON
( )	BEARINGS AND DIST. OR CALC'D
IOD	IRREVOCABLE OFFER OF DEDICATION
IP	IRON PIPE
K.C.S.	KERN COUNTY SURVEYOR
PM	PARCEL MAP
O.R.	OFFICIAL RECORDS
R/W	RIGHT OF WAY
*SFNF	MONUMENT SEARCHED FOR NOT FOUND



GRAPHIC SCALE
200' 100' 0' 100' 200'
(IN FEET)
1 inch = 200 ft.

PROPERTY OWNER

JOSEPH VINEYARD ESTATE, LLC
ADDRESS:
PHONE:

SURVEYOR'S NOTES

1. THE DISTINCTIVE BOUNDARY (———) INDICATES THE BOUNDARY OF LAND SUBDIVIDED BY THIS MAP.
2. THIS WILL BE A PHASED SUBDIVISION.

LAND SURVEYOR

DERRILL G. WHITTEN JR.
L.S. 7816
CORNERSTONE ENGINEERING INC.
208 OAK ST.
BAKERSFIELD, CA 93304
661.325.9474

PRELIMINARY

CORNERSTONE ENGINEERING
CONSULTANTS • ENGINEERS • LAND SURVEYORS
208 OAK STREET, BAKERSFIELD CA 93304
TEL: (661) 325-9474 FAX: (661) 322-0129
www.cornerstoneeng.com

DEVELOPMENT BY:
JOSEPH VINEYARD ESTATE, LLC
X X

TENTATIVE TRACT
MAP # XXXXX
DELANO, CA
X

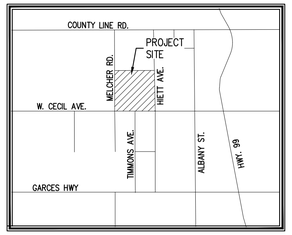
DESIGNER:	EPM
CHECKED BY:	DGW
DATE:	09/23/2020
DRAFTER:	EPM
SCALE:	AS SHOWN
COMP. NO:	7880100_TTM
JOB NO.:	788-01-00

TTM-1 | SHEET 1 OF 2

TENTATIVE TRACT MAP NO.

BEING A DIVISION OF THE SOUTHWEST QUARTER OF SECTION 3, TOWNSHIP 25 SOUTH, RANGE 25 EAST, M.D.M., IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA.
EXCEPTING THEREFROM, THAT PORTION CONVEYED TO DONALD BOWEN BY DEED RECORDED FEBRUARY 15, 1962, IN BOOK 3463, PAGE 237 OF OFFICIAL RECORDS.
ALSO EXCEPTING THEREFROM, THE SOUTH 55 FEET AS CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED APRIL 19, 1990 IN BOOK 6372, PAGE 339 OF OFFICIAL RECORDS

BEING A DIVISION OF ±152.6 GROSS ACRES INTO 181 LOTS
(APN: 520-010-29)



VICINITY MAP

NTS

PUBLIC UTILITY INFORMATION

WATER	CITY OF DELANO
SEWER	CITY OF DELANO
GAS & ELECTRIC	SOUTHERN CALIFORNIA EDISON
PHONE	PACIFIC BELL
CABLE TV	BRIGHTHOUSE NETWORK

GENERAL INFORMATION

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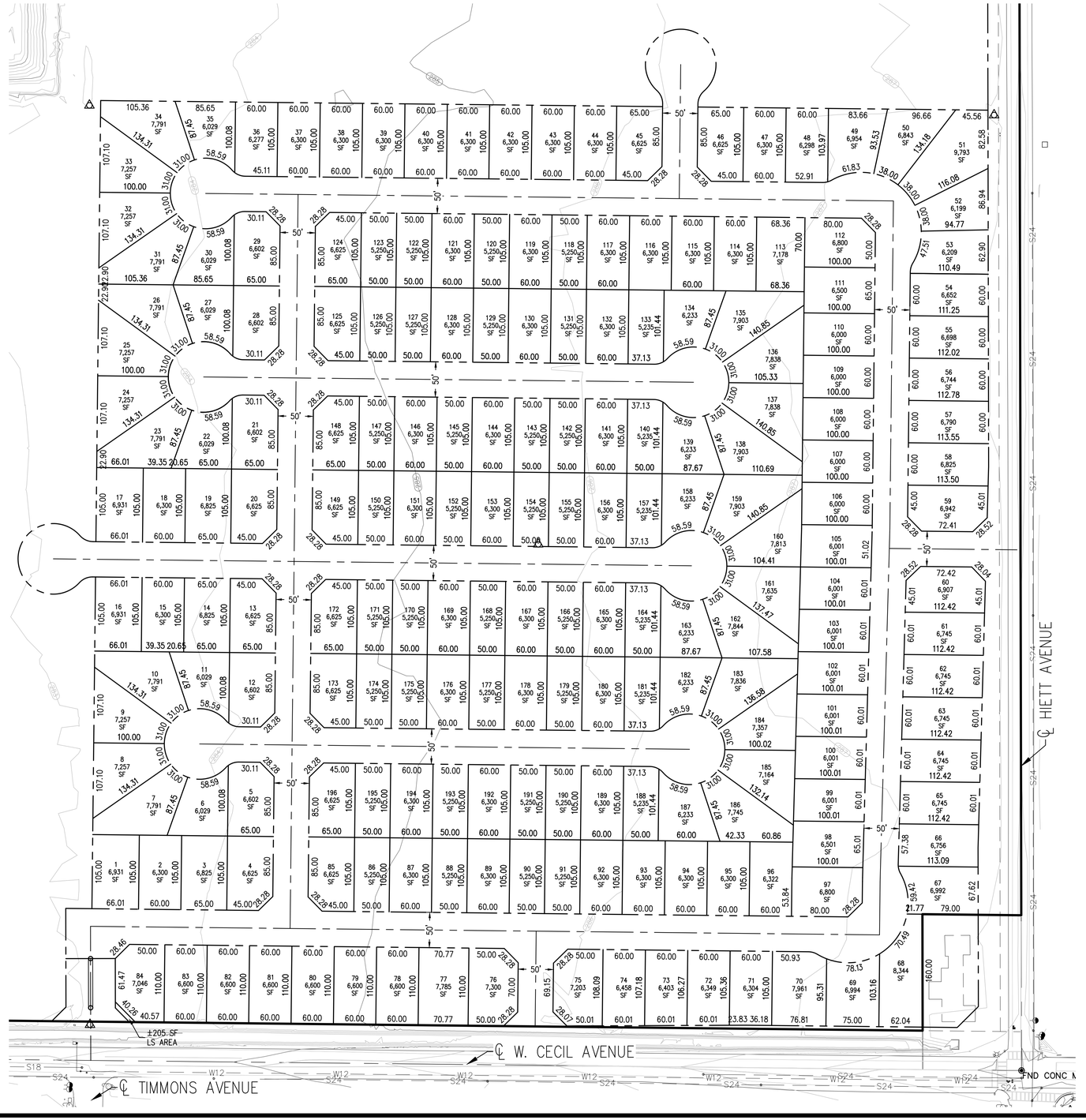
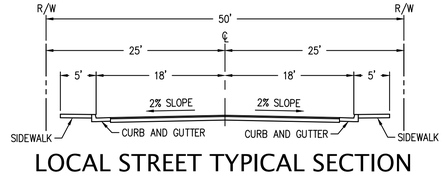
5. PROPOSED LAND USE : RESIDENTIAL
6. EXISTING AND PROPOSED ZONING : R-1 (RESIDENTIAL)
7. THIS MAP WILL BE PHASED
8. THERE ARE NO WATER OR GAS WELLS WITHIN THE BOUNDARY.

LEGEND

◉	MONUMENT FOUND / SFNF AS DESCRIBED HEREON
( )	BEARINGS AND DIST. OR CALC'D
IOD	IRREVOCABLE OFFER OF DEDICATION
IP	IRON PIPE
K.C.S.	KERN COUNTY SURVEYOR
PM	PARCEL MAP
O.R.	OFFICIAL RECORDS
R/W	RIGHT OF WAY
*SFNF	MONUMENT SEARCHED FOR NOT FOUND



GRAPHIC SCALE
80' 40' 0' 40' 80'
(IN FEET)
1 inch = 80 ft.



LOCAL STREET TYPICAL SECTION

NTS

PROPERTY OWNER

JOSEPH VINEYARD ESTATE, LLC
ADDRESS:
PHONE:

SURVEYOR'S NOTES

1. THE DISTINCTIVE BOUNDARY (———) INDICATES THE BOUNDARY OF LAND SUBDIVIDED BY THIS MAP.
2. THIS WILL BE A PHASED SUBDIVISION.

LAND SURVEYOR

DERRILL G. WHITTEN JR.
L.S. 7816
CORNERSTONE ENGINEERING INC.
208 OAK ST.
BAKERSFIELD, CA 93304
661.325.9474

PRELIMINARY

CORNERSTONE ENGINEERING
CONSULTANTS • ENGINEERS • LAND SURVEYORS
208 OAK STREET, BAKERSFIELD, CA 93304
TEL.: (661) 325-9474 FAX: (661) 322-0129
www.cornerstoneeng.com

DEVELOPMENT BY:
JOSEPH VINEYARD ESTATE, LLC
X
X

TENTATIVE TRACT MAP # XXXXX
DELANO, CA
X

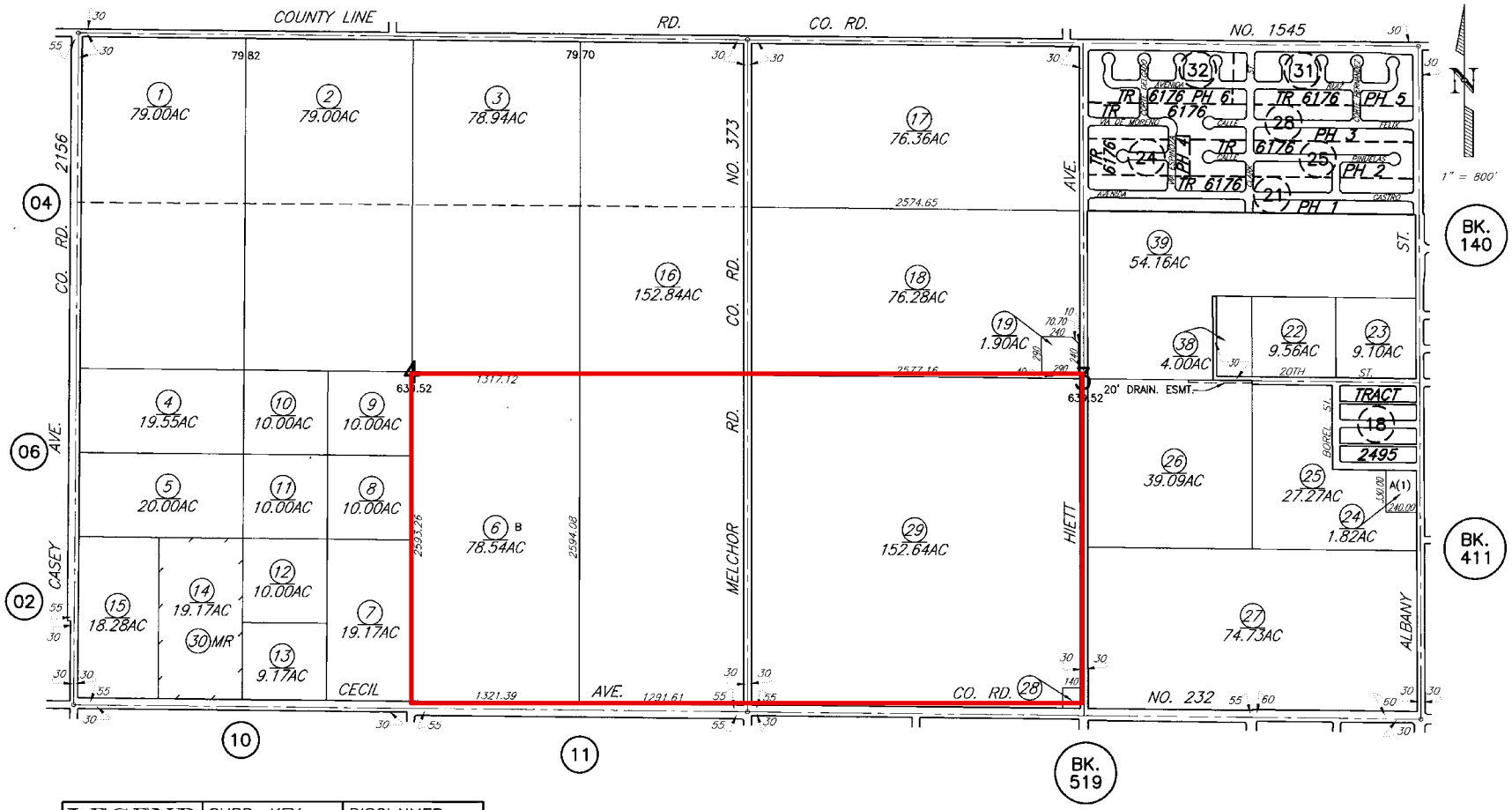
DESIGNER:	EPM
CHECKED BY:	DGW
DATE:	09/23/2020
DRAFTER:	EPM
SCALE:	AS SHOWN
COMP. NO:	7880100_TTM
JOB NO.:	788-01-00

TTM-2 | SHEET 2 OF 2

EXHIBIT D

ASSESSOR’S PARCEL MAP

520-01 T.25S. R.25E. 520-01



LEGEND	SUBD. KEY	DISCLAIMER
REVISED May 29, 2008	REF. SUBD. A. PM 13 B. R/S 12-25	This map is for assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.
JURISDICTION CITY OF DELANO & VICINITY	(LOT DESIGNATIONS IN PARENTHESIS)	

Legend

Project Location

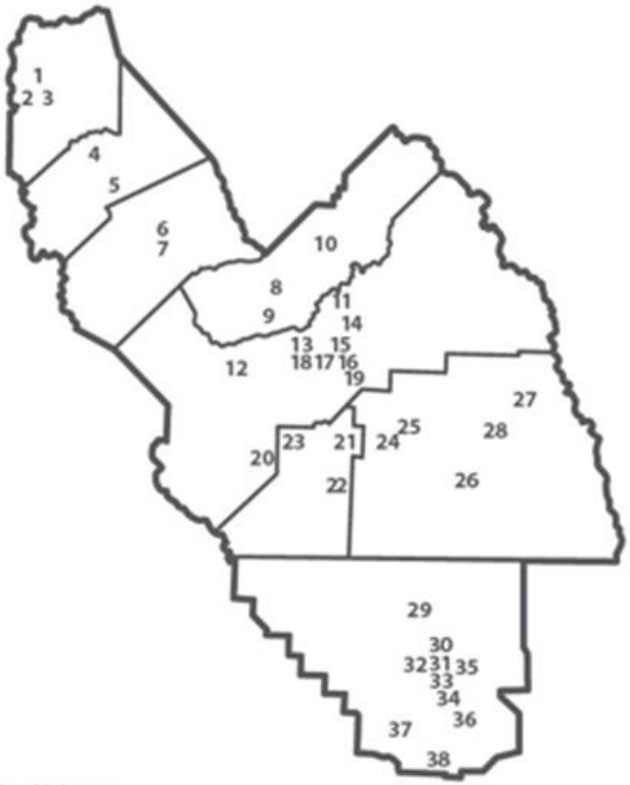
ASSESSORS MAP NO. 520-01
COUNTY OF KERN

PREPARED BY:	EnviroTech Consultants, Inc.	**TITLE:**	Cecil & Hiett - Assessors Map No. 520-01		
		LOCATION:	Delano, CA		
		COMPANY:	Cornerstone Engineering	**County:**	Kern
SECTION/TOWNSHIP/RANGE	Sec 3/4 - T25S/R25E MDB&M	**DRN BY:**	Ethan Sarti		
		DATE:	26-Oct-20	**SCALE:**	None

EXHIBIT E

AIR BASIN MONITORING STATIONS

Air Monitoring Sites in Operation



As of July 2018

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

SAN JOAQUIN COUNTY
- ■ 1 Stockton-Hazelton: G, M, P, F, T
- ★ 2 Tracy-Airport: G, M, P, F
- ★ 3 Manteca: P, F, M

STANISLAUS COUNTY
- ■ 4 Modesto-14th St: G, M, P, F
- ★ 5 Turlock: G, M, P, F

MERCED COUNTY
- ★ 6 Merced-M St: P, F
- ★ 7 Merced-Coffee: G, F, M

MADERA COUNTY
- ★ 8 Madera City: G, P, F, M
- ★ 9 Madera-Pump Yard: G, M

Other[1]:
Chukchansi Indians
- ▲ 10 Picayune Rancheria: G, F, P, M

FRESNO COUNTY

Other[1]:
Monache Tribe/Foothill Yokut Indians
- ▲ 11 Table Mountain AMS*: G, F, P, M
- ★ 12 Tranquillity: G, F, M
- ★ 13 Fresno-Sky Park: G, M
- ★ 14 Clovis: G, M, P, F
- ■ 15 Fresno-Garland: G, M, P, F, T, N, L
- ★ 16 Fresno-Pacific: F
- ★ 17 Fresno-Drummond: G, P, M
- ★ 18 Fresno-Foundry Park Ave: G, M
- ★ 19 Parlier: G, M
- ★ 20 Huron: F, M

KINGS COUNTY
- ★ 21 Hanford: G, F, M, P
- ★ 22 Corcoran: F, M, P

Other[1]:
Tachi Yokut Tribe
- ▲ 23 Santa Rosa Rancheria: G, M, P

TULARE COUNTY
- ★ 24 Visalia Airport: M
- ■ 25 Visalia-Church St: G, F, M, P
- ★ 26 Porterville: G, F, M

Other[2]:
- ▲ 27 Lower Kaweah: A, G, M
- ▲ 28 Ash Mountain: A, G, M, F

KERN COUNTY
- ● 29 Shafter: G, M
- ■ 30 Oildale: G, M, P
- ★ 31 Bakersfield-Golden/M St: F, P
- ■ 32 Bakersfield-Calif Ave: A, G, M, P, F, T
- ★ 33 Bakersfield-Muni: G, M
- ■ 34 Bakersfield-Airport (Planz): F
- ■ 35 Edison: G, M
- ■ 36 Arvin-Di-Giorgio: G, M
- ★ 37 Maricopa: G, M
- ★ 38 Lebec: F, M

MONITORING DESIGNATIONS

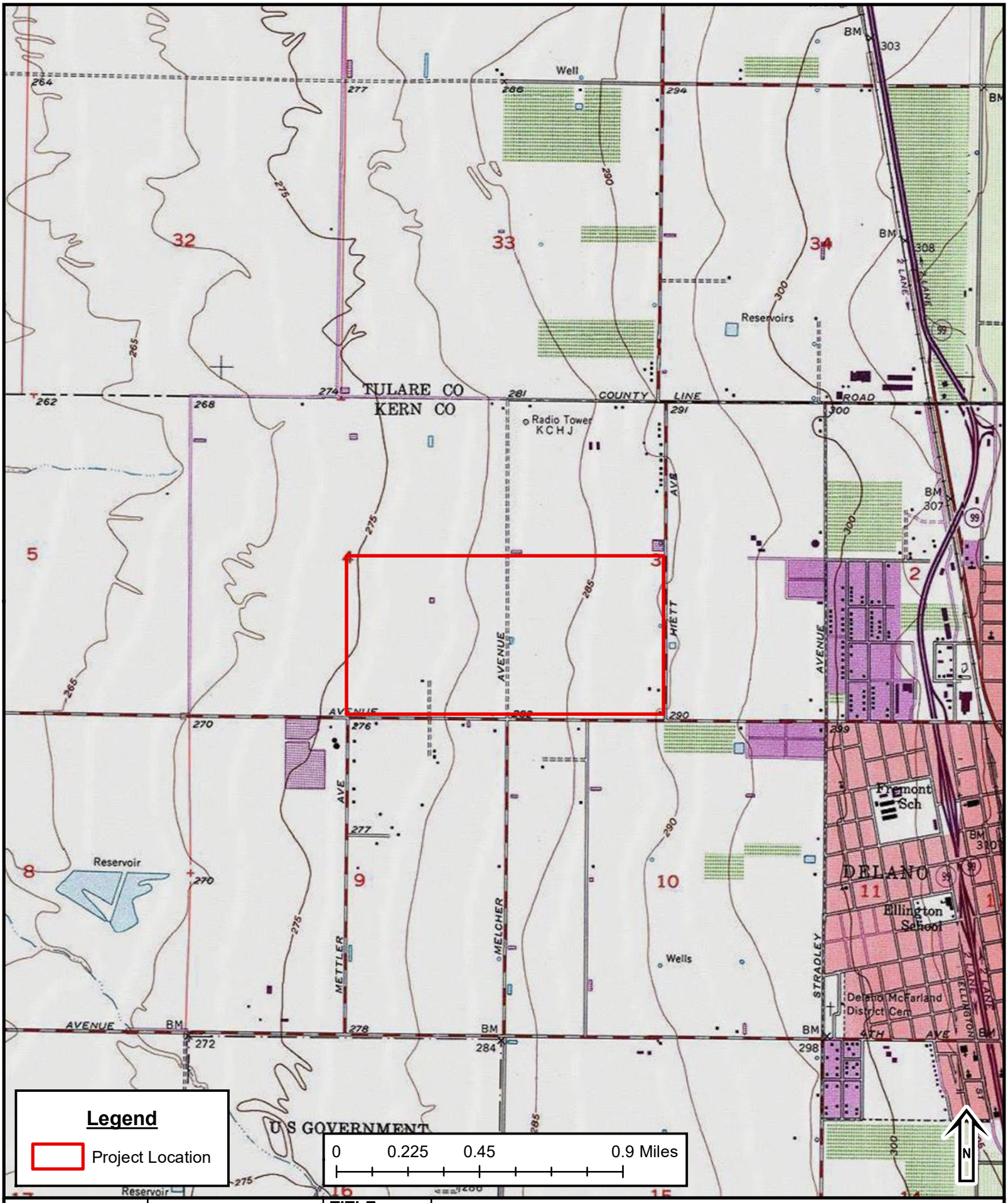
A	Acid Deposition	P	Particulate (PM10)
F	Fine Particulate (PM2.5)	N	National Core
G	Gaseous	T	Toxins
M	Meteorological	L	Lead

MONITORING OPERATION
- ★ Sites operated by the District
- ● Sites operated by the District & CARB
- ■ Sites operated by CARB
- ▲ Sites operated by other agencies
  - Other[1] Tribal
  - Other[2] National Park Service
- * Air Monitoring Station (AMS)

Source: http://www.valleyair.org/aqinfo/MonitoringSites.htm, 07/2018

EXHIBIT F

TOPOGRAPHIC MAP



PREPARED BY:	EnviroTech Consultants, Inc.	**TITLE:**	Cecil & Hiett		
		LOCATION:	Delano, CA		
		COMPANY:	Cornerstone Engineering	**County:**	Kern
SECTION/TOWNSHIP/RANGE	Sec 3/4 - T25S/R25E MDB&M	**DRN BY:**	Ethan Sarti		
		DATE:	22-Oct-20	**SCALE:**	1:24,000

EXHIBIT G

AIR MONITORING STATION DATA

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-5558 California Avenue

iADAM

	2017		2018		2019	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 15	66.0	Nov 16	61.5	Nov 8	67.1
Second High:	Dec 14	63.1	Nov 15	58.0	Nov 12	63.8
Third High:	Nov 22	61.5	Sep 28	56.3	Nov 13	62.6
Fourth High:	Dec 29	61.1	Nov 14	56.1	Nov 4	60.4
California:						
First High:	Dec 15	66	Nov 16	61	Nov 8	67
Second High:	Dec 14	63	Nov 15	58	Nov 12	63
Third High:	Nov 22	61	Sep 28	56	Nov 13	62
Fourth High:	Dec 12	61	Nov 14	56	Nov 4	60
National:						
1-Hour Standard Design Value:		52		53		54
1-Hour Standard 98th Percentile:		58.1		51.0		53.9
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		13		13		12
California:						
1-Hour Std Designation Value:		60		70		70
Expected Peak Day Concentration:		63		65		66
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		12		12		12
Annual Average:		12		12		11
Year Coverage:		97		97		99

◄ Shift Backward 1 year Shift Forward ►

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2019. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Trends Summary: PM2.5 Statistics

at Bakersfield-410 E Planz Road

iADAM

Year	Est. Days > Natl '06 Std	Annual Average		Natl Ann Std D.V.[1]	State Ann Std D.V.[2]	Natl '06 Std 98th Pctile	Natl '06 24-Hr Std D.V.[1]	High 24-Hr Average		Year Coverage
		Natl	State					Natl	State	
2019	10.0	13.0	13.0	16.9	13	46.7	59	83.7	83.7	92
2018	*	19.4	*	17.8	*	60.8	60	100.9	100.9	79
2017	32.2	18.2	*	17.3	18	69.7	59	80.1	80.1	86
Graph	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Info:
Click on a column header for more information about the statistic in that column.

Area:
Kern County; San Joaquin Valley Air Basin;
San Joaquin Valley 8-Hour Ozone Planning Area

District:
San Joaquin Valley Unified APCD

Years:
Annual PM2.5 statistics are available for this site from 2000 through 2019.

Notes:
All concentrations expressed in micrograms per cubic meter.
yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
D.V.[1] = National Design Value
D.V.[2] = State Designation Value
* means there was insufficient data available to determine the value.

Trends Summary: PM10 Statistics

at Bakersfield-5558 California Avenue

iADAM

Year	Est Days > Std		Annual Average		3-Year Average		High 24-Hr Average		Year Coverage
	Natl	State	*Natl*	State	*Natl*	State	Natl	State	
2019	0.0	108.1	*38.8*	39.0	*41*	43	116.3	125.9	94
2018	0.0	*	*42.1*	*	*42*	43	136.1	142.0	95
2017	0.0	98.7	*42.6*	42.6	*43*	44	138.0	143.6	98
Graph	☐	☐	☐	☐	☐	☐	☐	☐	☐

Info:
Click on a column header for more information about the statistic in that column.

Area:
Kern County; San Joaquin Valley Air Basin;
San Joaquin Valley 8-Hour Ozone Planning Area

District:
San Joaquin Valley Unified APCD

Years:
Annual PM10 statistics are available for this site from 1994 through 2019.

Notes:
All concentrations expressed in micrograms per cubic meter.
All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.
The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics*.
yellow exceeds a California ambient air quality standard. orange exceeds a national ambient air quality standard.
An exceedance of a standard is not necessarily related to a violation of the standard.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
* means there was insufficient data available to determine the value.

EXHIBIT H

CALEEMOD EMISSION MODELING

- CONSTRUCTION EMISSIONS (2021-2024)
- OPERATIONAL EMISSIONS (2022)

Cecil & Hiett - Blumer Construction - SE Section

San Joaquin Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.00		6.54	285,000.00	0
Single Family Housing	196.00	Dwelling Unit	27.00	1,176,500.00	561

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cecil & Hiett - Blumer Construction - SE Section - San Joaquin Valley Air Basin, Annual

Project Characteristics -

Land Use - Tentative Tract Map used to determine lot acreage - Total lot size of 37.1 acres with 27.00 acres housing and 6.54 acres roads.

Construction Phase - Construction timeline adjusted to have four phases with each phase equal to the calendar year - Phase I (2021) consists of 60% of houses constructed, Phase II (2022) with 20%, and Phases III/IV (2023/2024) with 10% each.

Demolition - Removal of water well piping

Grading - Acres graded equal to lot size

Architectural Coating - The Residential sqft for the total project was divided into the four years to match the construction phase (60% 2021/20% 2022/10% 2023/10% 2024)

Energy Use - Default data used for historical

Land Use Change -

Construction Off-road Equipment Mitigation - Tier 4 Final equipment will be used as available

Mobile Land Use Mitigation -

Area Mitigation - Low VOC paint with 50 g/L used per APCD regulations - Rule 4601
Only natural gas stoves - no woodstoves

Waste Mitigation - Community recycling through city-issued 'blue bins'

Fleet Mix - Fleet mix moved 11% HHD to LDT1 for residential neighborhood/MHD to LDT1 2%

Area Coating - VOC of paint reduced to 50 g/l to meet current APCD Rules

Woodstoves - No wood fireplaces will be installed

Consumer Products - General VOC factor to 2.14E-6 & City Park VOC/Parking Degreaser factor to 3.542E-8

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	17,100.00	1,710.00
tblArchitecturalCoating	ConstArea_Parking	17,100.00	1,710.00
tblArchitecturalCoating	ConstArea_Parking	17,100.00	10,260.00
tblArchitecturalCoating	ConstArea_Parking	17,100.00	3,420.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	794,138.00	79,414.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	794,138.00	79,414.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	794,138.00	476,483.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	794,138.00	158,828.00

tblArchitecturalCoating	ConstArea_Residential_Interior	2,382,413.00	238,241.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,382,413.00	238,241.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,382,413.00	1,429,448.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,382,413.00	476,483.00
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintParkingValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	50
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
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tblConstEquipMitigation	DPF	No Change	Level 3
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	35.00	4.00
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tblConstructionPhase	NumDays	500.00	30.00
tblConstructionPhase	NumDays	500.00	160.00
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tblConstructionPhase	PhaseEndDate	2/7/2030	4/6/2023
tblConstructionPhase	PhaseEndDate	9/13/2029	6/29/2021
tblConstructionPhase	PhaseEndDate	11/1/2029	5/10/2022
tblConstructionPhase	PhaseEndDate	2/11/2027	2/10/2023
tblConstructionPhase	PhaseEndDate	1/11/2029	2/9/2024
tblConstructionPhase	PhaseEndDate	4/13/2023	12/23/2021
tblConstructionPhase	PhaseEndDate	3/13/2025	3/11/2022
tblConstructionPhase	PhaseEndDate	6/7/2029	3/6/2023
tblConstructionPhase	PhaseEndDate	7/26/2029	3/6/2024
tblConstructionPhase	PhaseEndDate	3/1/2029	7/2/2021
tblConstructionPhase	PhaseEndDate	4/19/2029	4/12/2022
tblConstructionPhase	PhaseStartDate	11/2/2029	4/1/2023
tblConstructionPhase	PhaseStartDate	12/21/2029	4/1/2023
tblConstructionPhase	PhaseStartDate	7/27/2029	6/1/2021
tblConstructionPhase	PhaseStartDate	9/14/2029	5/1/2022
tblConstructionPhase	PhaseStartDate	3/14/2025	1/1/2023
tblConstructionPhase	PhaseStartDate	2/12/2027	1/1/2024

tblConstructionPhase	PhaseStartDate	4/14/2023	1/1/2022
tblConstructionPhase	PhaseStartDate	4/20/2029	3/1/2023
tblConstructionPhase	PhaseStartDate	6/8/2029	3/1/2024
tblConstructionPhase	PhaseStartDate	1/12/2029	6/1/2021
tblConstructionPhase	PhaseStartDate	3/2/2029	4/1/2022
tblConsumerProducts	ROG_EF	2.14E-05	2.14E-06
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	3.542E-08
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFleetMix	HHD	0.11	5.1000e-005
tblFleetMix	HHD	0.11	5.1000e-005
tblFleetMix	LDT1	0.03	0.14
tblFleetMix	LDT1	0.03	0.14
tblFleetMix	LDT2	0.17	0.19
tblFleetMix	LDT2	0.17	0.19
tblFleetMix	MHD	0.02	1.6640e-003
tblFleetMix	MHD	0.02	1.6640e-003
tblLandUse	LandUseSquareFeet	352,800.00	1,176,500.00
tblLandUse	LotAcreage	63.64	27.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	7.1021	4.1285	3.3001	7.6200e-003	0.5449	0.1768	0.7217	0.2260	0.1646	0.3905	0.0000	679.8648	679.8648	0.1316	0.0000	683.1559
2022	2.2997	0.6287	0.6244	1.6100e-003	0.0508	0.0235	0.0743	0.0138	0.0221	0.0358	0.0000	144.9201	144.9201	0.0207	0.0000	145.4372
2023	2.2677	0.3298	0.3623	9.5000e-004	0.0310	0.0120	0.0430	8.4000e-003	0.0113	0.0197	0.0000	85.6775	85.6775	0.0115	0.0000	85.9637
2024	0.0437	0.3076	0.3448	9.2000e-004	0.0298	0.0104	0.0402	8.0700e-003	9.7300e-003	0.0178	0.0000	82.7812	82.7812	0.0113	0.0000	83.0636
Maximum	**7.1021**	**4.1285**	**3.3001**	**7.6200e-003**	**0.5449**	**0.1768**	**0.7217**	**0.2260**	**0.1646**	**0.3905**	**0.0000**	**679.8648**	**679.8648**	**0.1316**	**0.0000**	**683.1559**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	6.8107	0.9614	3.4734	7.6200e-003	0.3382	4.7200e-003	0.3429	0.1269	4.5700e-003	0.1314	0.0000	679.8643	679.8643	0.1316	0.0000	683.1554
2022	2.2613	0.2500	0.6628	1.6100e-003	0.0508	9.0000e-004	0.0517	0.0138	8.6000e-004	0.0146	0.0000	144.9201	144.9201	0.0207	0.0000	145.4371
2023	2.2468	0.1249	0.3860	9.5000e-004	0.0310	3.4000e-004	0.0314	8.4000e-003	3.3000e-004	8.7200e-003	0.0000	85.6774	85.6774	0.0115	0.0000	85.9636
2024	0.0251	0.1229	0.3696	9.2000e-004	0.0298	3.3000e-004	0.0301	8.0700e-003	3.1000e-004	8.3900e-003	0.0000	82.7812	82.7812	0.0113	0.0000	83.0636
Maximum	**6.8107**	**0.9614**	**3.4734**	**7.6200e-003**	**0.3382**	**4.7200e-003**	**0.3429**	**0.1269**	**4.5700e-003**	**0.1314**	**0.0000**	**679.8643**	**679.8643**	**0.1316**	**0.0000**	**683.1554**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**3.15**	**72.95**	**-5.62**	**0.00**	**31.49**	**97.18**	**48.13**	**38.69**	**97.08**	**64.83**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	1.3281	0.0946
2	**4-1-2021**	**6-30-2021**	8.0150	6.8607
3	**7-1-2021**	**9-30-2021**	0.9386	0.3785
4	**10-1-2021**	**12-31-2021**	0.8507	0.3475
5	**1-1-2022**	**3-31-2022**	0.6454	0.2764
6	**4-1-2022**	**6-30-2022**	2.3343	2.2831
9	**1-1-2023**	**3-31-2023**	0.3654	0.1484
10	**4-1-2023**	**6-30-2023**	2.3863	2.3806

13	**1-1-2024**	**3-31-2024**	0.3390	0.1432
		Highest	8.0150	6.8607

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6243	0.0902	1.4897	5.4000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	87.2859	87.2859	3.9300e-003	1.5600e-003	87.8481
Energy	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	853.4389	853.4389	0.0273	0.0108	857.3369
Mobile	0.6633	1.2724	7.8334	0.0211	2.0009	0.0184	2.0192	0.5342	0.0171	0.5513	0.0000	1,915.4602	1,915.4602	0.0771	0.0000	1,917.3874
Waste						0.0000	0.0000		0.0000	0.0000	42.8473	0.0000	42.8473	2.5322	0.0000	106.1525
Water						0.0000	0.0000		0.0000	0.0000	4.0514	30.9946	35.0460	0.4174	0.0101	48.4878
Total	**2.3237**	**1.6710**	**9.4544**	**0.0236**	**2.0009**	**0.0573**	**2.0581**	**0.5342**	**0.0560**	**0.5902**	**46.8987**	**2,887.1795**	**2,934.0782**	**3.0580**	**0.0224**	**3,017.2125**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6243	0.0902	1.4897	5.4000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	87.2859	87.2859	3.9300e-003	1.5600e-003	87.8481
Energy	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	853.4389	853.4389	0.0273	0.0108	857.3369
Mobile	0.6533	1.2233	7.5530	0.0202	1.9097	0.0176	1.9273	0.5099	0.0164	0.5263	0.0000	1,830.4311	1,830.4311	0.0740	0.0000	1,832.2809
Waste						0.0000	0.0000		0.0000	0.0000	34.2779	0.0000	34.2779	2.0258	0.0000	84.9220
Water						0.0000	0.0000		0.0000	0.0000	4.0514	30.9946	35.0460	0.4174	0.0101	48.4878
Total	**2.3137**	**1.6219**	**9.1739**	**0.0227**	**1.9097**	**0.0565**	**1.9662**	**0.5099**	**0.0553**	**0.5652**	**38.3293**	**2,802.1505**	**2,840.4797**	**2.5484**	**0.0224**	**2,910.8756**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.43**	**2.94**	**2.97**	**3.94**	**4.56**	**1.31**	**4.47**	**4.56**	**1.25**	**4.24**	**18.27**	**2.95**	**3.19**	**16.66**	**0.00**	**3.52**

3.0 Construction Detail

Construction Phase

Cecil & Hiett - Blumer Construction - SE Section - San Joaquin Valley Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	2/11/2021	5	30	
2	Site Preparation	Site Preparation	2/12/2021	3/11/2021	5	20	
3	Grading	Grading	3/12/2021	5/13/2021	5	45	
4	Building Construction - Phase I 2021	Building Construction	5/14/2021	12/23/2021	5	160	Year 1 Construction - 60%
5	Paving - Phase I 2021	Paving	6/1/2021	7/2/2021	5	24	Year 1 Construction - 60%
6	Architectural Coating - Phase I 2021	Architectural Coating	6/1/2021	6/29/2021	5	21	Year 1 Construction - 60%
7	Building Construction - Phase II 2022	Building Construction	1/1/2022	3/11/2022	5	50	Year 2 Construction - 20%
8	Paving - Phase II 2022	Paving	4/1/2022	4/12/2022	5	8	Year 2 Construction - 20%
9	Architectural Coating - Phase II 2022	Architectural Coating	5/1/2022	5/10/2022	5	7	Year 2 Construction - 20%
10	Building Construction - Phase III 2023	Building Construction	1/1/2023	2/10/2023	5	30	Year 3 Construction - 10%
11	Paving - Phase III 2023	Paving	3/1/2023	3/6/2023	5	4	Year 3 Construction - 10%
12	Architectural Coating - Phase III 2023	Architectural Coating	4/1/2023	4/6/2023	5	4	Year 3 Construction - 10%
13	Architectural Coating - Phase IV 2024	Architectural Coating	4/1/2023	4/6/2023	5	4	Year 4 Construction - 10%
14	Building Construction - Phase IV 2024	Building Construction	1/1/2024	2/9/2024	5	30	Year 4 Construction - 10%
15	Paving - Phase IV 2024	Paving	3/1/2024	3/6/2024	5	4	Year 4 Construction - 10%

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 6.54

Residential Indoor: 1,429,448; Residential Outdoor: 476,483; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 10,260 (Architectural Coating – sqft)

OffRoad Equipment

Cecil & Hiett - Blumer Construction - SE Section - San Joaquin Valley Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction - Phase I 2021	Cranes	1	7.00	231	0.29
Building Construction - Phase I 2021	Forklifts	3	8.00	89	0.20
Building Construction - Phase I 2021	Generator Sets	1	8.00	84	0.74
Building Construction - Phase I 2021	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction - Phase I 2021	Welders	1	8.00	46	0.45
Paving - Phase I 2021	Pavers	2	8.00	130	0.42
Paving - Phase I 2021	Paving Equipment	2	8.00	132	0.36
Paving - Phase I 2021	Rollers	2	8.00	80	0.38
Architectural Coating - Phase I 2021	Air Compressors	1	6.00	78	0.48
Building Construction - Phase II 2022	Cranes	1	7.00	231	0.29
Building Construction - Phase II 2022	Forklifts	3	8.00	89	0.20
Building Construction - Phase II 2022	Generator Sets	1	8.00	84	0.74
Building Construction - Phase II 2022	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction - Phase II 2022	Welders	1	8.00	46	0.45
Paving - Phase II 2022	Pavers	2	8.00	130	0.42
Paving - Phase II 2022	Paving Equipment	2	8.00	132	0.36

Paving - Phase II 2022	Rollers	2	8.00	80	0.38
Architectural Coating - Phase II 2022	Air Compressors	1	6.00	78	0.48
Building Construction - Phase III 2023	Cranes	1	7.00	231	0.29
Building Construction - Phase III 2023	Forklifts	3	8.00	89	0.20
Building Construction - Phase III 2023	Generator Sets	1	8.00	84	0.74
Building Construction - Phase III 2023	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction - Phase III 2023	Welders	1	8.00	46	0.45
Paving - Phase III 2023	Pavers	2	8.00	130	0.42
Paving - Phase III 2023	Paving Equipment	2	8.00	132	0.36
Paving - Phase III 2023	Rollers	2	8.00	80	0.38
Paving - Phase IV 2024	Pavers	2	8.00	130	0.42
Paving - Phase IV 2024	Paving Equipment	2	8.00	132	0.36
Paving - Phase IV 2024	Rollers	2	8.00	80	0.38
Architectural Coating - Phase III 2023	Air Compressors	1	6.00	78	0.48
Building Construction - Phase IV 2024	Cranes	1	7.00	231	0.29
Building Construction - Phase IV 2024	Forklifts	3	8.00	89	0.20
Building Construction - Phase IV 2024	Generator Sets	1	8.00	84	0.74
Building Construction - Phase IV 2024	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction - Phase IV 2024	Welders	1	8.00	46	0.45
Architectural Coating - Phase IV 2024	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase I 2021	9	190.00	68.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase I 2021	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase I 2021	1	38.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase II 2022	9	190.00	68.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase II 2022	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase II 2022	1	38.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase III 2023	9	190.00	68.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase III 2023	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase IV 2024	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase III 2023	1	38.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase IV 2024	9	190.00	68.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase IV 2024	1	38.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**1.0000e-005**	**0.0233**	**0.0233**	**0.0000**	**0.0216**	**0.0216**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	5.7000e-004	5.9500e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5592	1.5592	4.0000e-005	0.0000	1.5602
Total	**8.8000e-004**	**5.7000e-004**	**5.9500e-003**	**2.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.5592**	**1.5592**	**4.0000e-005**	**0.0000**	**1.5602**

3.2 Demolition - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9300e-003	0.0301	0.3492	5.8000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**6.9300e-003**	**0.0301**	**0.3492**	**5.8000e-004**	**0.0000**	**4.9000e-004**	**4.9000e-004**	**0.0000**	**4.9000e-004**	**4.9000e-004**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	5.7000e-004	5.9500e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5592	1.5592	4.0000e-005	0.0000	1.5602
Total	**8.8000e-004**	**5.7000e-004**	**5.9500e-003**	**2.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.5592**	**1.5592**	**4.0000e-005**	**0.0000**	**1.5602**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	4.7600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2474	1.2474	3.0000e-005	0.0000	1.2482
Total	**7.0000e-004**	**4.6000e-004**	**4.7600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2474**	**1.2474**	**3.0000e-005**	**0.0000**	**1.2482**

3.3 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0813	0.0000	0.0813	0.0447	0.0000	0.0447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0202	0.2087	3.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**4.6600e-003**	**0.0202**	**0.2087**	**3.8000e-004**	**0.0813**	**4.5000e-004**	**0.0818**	**0.0447**	**4.5000e-004**	**0.0451**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	4.7600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2474	1.2474	3.0000e-005	0.0000	1.2482
Total	**7.0000e-004**	**4.6000e-004**	**4.7600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2474**	**1.2474**	**3.0000e-005**	**0.0000**	**1.2482**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0943	1.0440	0.6948	1.4000e-003		0.0447	0.0447		0.0411	0.0411	0.0000	122.6137	122.6137	0.0397	0.0000	123.6051
Total	**0.0943**	**1.0440**	**0.6948**	**1.4000e-003**	**0.1952**	**0.0447**	**0.2398**	**0.0809**	**0.0411**	**0.1220**	**0.0000**	**122.6137**	**122.6137**	**0.0397**	**0.0000**	**123.6051**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7500e-003	1.1500e-003	0.0119	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.1184	3.1184	8.0000e-005	0.0000	3.1204
Total	**1.7500e-003**	**1.1500e-003**	**0.0119**	**3.0000e-005**	**3.6000e-003**	**2.0000e-005**	**3.6200e-003**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**0.0000**	**3.1184**	**3.1184**	**8.0000e-005**	**0.0000**	**3.1204**

3.4 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0878	0.0000	0.0878	0.0364	0.0000	0.0364	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0171	0.0743	0.7425	1.4000e-003		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	122.6136	122.6136	0.0397	0.0000	123.6050
Total	**0.0171**	**0.0743**	**0.7425**	**1.4000e-003**	**0.0878**	**6.1000e-004**	**0.0884**	**0.0364**	**6.1000e-004**	**0.0370**	**0.0000**	**122.6136**	**122.6136**	**0.0397**	**0.0000**	**123.6050**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7500e-003	1.1500e-003	0.0119	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.1184	3.1184	8.0000e-005	0.0000	3.1204
Total	**1.7500e-003**	**1.1500e-003**	**0.0119**	**3.0000e-005**	**3.6000e-003**	**2.0000e-005**	**3.6200e-003**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**0.0000**	**3.1184**	**3.1184**	**8.0000e-005**	**0.0000**	**3.1204**

3.5 Building Construction - Phase I 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1521	1.3946	1.3260	2.1500e-003		0.0767	0.0767		0.0721	0.0721	0.0000	185.3098	185.3098	0.0447	0.0000	186.4275
Total	**0.1521**	**1.3946**	**1.3260**	**2.1500e-003**		**0.0767**	**0.0767**		**0.0721**	**0.0721**	**0.0000**	**185.3098**	**185.3098**	**0.0447**	**0.0000**	**186.4275**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0175	0.5998	0.1094	1.5300e-003	0.0361	1.6900e-003	0.0378	0.0104	1.6100e-003	0.0120	0.0000	145.5260	145.5260	0.0111	0.0000	145.8038
Worker	0.0592	0.0388	0.4020	1.1700e-003	0.1215	8.4000e-004	0.1224	0.0323	7.7000e-004	0.0331	0.0000	105.3320	105.3320	2.7800e-003	0.0000	105.4016
Total	**0.0767**	**0.6386**	**0.5115**	**2.7000e-003**	**0.1576**	**2.5300e-003**	**0.1601**	**0.0427**	**2.3800e-003**	**0.0451**	**0.0000**	**250.8581**	**250.8581**	**0.0139**	**0.0000**	**251.2054**

3.5 Building Construction - Phase I 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0262	0.1788	1.3968	2.1500e-003		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	185.3096	185.3096	0.0447	0.0000	186.4273
Total	**0.0262**	**0.1788**	**1.3968**	**2.1500e-003**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**185.3096**	**185.3096**	**0.0447**	**0.0000**	**186.4273**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0175	0.5998	0.1094	1.5300e-003	0.0361	1.6900e-003	0.0378	0.0104	1.6100e-003	0.0120	0.0000	145.5260	145.5260	0.0111	0.0000	145.8038
Worker	0.0592	0.0388	0.4020	1.1700e-003	0.1215	8.4000e-004	0.1224	0.0323	7.7000e-004	0.0331	0.0000	105.3320	105.3320	2.7800e-003	0.0000	105.4016
Total	**0.0767**	**0.6386**	**0.5115**	**2.7000e-003**	**0.1576**	**2.5300e-003**	**0.1601**	**0.0427**	**2.3800e-003**	**0.0451**	**0.0000**	**250.8581**	**250.8581**	**0.0139**	**0.0000**	**251.2054**

3.6 Paving - Phase I 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0151	0.1550	0.1758	2.7000e-004		8.1300e-003	8.1300e-003		7.4800e-003	7.4800e-003	0.0000	24.0282	24.0282	7.7700e-003	0.0000	24.2225
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0236**	**0.1550**	**0.1758**	**2.7000e-004**		**8.1300e-003**	**8.1300e-003**		**7.4800e-003**	**7.4800e-003**	**0.0000**	**24.0282**	**24.0282**	**7.7700e-003**	**0.0000**	**24.2225**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	4.7600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2474	1.2474	3.0000e-005	0.0000	1.2482
Total	**7.0000e-004**	**4.6000e-004**	**4.7600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2474**	**1.2474**	**3.0000e-005**	**0.0000**	**1.2482**

3.6 Paving - Phase I 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.3700e-003	0.0146	0.2076	2.7000e-004		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	24.0282	24.0282	7.7700e-003	0.0000	24.2224
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0119**	**0.0146**	**0.2076**	**2.7000e-004**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**24.0282**	**24.0282**	**7.7700e-003**	**0.0000**	**24.2224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.6000e-004	4.7600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2474	1.2474	3.0000e-005	0.0000	1.2482
Total	**7.0000e-004**	**4.6000e-004**	**4.7600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2474**	**1.2474**	**3.0000e-005**	**0.0000**	**1.2482**

3.7 Architectural Coating - Phase I 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.6612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3000e-003	0.0160	0.0191	3.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	2.6809	2.6809	1.8000e-004	0.0000	2.6855
Total	**6.6635**	**0.0160**	**0.0191**	**3.0000e-005**		**9.9000e-004**	**9.9000e-004**		**9.9000e-004**	**9.9000e-004**	**0.0000**	**2.6809**	**2.6809**	**1.8000e-004**	**0.0000**	**2.6855**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0200e-003	0.0106	3.0000e-005	3.1900e-003	2.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7650	2.7650	7.0000e-005	0.0000	2.7668
Total	**1.5500e-003**	**1.0200e-003**	**0.0106**	**3.0000e-005**	**3.1900e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7650**	**2.7650**	**7.0000e-005**	**0.0000**	**2.7668**

3.7 Architectural Coating - Phase I 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.6612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1000e-004	1.3500e-003	0.0192	3.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.6809	2.6809	1.8000e-004	0.0000	2.6855
Total	**6.6615**	**1.3500e-003**	**0.0192**	**3.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.6809**	**2.6809**	**1.8000e-004**	**0.0000**	**2.6855**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0200e-003	0.0106	3.0000e-005	3.1900e-003	2.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7650	2.7650	7.0000e-005	0.0000	2.7668
Total	**1.5500e-003**	**1.0200e-003**	**0.0106**	**3.0000e-005**	**3.1900e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7650**	**2.7650**	**7.0000e-005**	**0.0000**	**2.7668**

3.8 Building Construction - Phase II 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0427	0.3904	0.4091	6.7000e-004		0.0202	0.0202		0.0190	0.0190	0.0000	57.9313	57.9313	0.0139	0.0000	58.2783
Total	**0.0427**	**0.3904**	**0.4091**	**6.7000e-004**		**0.0202**	**0.0202**		**0.0190**	**0.0190**	**0.0000**	**57.9313**	**57.9313**	**0.0139**	**0.0000**	**58.2783**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0900e-003	0.1776	0.0315	4.7000e-004	0.0113	4.6000e-004	0.0117	3.2600e-003	4.4000e-004	3.6900e-003	0.0000	45.0546	45.0546	3.3500e-003	0.0000	45.1383
Worker	0.0171	0.0108	0.1145	3.5000e-004	0.0380	2.5000e-004	0.0382	0.0101	2.3000e-004	0.0103	0.0000	31.7400	31.7400	7.8000e-004	0.0000	31.7594
Total	**0.0222**	**0.1884**	**0.1460**	**8.2000e-004**	**0.0492**	**7.1000e-004**	**0.0500**	**0.0134**	**6.7000e-004**	**0.0140**	**0.0000**	**76.7945**	**76.7945**	**4.1300e-003**	**0.0000**	**76.8976**

3.8 Building Construction - Phase II 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2000e-003	0.0559	0.4365	6.7000e-004		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	57.9312	57.9312	0.0139	0.0000	58.2782
Total	**8.2000e-003**	**0.0559**	**0.4365**	**6.7000e-004**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**57.9312**	**57.9312**	**0.0139**	**0.0000**	**58.2782**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0900e-003	0.1776	0.0315	4.7000e-004	0.0113	4.6000e-004	0.0117	3.2600e-003	4.4000e-004	3.6900e-003	0.0000	45.0546	45.0546	3.3500e-003	0.0000	45.1383
Worker	0.0171	0.0108	0.1145	3.5000e-004	0.0380	2.5000e-004	0.0382	0.0101	2.3000e-004	0.0103	0.0000	31.7400	31.7400	7.8000e-004	0.0000	31.7594
Total	**0.0222**	**0.1884**	**0.1460**	**8.2000e-004**	**0.0492**	**7.1000e-004**	**0.0500**	**0.0134**	**6.7000e-004**	**0.0140**	**0.0000**	**76.7945**	**76.7945**	**4.1300e-003**	**0.0000**	**76.8976**

3.9 Paving - Phase II 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4100e-003	0.0445	0.0583	9.0000e-005		2.2700e-003	2.2700e-003		2.0900e-003	2.0900e-003	0.0000	8.0110	8.0110	2.5900e-003	0.0000	8.0758
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.0445**	**0.0583**	**9.0000e-005**		**2.2700e-003**	**2.2700e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**8.0110**	**8.0110**	**2.5900e-003**	**0.0000**	**8.0758**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.4000e-004	1.4500e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4009	0.4009	1.0000e-005	0.0000	0.4012
Total	**2.2000e-004**	**1.4000e-004**	**1.4500e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4009**	**0.4009**	**1.0000e-005**	**0.0000**	**0.4012**

3.9 Paving - Phase II 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1200e-003	4.8600e-003	0.0692	9.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.0110	8.0110	2.5900e-003	0.0000	8.0758
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6900e-003**	**4.8600e-003**	**0.0692**	**9.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.0110**	**8.0110**	**2.5900e-003**	**0.0000**	**8.0758**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.4000e-004	1.4500e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4009	0.4009	1.0000e-005	0.0000	0.4012
Total	**2.2000e-004**	**1.4000e-004**	**1.4500e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4009**	**0.4009**	**1.0000e-005**	**0.0000**	**0.4012**

3.10 Architectural Coating - Phase II 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.2204					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2000e-004	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	**2.2211**	**4.9300e-003**	**6.3500e-003**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.0000e-004	3.2100e-003	1.0000e-005	1.0600e-003	1.0000e-005	1.0700e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8887	0.8887	2.0000e-005	0.0000	0.8893
Total	**4.8000e-004**	**3.0000e-004**	**3.2100e-003**	**1.0000e-005**	**1.0600e-003**	**1.0000e-005**	**1.0700e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8887**	**0.8887**	**2.0000e-005**	**0.0000**	**0.8893**

3.10 Architectural Coating - Phase II 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.2204					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-004	4.5000e-004	6.4100e-003	1.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	**2.2205**	**4.5000e-004**	**6.4100e-003**	**1.0000e-005**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.0000e-004	3.2100e-003	1.0000e-005	1.0600e-003	1.0000e-005	1.0700e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8887	0.8887	2.0000e-005	0.0000	0.8893
Total	**4.8000e-004**	**3.0000e-004**	**3.2100e-003**	**1.0000e-005**	**1.0600e-003**	**1.0000e-005**	**1.0700e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8887**	**0.8887**	**2.0000e-005**	**0.0000**	**0.8893**

3.11 Building Construction - Phase III 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0236	0.2158	0.2437	4.0000e-004		0.0105	0.0105		9.8800e-003	9.8800e-003	0.0000	34.7707	34.7707	8.2700e-003	0.0000	34.9775
Total	**0.0236**	**0.2158**	**0.2437**	**4.0000e-004**		**0.0105**	**0.0105**		**9.8800e-003**	**9.8800e-003**	**0.0000**	**34.7707**	**34.7707**	**8.2700e-003**	**0.0000**	**34.9775**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1200e-003	0.0823	0.0156	2.8000e-004	6.7600e-003	8.0000e-005	6.8400e-003	1.9500e-003	8.0000e-005	2.0300e-003	0.0000	26.3755	26.3755	1.3800e-003	0.0000	26.4100
Worker	9.5500e-003	5.8100e-003	0.0626	2.0000e-004	0.0228	1.5000e-004	0.0229	6.0600e-003	1.4000e-004	6.1900e-003	0.0000	18.3338	18.3338	4.2000e-004	0.0000	18.3441
Total	**0.0117**	**0.0881**	**0.0782**	**4.8000e-004**	**0.0295**	**2.3000e-004**	**0.0298**	**8.0100e-003**	**2.2000e-004**	**8.2200e-003**	**0.0000**	**44.7093**	**44.7093**	**1.8000e-003**	**0.0000**	**44.7542**

3.11 Building Construction - Phase III 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9200e-003	0.0335	0.2619	4.0000e-004		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	34.7707	34.7707	8.2700e-003	0.0000	34.9775
Total	**4.9200e-003**	**0.0335**	**0.2619**	**4.0000e-004**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**34.7707**	**34.7707**	**8.2700e-003**	**0.0000**	**34.9775**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1200e-003	0.0823	0.0156	2.8000e-004	6.7600e-003	8.0000e-005	6.8400e-003	1.9500e-003	8.0000e-005	2.0300e-003	0.0000	26.3755	26.3755	1.3800e-003	0.0000	26.4100
Worker	9.5500e-003	5.8100e-003	0.0626	2.0000e-004	0.0228	1.5000e-004	0.0229	6.0600e-003	1.4000e-004	6.1900e-003	0.0000	18.3338	18.3338	4.2000e-004	0.0000	18.3441
Total	**0.0117**	**0.0881**	**0.0782**	**4.8000e-004**	**0.0295**	**2.3000e-004**	**0.0298**	**8.0100e-003**	**2.2000e-004**	**8.2200e-003**	**0.0000**	**44.7093**	**44.7093**	**1.8000e-003**	**0.0000**	**44.7542**

3.12 Paving - Phase III 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0700e-003	0.0204	0.0292	5.0000e-005		1.0200e-003	1.0200e-003		9.4000e-004	9.4000e-004	0.0000	4.0054	4.0054	1.3000e-003	0.0000	4.0378
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0106**	**0.0204**	**0.0292**	**5.0000e-005**		**1.0200e-003**	**1.0200e-003**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**4.0054**	**4.0054**	**1.3000e-003**	**0.0000**	**4.0378**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	6.0000e-005	6.6000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.1930	0.1930	0.0000	0.0000	0.1931
Total	**1.0000e-004**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.1930**	**0.1930**	**0.0000**	**0.0000**	**0.1931**

3.12 Paving - Phase III 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-004	2.4300e-003	0.0346	5.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0054	4.0054	1.3000e-003	0.0000	4.0378
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1300e-003**	**2.4300e-003**	**0.0346**	**5.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.0054**	**4.0054**	**1.3000e-003**	**0.0000**	**4.0378**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	6.0000e-005	6.6000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.1930	0.1930	0.0000	0.0000	0.1931
Total	**1.0000e-004**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.1930**	**0.1930**	**0.0000**	**0.0000**	**0.1931**

3.13 Architectural Coating - Phase III 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8000e-004	2.6100e-003	3.6200e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	0.5107	0.5107	3.0000e-005	0.0000	0.5114
Total	**1.1106**	**2.6100e-003**	**3.6200e-003**	**1.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.5107**	**0.5107**	**3.0000e-005**	**0.0000**	**0.5114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.6700e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.4889	0.4889	1.0000e-005	0.0000	0.4892
Total	**2.5000e-004**	**1.5000e-004**	**1.6700e-003**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4889**	**0.4889**	**1.0000e-005**	**0.0000**	**0.4892**

3.13 Architectural Coating - Phase III 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0000e-005	2.6000e-004	3.6600e-003	1.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	0.5107	0.5107	3.0000e-005	0.0000	0.5114
Total	**1.1103**	**2.6000e-004**	**3.6600e-003**	**1.0000e-005**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.5107**	**0.5107**	**3.0000e-005**	**0.0000**	**0.5114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.6700e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.4889	0.4889	1.0000e-005	0.0000	0.4892
Total	**2.5000e-004**	**1.5000e-004**	**1.6700e-003**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4889**	**0.4889**	**1.0000e-005**	**0.0000**	**0.4892**

3.14 Architectural Coating - Phase IV 2024 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8000e-004	2.6100e-003	3.6200e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	0.5107	0.5107	3.0000e-005	0.0000	0.5114
Total	**1.1106**	**2.6100e-003**	**3.6200e-003**	**1.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.5107**	**0.5107**	**3.0000e-005**	**0.0000**	**0.5114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.6700e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.4889	0.4889	1.0000e-005	0.0000	0.4892
Total	**2.5000e-004**	**1.5000e-004**	**1.6700e-003**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4889**	**0.4889**	**1.0000e-005**	**0.0000**	**0.4892**

3.14 Architectural Coating - Phase IV 2024 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0000e-005	2.6000e-004	3.6600e-003	1.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	0.5107	0.5107	3.0000e-005	0.0000	0.5114
Total	**1.1103**	**2.6000e-004**	**3.6600e-003**	**1.0000e-005**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.5107**	**0.5107**	**3.0000e-005**	**0.0000**	**0.5114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.6700e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.4889	0.4889	1.0000e-005	0.0000	0.4892
Total	**2.5000e-004**	**1.5000e-004**	**1.6700e-003**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.4889**	**0.4889**	**1.0000e-005**	**0.0000**	**0.4892**

3.15 Building Construction - Phase IV 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0221	0.2017	0.2425	4.0000e-004		9.2000e-003	9.2000e-003		8.6500e-003	8.6500e-003	0.0000	34.7774	34.7774	8.2200e-003	0.0000	34.9830
Total	**0.0221**	**0.2017**	**0.2425**	**4.0000e-004**		**9.2000e-003**	**9.2000e-003**		**8.6500e-003**	**8.6500e-003**	**0.0000**	**34.7774**	**34.7774**	**8.2200e-003**	**0.0000**	**34.9830**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0600e-003	0.0816	0.0147	2.8000e-004	6.7600e-003	8.0000e-005	6.8400e-003	1.9500e-003	8.0000e-005	2.0300e-003	0.0000	26.1761	26.1761	1.4000e-003	0.0000	26.2111
Worker	8.9200e-003	5.2200e-003	0.0577	1.9000e-004	0.0228	1.4000e-004	0.0229	6.0600e-003	1.3000e-004	6.1900e-003	0.0000	17.6368	17.6368	3.7000e-004	0.0000	17.6461
Total	**0.0110**	**0.0868**	**0.0725**	**4.7000e-004**	**0.0295**	**2.2000e-004**	**0.0298**	**8.0100e-003**	**2.1000e-004**	**8.2200e-003**	**0.0000**	**43.8129**	**43.8129**	**1.7700e-003**	**0.0000**	**43.8572**

3.15 Building Construction - Phase IV 2024 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9200e-003	0.0335	0.2619	4.0000e-004		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	34.7773	34.7773	8.2200e-003	0.0000	34.9829
Total	**4.9200e-003**	**0.0335**	**0.2619**	**4.0000e-004**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**34.7773**	**34.7773**	**8.2200e-003**	**0.0000**	**34.9829**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0600e-003	0.0816	0.0147	2.8000e-004	6.7600e-003	8.0000e-005	6.8400e-003	1.9500e-003	8.0000e-005	2.0300e-003	0.0000	26.1761	26.1761	1.4000e-003	0.0000	26.2111
Worker	8.9200e-003	5.2200e-003	0.0577	1.9000e-004	0.0228	1.4000e-004	0.0229	6.0600e-003	1.3000e-004	6.1900e-003	0.0000	17.6368	17.6368	3.7000e-004	0.0000	17.6461
Total	**0.0110**	**0.0868**	**0.0725**	**4.7000e-004**	**0.0295**	**2.2000e-004**	**0.0298**	**8.0100e-003**	**2.1000e-004**	**8.2200e-003**	**0.0000**	**43.8129**	**43.8129**	**1.7700e-003**	**0.0000**	**43.8572**

3.16 Paving - Phase IV 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0191	0.0293	5.0000e-005		9.4000e-004	9.4000e-004		8.6000e-004	8.6000e-004	0.0000	4.0053	4.0053	1.3000e-003	0.0000	4.0377
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0106**	**0.0191**	**0.0293**	**5.0000e-005**		**9.4000e-004**	**9.4000e-004**		**8.6000e-004**	**8.6000e-004**	**0.0000**	**4.0053**	**4.0053**	**1.3000e-003**	**0.0000**	**4.0377**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	6.1000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.1857	0.1857	0.0000	0.0000	0.1858
Total	**9.0000e-005**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.1857**	**0.1857**	**0.0000**	**0.0000**	**0.1858**

3.16 Paving - Phase IV 2024 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-004	2.4300e-003	0.0346	5.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0053	4.0053	1.3000e-003	0.0000	4.0377
Paving	8.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1300e-003**	**2.4300e-003**	**0.0346**	**5.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.0053**	**4.0053**	**1.3000e-003**	**0.0000**	**4.0377**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	6.1000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.1857	0.1857	0.0000	0.0000	0.1858
Total	**9.0000e-005**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.1857**	**0.1857**	**0.0000**	**0.0000**	**0.1858**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6533	1.2233	7.5530	0.0202	1.9097	0.0176	1.9273	0.5099	0.0164	0.5263	0.0000	1,830.4311	1,830.4311	0.0740	0.0000	1,832.2809
Unmitigated	0.6633	1.2724	7.8334	0.0211	2.0009	0.0184	2.0192	0.5342	0.0171	0.5513	0.0000	1,915.4602	1,915.4602	0.0771	0.0000	1,917.3874

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,865.92	1,942.36	1689.52	5,365,713	5,121,145
Total	1,865.92	1,942.36	1,689.52	5,365,713	5,121,145

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.506092	0.142602	0.189295	0.124521	0.019914	0.005374	0.001664	0.000051	0.001797	0.001623	0.005307	0.000969	0.000792
Single Family Housing	0.506092	0.142602	0.189295	0.124521	0.019914	0.005374	0.001664	0.000051	0.001797	0.001623	0.005307	0.000969	0.000792

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	496.2186	496.2186	0.0205	4.2400e-003	497.9939
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	496.2186	496.2186	0.0205	4.2400e-003	497.9939
NaturalGas Mitigated	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	357.2203	357.2203	6.8500e-003	6.5500e-003	359.3430
NaturalGas Unmitigated	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	357.2203	357.2203	6.8500e-003	6.5500e-003	359.3430

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.69405e+006	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	357.2203	357.2203	6.8500e-003	6.5500e-003	359.3430
Total		**0.0361**	**0.3085**	**0.1313**	**1.9700e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**357.2203**	**357.2203**	**6.8500e-003**	**6.5500e-003**	**359.3430**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.69405e+006	0.0361	0.3085	0.1313	1.9700e-003		0.0249	0.0249		0.0249	0.0249	0.0000	357.2203	357.2203	6.8500e-003	6.5500e-003	359.3430
Total		**0.0361**	**0.3085**	**0.1313**	**1.9700e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**357.2203**	**357.2203**	**6.8500e-003**	**6.5500e-003**	**359.3430**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.55739e+006	496.2186	0.0205	4.2400e-003	497.9939
Total		**496.2186**	**0.0205**	**4.2400e-003**	**497.9939**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.55739e+006	496.2186	0.0205	4.2400e-003	497.9939
Total		**496.2186**	**0.0205**	**4.2400e-003**	**497.9939**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.6243	0.0902	1.4897	5.4000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	87.2859	87.2859	3.9300e-003	1.5600e-003	87.8481
Unmitigated	1.6243	0.0902	1.4897	5.4000e-004		0.0140	0.0140		0.0140	0.0140	0.0000	87.2859	87.2859	3.9300e-003	1.5600e-003	87.8481

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4613					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.5800e-003	0.0733	0.0312	4.7000e-004		5.9300e-003	5.9300e-003		5.9300e-003	5.9300e-003	0.0000	84.9087	84.9087	1.6300e-003	1.5600e-003	85.4132
Landscaping	0.0442	0.0168	1.4585	8.0000e-005		8.0400e-003	8.0400e-003		8.0400e-003	8.0400e-003	0.0000	2.3772	2.3772	2.3000e-003	0.0000	2.4348
Total	**1.6243**	**0.0902**	**1.4897**	**5.5000e-004**		**0.0140**	**0.0140**		**0.0140**	**0.0140**	**0.0000**	**87.2859**	**87.2859**	**3.9300e-003**	**1.5600e-003**	**87.8481**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.1102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4613					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.5800e-003	0.0733	0.0312	4.7000e-004		5.9300e-003	5.9300e-003		5.9300e-003	5.9300e-003	0.0000	84.9087	84.9087	1.6300e-003	1.5600e-003	85.4132
Landscaping	0.0442	0.0168	1.4585	8.0000e-005		8.0400e-003	8.0400e-003		8.0400e-003	8.0400e-003	0.0000	2.3772	2.3772	2.3000e-003	0.0000	2.4348
Total	**1.6243**	**0.0902**	**1.4897**	**5.5000e-004**		**0.0140**	**0.0140**		**0.0140**	**0.0140**	**0.0000**	**87.2859**	**87.2859**	**3.9300e-003**	**1.5600e-003**	**87.8481**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	35.0460	0.4174	0.0101	48.4878
Unmitigated	35.0460	0.4174	0.0101	48.4878

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	12.7702 / 8.05077	35.0460	0.4174	0.0101	48.4878
Total		**35.0460**	**0.4174**	**0.0101**	**48.4878**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	12.7702 / 8.05077	35.0460	0.4174	0.0101	48.4878
Total		**35.0460**	**0.4174**	**0.0101**	**48.4878**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	34.2779	2.0258	0.0000	84.9220
Unmitigated	42.8473	2.5322	0.0000	106.1525

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	211.08	42.8473	2.5322	0.0000	106.1525
Total		**42.8473**	**2.5322**	**0.0000**	**106.1525**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	168.864	34.2779	2.0258	0.0000	84.9220
Total		**34.2779**	**2.0258**	**0.0000**	**84.9220**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EXHIBIT I

TRAFFIC REPORT (EXCERPTS)

Project No: 627-02

TRAFFIC STUDY

PROPOSED SINGLE-FAMILY RESIDENTIAL DEVELOPMENT
CECIL AVENUE AND HIETT AVENUE
CITY OF DELANO

Prepared for:

BLUMER CONSTRUCTION, INC.

January 2021

Prepared by:

RUETTGERS & SCHULER
CIVIL ENGINEERS

1800 30th Street, Suite 260
Bakersfield, California 93301

Ian J. Parks, RCE 58155

TABLE OF CONTENTS

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INTRODUCTION

The purpose of this study is to evaluate the potential traffic impacts of a proposed single-family residential development located on the west side of Hiett Avenue, north of Cecil Avenue, in the City of Delano, California. A vicinity map is presented in Figure 1 and a location map is presented in Figure 2.

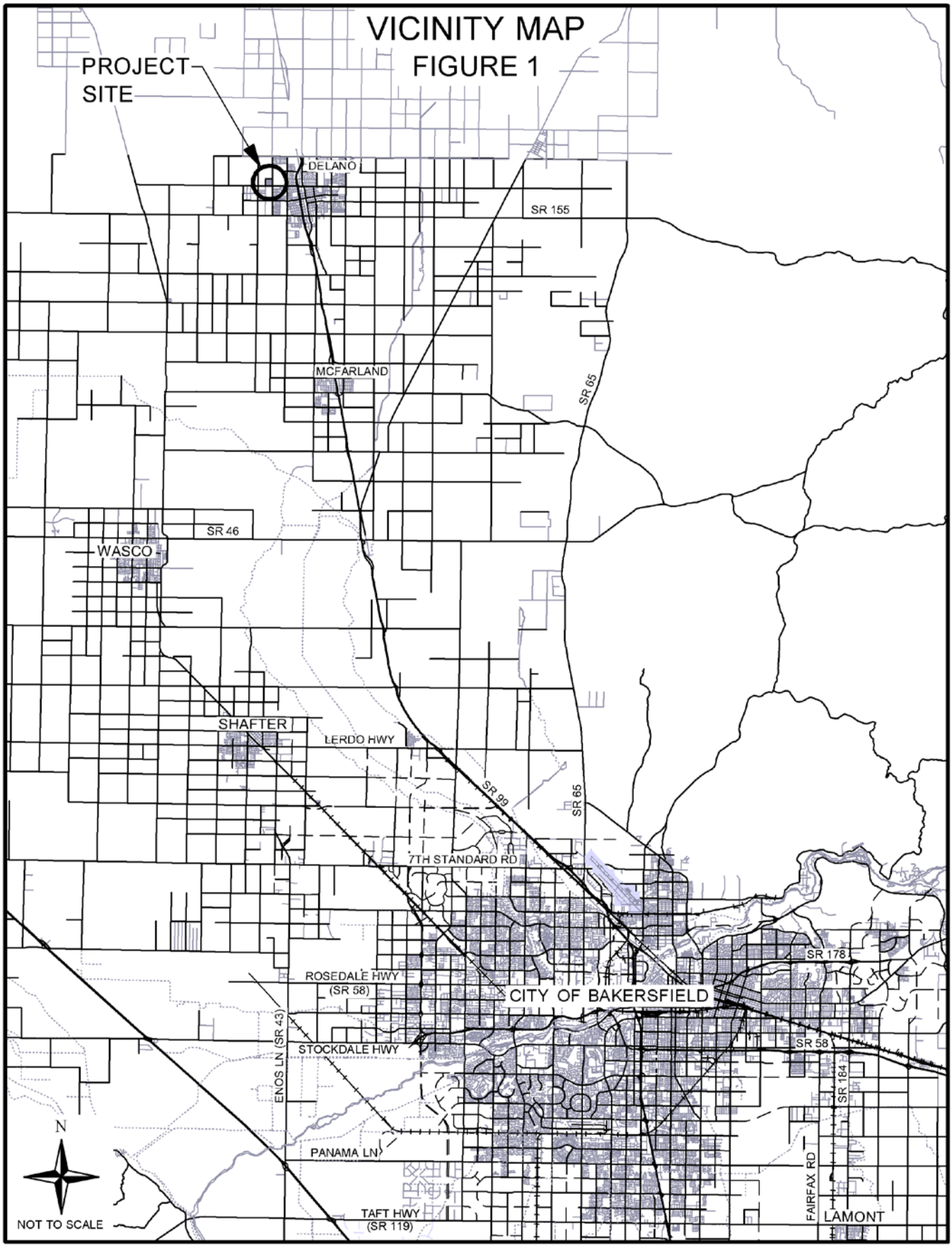
The study methodology is consistent with the California Department of Transportation (Caltrans) "Guide for the Preparation of Traffic Impact Studies," dated December 2002, and Section 15064.3(b) of the California Environmental Quality Act (CEQA), which became effective July 1, 2020. The scope of the study includes four intersections (all signalized) and was developed in coordination with staff from the City of Delano and Caltrans.

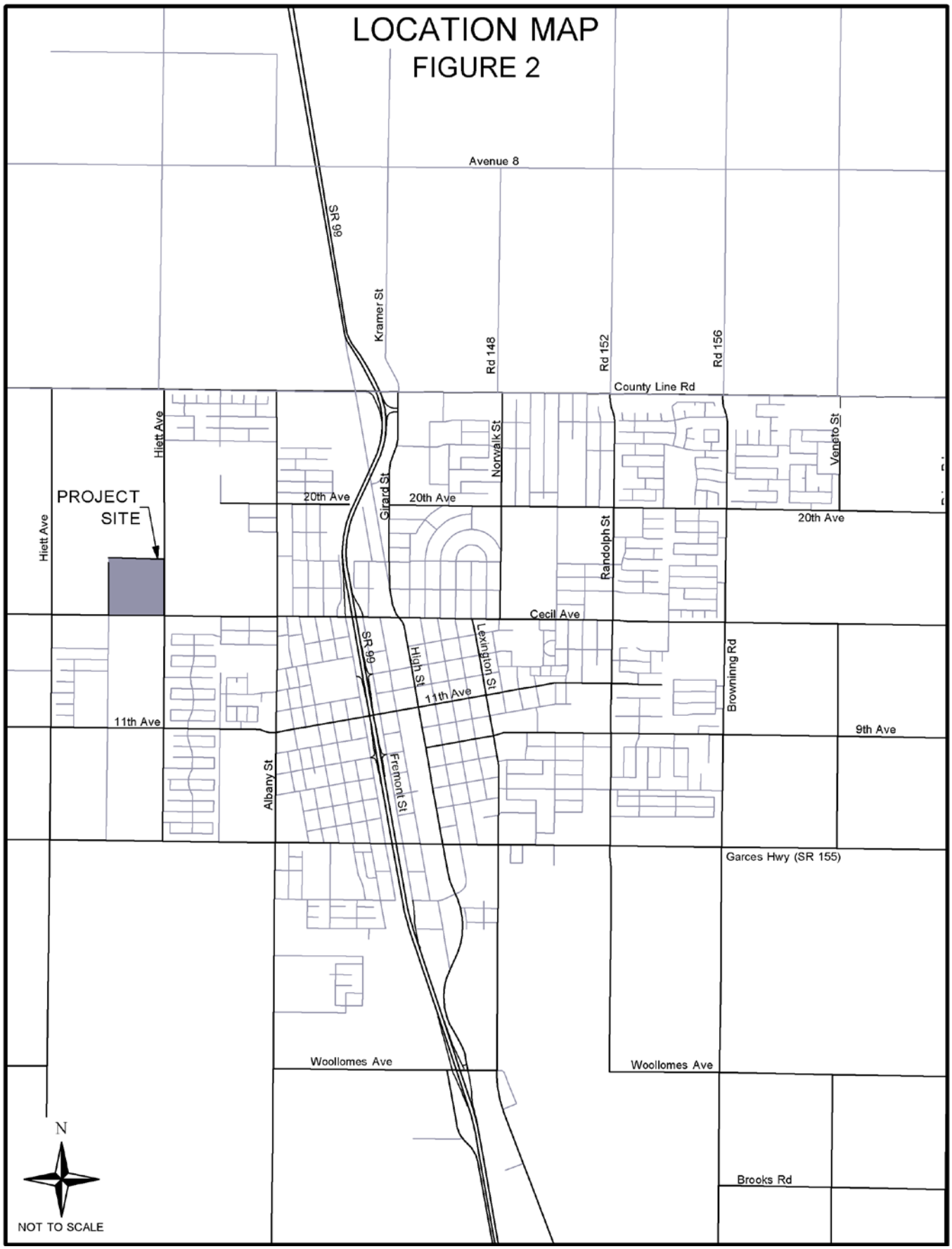
A. Project Land Use and Site Access

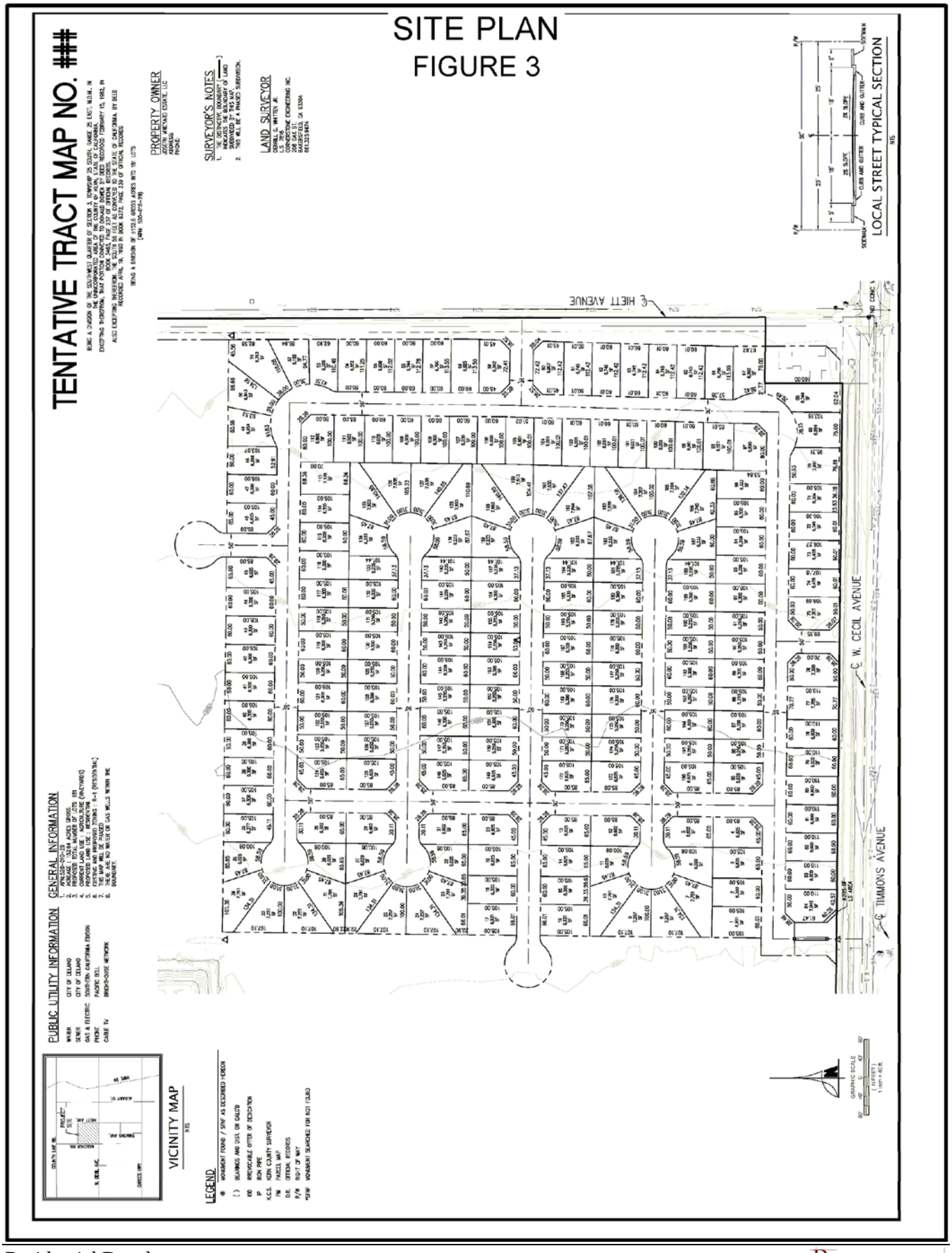
The project site is situated on approximately 38 acres of land currently used for agricultural production. The property is zoned R-1 (Single-Family Residential) and has a General Plan Land Use designation of Low Residential. The proposed development would include 196 single-family lots. Access to the project would be provided by way of Hiett Avenue and Cecil Avenue. A tentative subdivision map is provided in Figure 3.

B. Existing Land Uses in Project Vicinity

Land used for agricultural purposes is located immediately north, south, east and west of the project. Residential developments lie further to the south and east.


VICINITY MAP
FIGURE 1
PROJECT SITE
DELANO
SR 155
MCFARLAND
SR 65
SR 46
WASCO
SHAFTER
LERDO HWY
SR 99
SR 65
7TH STANDARD RD
SR 178
ROSEDALE HWY (SR 58)
CITY OF BAKERSFIELD
STOCKDALE HWY
SR 58
ENOS LN (SR 43)
SR 184
PANAMA LN
FAIRFAX RD
TAFT HWY (SR 119)
LAMONT
N
NOT TO SCALE


LOCATION MAP
FIGURE 2
Avenue 8
SR 99
Kramer St
Rd 148
Rd 152
Rd 156
County Line Rd
Hiett Ave
PROJECT SITE
Hiett Ave
20th Ave
Girard St
20th Ave
Norwalk St
Veneto St
20th Ave
Randolph St
Cecil Ave
SR 99
High St
Lexington St
11th Ave
11th Ave
Browninng Rd
9th Ave
Albany St
Fremont St
Garces Hwy (SR 155)
Woollomes Ave
Woollomes Ave
Brooks Rd
N
NOT TO SCALE


SITE PLAN
FIGURE 3
TENTATIVE TRACT MAP NO. ###
PROPERTY OWNER
SURVEYOR'S NOTES
LAND SURVEYOR
LOCAL STREET TYPICAL SECTION
PUBLIC UTILITY INFORMATION
GENERAL INFORMATION
VICINITY MAP
LEGEND
HIETT AVENUE
C. W. CECIL AVENUE
C. TIMMONS AVENUE

C. Roadway Descriptions

Albany Street is an arterial that extends south from County Line Road approximately 0.5 miles west of State Route 99. It operates as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere. Albany Street provides access to agricultural and residential land uses within the study area.

Cecil Avenue extends from State Route 43 to Famoso Porterville Highway and provides access to commercial, residential, and agricultural land uses. In the vicinity of the project it operates as a four-lane arterial with curb and gutter.

Ellington Street extends south of County Line Road approximately 0.2 miles west of State Route 99 and provides access to residential and commercial land uses. It operates as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere.

Freemont Street extends south of County Line Road approximately 0.2 miles east of State Route 99 and provides access to residential and commercial land uses. It operates as a two-lane roadway with curb and gutter.

Hiett Street is a collector that extends south from County Line Road midway between Albany Street and Melcher Road. It exists as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere. Hiett Street provides access to agricultural and residential land uses within the study area.

State Route 99 is a major north-south route through the central valley of California, extending from Interstate 5 south of Bakersfield to Sacramento. State Route 99 operates as a four-to-six lane freeway within the study area.

PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The project trip generation and design hour volumes shown in Table 1 were estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition (2017). Trip equations and directional splits for ITE Land Use Code 210 (Single-Family Detached Housing) was used to estimate project trips for weekday peak hour of adjacent street traffic based on information provided by the project applicant.

Table 1
Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	196 Dwelling Units	eq	1931	eq	25% 36	75% 108	eq	63% 122	37% 72

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of project peak hour trips is shown in Table 2 and represents the movement of traffic accessing the project site by direction. The project trip distribution was developed based on site location and travel patterns anticipated for the proposed land use.

Table 2
Project Trip Distribution

Direction	Percent
North	30
East	30
South	30
West	10

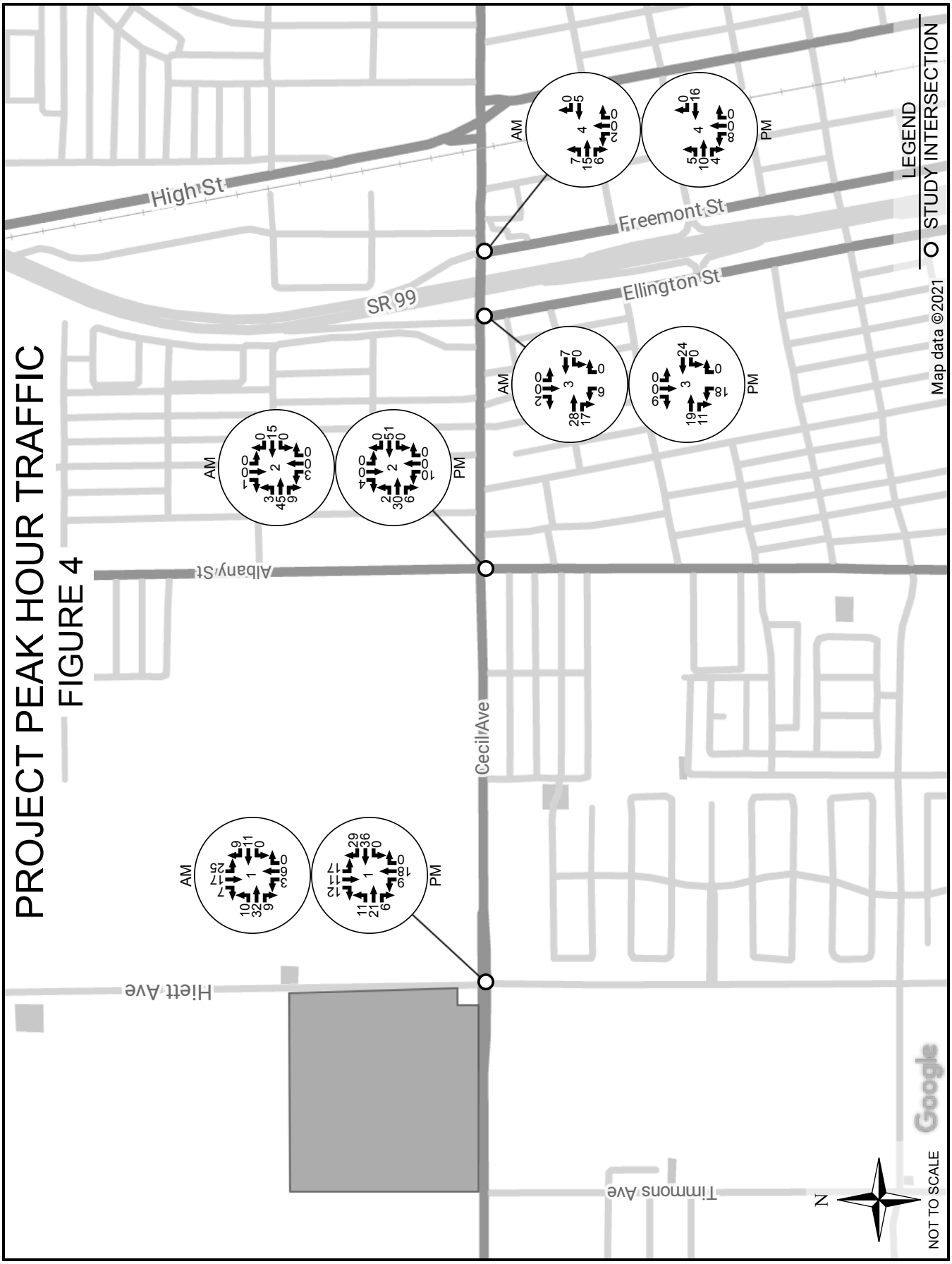
Project peak hour trips were assigned to the study intersections as shown in Figure 4. Project trip assignment was developed based on trip generation, trip distribution and likely travel routes for traffic accessing the project site.

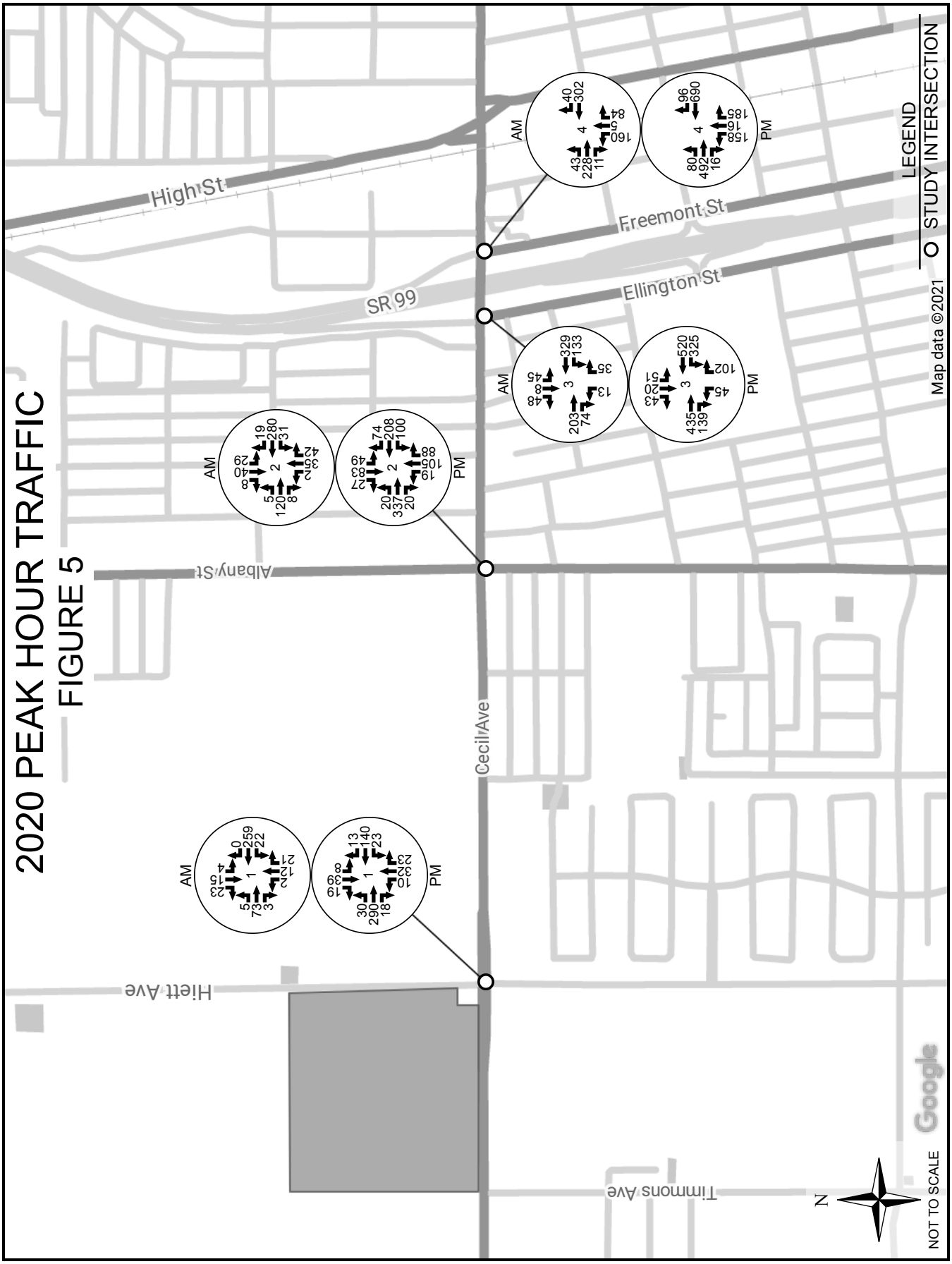
EXISTING AND FUTURE TRAFFIC

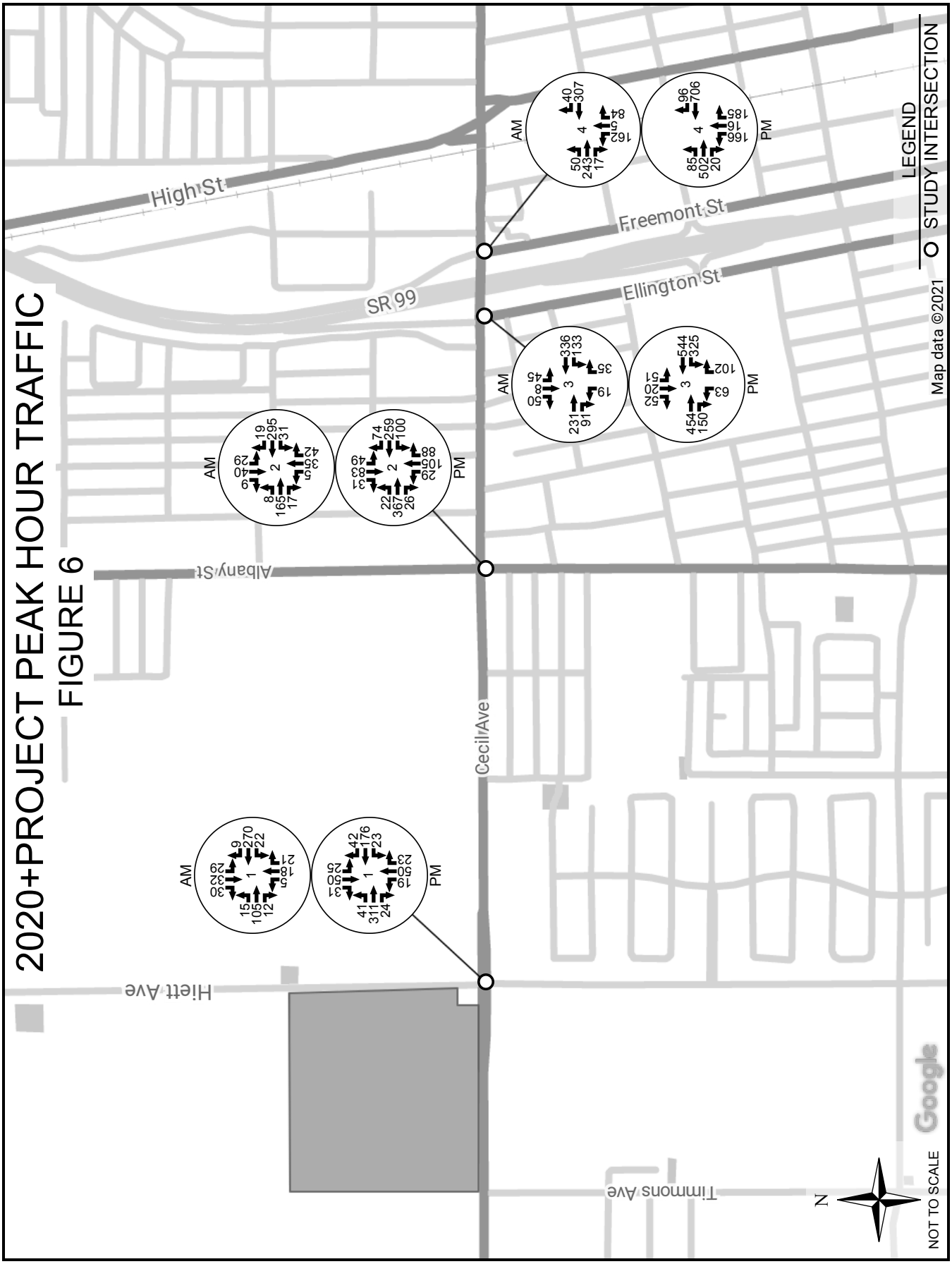
Weekday peak hour turning movements were counted at the study intersections in December 2020. Traffic counts were obtained between the hours of 7:30 and 8:30 AM, and 4:30 and 5:30 PM. Count data is included in the Appendix. Due to the current COVID-19 pandemic and the various shelter-in-place orders, the traffic counts were compared to historical turn movement volume data in the vicinity of the project. It was determined that the counts performed were generally accurate and do not represent an appreciable reduction. Therefore, no adjustments were made to the counts.

Annual growth rates ranging between 0.15 and 6.47 percent were applied to existing peak hour volumes to estimate future peak hour volumes for the year 2040 (planning horizon year). These growth rates were estimated based on a review of regional travel demand model data from the Kern Council of Governments (KernCOG).

Existing peak hour volumes are shown in Figure 5. Existing plus project peak hour volumes are shown in Figure 6. Future peak hour volumes for the year 2040, both without and with project traffic, are shown in Figures 7 and 8, respectively.


PROJECT PEAK HOUR TRAFFIC
FIGURE 4
LEGEND
STUDY INTERSECTION
Map data ©2021
NOT TO SCALE
N
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Google
AM
PM


2020 PEAK HOUR TRAFFIC
FIGURE 5
LEGEND
STUDY INTERSECTION
High St
Freemont St
SR 99
Ellington St
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
AM
PM
Map data ©2021
Google
N
NOT TO SCALE


2020+PROJECT PEAK HOUR TRAFFIC
FIGURE 6
LEGEND
STUDY INTERSECTION
AM
PM
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Map data ©2021
Google
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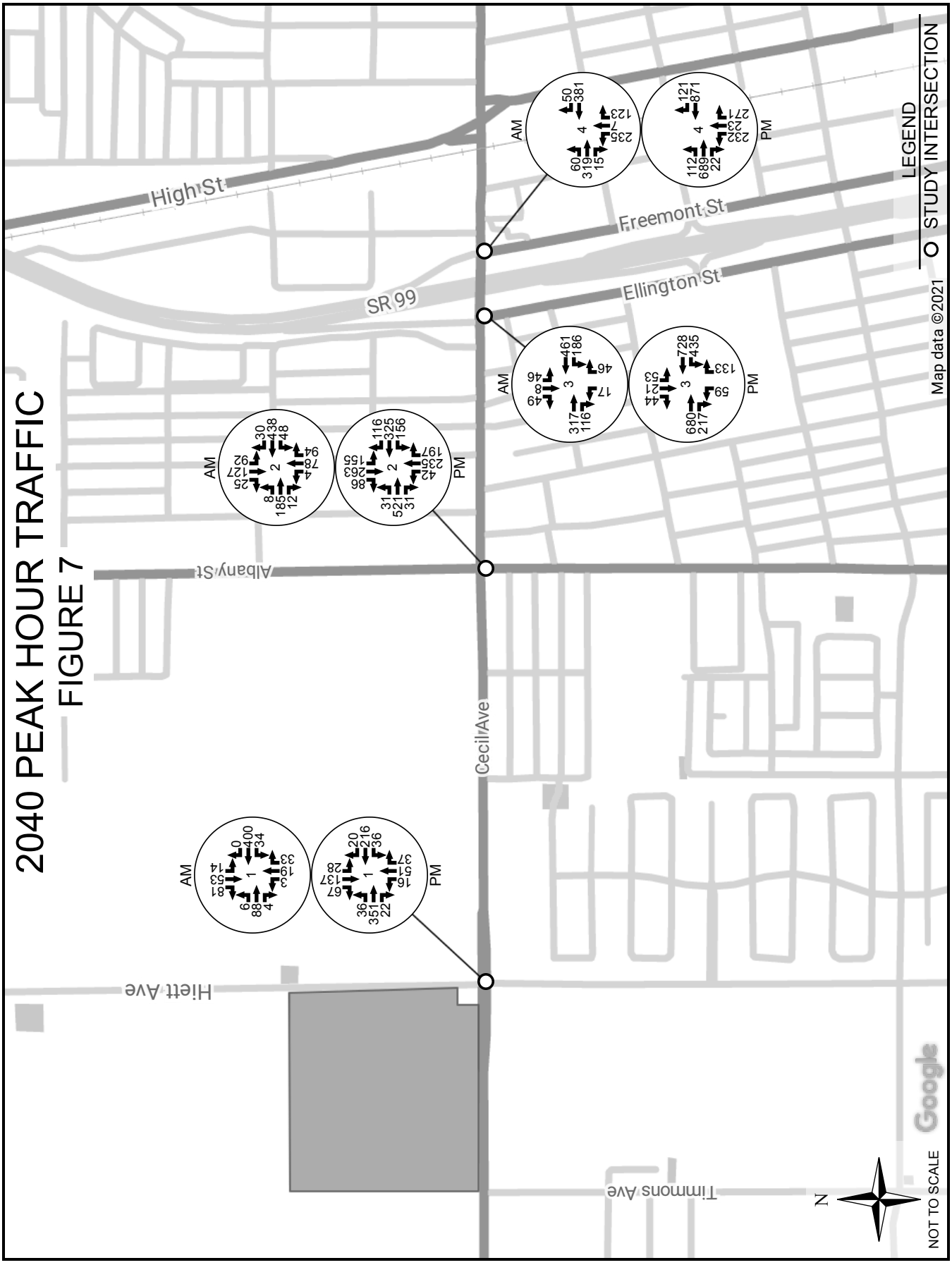
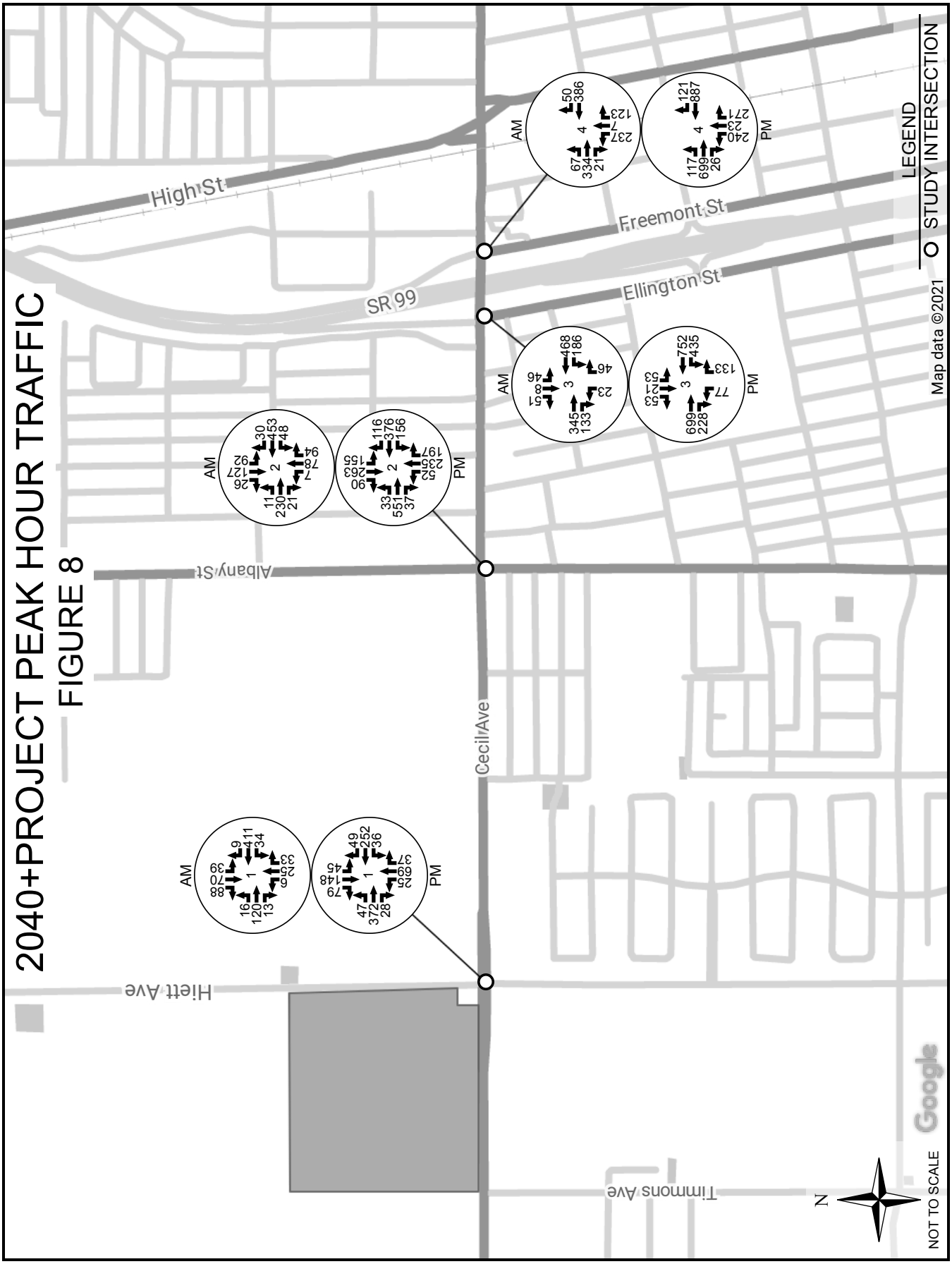
NOT TO SCALE


2040 PEAK HOUR TRAFFIC
FIGURE 7
LEGEND
STUDY INTERSECTION
Map data ©2021
NOT TO SCALE
N
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Google
AM
PM


2040+PROJECT PEAK HOUR TRAFFIC
FIGURE 8
LEGEND
STUDY INTERSECTION
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
AM
PM
Map data ©2021
Google
NOT TO SCALE
N

INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro 9 software from Trafficware. This software utilizes the capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual 2010 (HCM 2010). The analysis was performed for each of the following traffic scenarios.

- Existing (2020)
- Existing (2020) + Project
- Future (2040)
- Future (2040) + Project

Level of service (LOS) criteria for unsignalized and signalized intersections, as defined in HCM 2010, are presented in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

Level of Service	Average Control Delay (sec/veh)	Expected Delay to Minor Street Traffic
A	≤ 10	Little or no delay
B	> 10 and ≤ 15	Short delays
C	> 15 and ≤ 25	Average delays
D	> 25 and ≤ 35	Long delays
E	> 35 and ≤ 50	Very long delays
F	> 50	Extreme delays

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay (sec/veh)	Volume-to-Capacity Ratio
A	≤ 10	< 0.60
B	> 10 and ≤ 20	0.61 - 0.70
C	> 20 and ≤ 35	0.71 - 0.80
D	> 35 and ≤ 55	0.81 - 0.90
E	> 55 and ≤ 80	0.91 - 1.00
F	> 80	> 1.00

As stated in the City of Delano General Plan Circulation Element, the City has set a level of service standard of LOS C, except at freeway interchanges and other high-volume locations, where the standard

is LOS D. Caltrans also has a level of service standard of C. A minimum acceptable level of service threshold of LOS C was used for the purposes of this study.

Peak hour level of service for the study intersections is presented in Tables 3a and 3b. Intersection delay in seconds per vehicle is shown within parentheses for intersections operating below LOS C.

Table 3a
Intersection Level of Service
Weekday PM Peak Hour

#	Intersection	Control	2020	2020+ Project	2040	2040+ Project
1	Hiett Ave & Cecil Ave	Signal	B	C	C	C
2	Albany St & Cecil Ave	Signal	B	B	B	B
3	SR 99 SB Off Ramp/Ellington St & Cecil Ave	Signal	B	C	C	C
4	SR 99 NB On Ramp/Fremont St & Cecil Ave	Signal	B	B	C	C

Table 3b
Intersection Level of Service
Weekday AM Peak Hour

#	Intersection	Control	2020	2020+ Project	2040	2040+ Project
1	Hiett Ave & Cecil Ave	Signal	B	B	C	C
2	Albany St & Cecil Ave	Signal	A	A	B	B
3	SR 99 SB Off Ramp/Ellington St & Cecil Ave	Signal	B	B	B	B
4	SR 99 NB On Ramp/Fremont St & Cecil Ave	Signal	B	B	C	C

ROADWAY ANALYSIS

As noted previously, the City of Delano General Plan Circulation Element states that the City has a level of service standard of LOS C, except at freeway interchanges and other high-volume locations, where the standard is LOS D. Caltrans also has a level of service standard of LOS C. A minimum acceptable level of service threshold of LOS C was used for the purposes of this study.

Average daily traffic (ADT) volumes and roadway capacities are presented in Tables 5a and 5b, respectively. As defined in HCM 2010, a volume-to-capacity ratio (v/c) of greater than 0.80 corresponds to a LOS of less than C.

Table 4a
ADT Volumes

Roadway Segment	2020	Project ADT	2020+Proj ADT	2040 ADT	2040+Proj ADT
Cecil Ave: Hiett Ave to Albany St	10,329	1,025	11,354	15,968	16,993
Cecil Ave: Albany St to Ellington St	13,313	806	14,119	17,931	18,737
Cecil Ave: Ellington St to Freemont St	17,135	428	17,563	20,908	21,336

2020 ADT estimated based on 2019 count data obtained from KernCOG's Transportation Data Management System
Average annual growth rates applied to 2020 ADT to estimate 2040 ADT

Table 4b
Roadway Capacity

Roadway Segment	Existing Capacity	Mitigated Capacity	v/c 2020	v/c 2020+Proj	v/c 2040	v/c 2040+Proj	v/c (Mit) 2040+Proj
Cecil Ave: Hiett Ave to Albany St	13,100	27,360	0.79	**0.87**	**1.22**	**1.30**	0.41
Cecil Ave: Albany St to Ellington St	27,360	-	0.49	0.52	0.66	0.68	-
Cecil Ave: Ellington St to Freemont St	27,360	-	0.63	0.64	0.76	0.78	-

Existing Capacity (vehicles/day) taken from Table 3-2, City of Delano General Plan Circulation Element (page 3-9)

QUEUE LENGTH ANALYSIS

Existing and future peak hour volumes, both with and without project traffic, were used to analyze whether traffic queues exceed storage capacities at the State Route 58 ramps at Ellington Street and Freemont Street. The queue length analysis was conducted using Synchro 9 and SimTraffic software. The analysis results shown in Tables 5a and 5b are provided for informational purposes only. All lengths are reported in feet.

Table 5a
PM Queue Length Analysis
Weekday Peak Hour

Intersection	Cecil Ave & SR 99 SB Off Ramp/ Ellington St		Cecil Ave & SR 99 NB On Ramp/ Feemont St		
Movement	SBLT	SBR	EBL	WBR	NBT
Storage Capacity	1200	1200	120	-	-
2020	126	69	104	130	183
2020+Project	106	75	97	109	212
2040	112	70	114	261	315
2040+Project	120	70	81	190	271

Table 5b
AM Queue Length Analysis
Weekday Peak Hour

Intersection	Cecil Ave & SR 99 SB Off Ramp/ Ellington St		Cecil Ave & SR 99 NB On Ramp/ Feemont St		
Movement	1200	1200	120	-	-
Storage Capacity	SBLT	SBR	EBL	WBR	NBT
2020	110	70	67	45	160
2020+Project	120	69	52	25	148
2040	102	70	57	46	264
2040+Project	106	63	120	31	223

MITIGATION

Roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.

Table 6
Future Roadway Improvements and Local Mitigation

Roadway Segment	Total Improvements Required by 2040
Cecil Ave: Hiett Ave to Albany St	Add two lanes

VMT ANALYSIS

An evaluation of vehicle miles traveled (VMT) for project traffic was conducted based on applicable California Environmental Quality Act (CEQA) guidelines. The analysis involved comparing an estimate of VMT attributable to the project to a baseline VMT for the greater Delano area and assessing whether project VMT would result in a significant transportation impact.

VMT data was obtained from the Kern Council of Governments (KernCOG) in order to establish a baseline for daily vehicle miles traveled in the Kern County area. Based on household and employment populations in the greater Kern County area, as well as travel patterns throughout the region, KernCOG data shows an average VMT per trip of 9.76 miles.

Several factors were taken into consideration when estimating project VMT, including project trip generation and distribution, trip type and probable trip destination. As shown in Table 9, it is anticipated that the project would result in an average VMT per trip of 6.56 miles.

Table 7
Project Vehicle Miles Traveled

Trip Type	Daily Project Trips	Avg Trip Length (miles)	Daily Miles Traveled
AM Commuter Trips	144	21	3,024
PM Commuter Trips	194	21	4,074
Other Trips	1,593	4	5,576
		Average	6.56

Average commuter trip length based on trip generation/distribution and probable destinations
Assumed majority of commuter trips are work trips and half of work trips travel outside of Delano
Average trip length for other trips assumes majority of trips remain within greater Delano area

The project average VMT of 6.61 miles is approximately 32% lower than the average regional VMT of 9.76 miles. Therefore, the project will not result in a significant transportation impact under CEQA.

SUMMARY AND CONCLUSIONS

The purpose of this study is to evaluate the potential traffic impacts of a proposed single-family residential development located on the west side of Hiett Avenue, north of Cecil Avenue, in the City of Delano, California. The scope of the study includes four intersections (all signalized) and was developed in coordination with staff from the City of Delano and Caltrans.

All intersections currently operate at an acceptable level of service prior to, and with the addition of project traffic and are anticipated to continue to do so through 2040.

The segment of Cecil Avenue between Hiett Avenue and Albany Street currently operates below LOS C with the addition of project traffic and is shown to continue to operate below an acceptable level of service through the year 2040, both with and without project traffic. This segment can be mitigated to operate above LOS C with roadway widening.

The mitigation measures identified in Table 6 will be required, as described above, in order to reduce the impacts for the listed facilities to less-than-significant levels in the year 2040. Mitigation measures will be accomplished through improvements identified in the Delano Transportation Impact Fee program and adjacent development.

The average project VMT is approximately 32% less than the baseline average regional VMT. Therefore, the project will not result in a significant transportation impact under CEQA.

REFERENCES

1. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2014 Edition, California Department of Transportation (Caltrans)
2. City of Delano General Plan, December 2005
3. Highway Capacity Manual 2010, Transportation Research Board
4. Technical Advisory on Evaluating Transportation Impacts in CEQA, State of California, Governor's Office of Planning and Research (OPR), December 2018
5. Transportation Data Management System, Kern Council of Governments (KernCOG)
6. Trip Generation Manual, 10th Edition, Institute of Transportation Engineers (ITE)

EXHIBIT J

CO “HOT SPOTS” ANALYSIS

CO “Hot Spot” modeling is required if a traffic study reveals that the proposed project will reduce the LOS on one or more streets to E or F; or, if the proposed project will worsen an existing LOS F.

A traffic study is currently was prepared to detail the LOS change associated with the project. With the recommended mitigation measures, the proposed project is not expected to reduce the composite LOS to E or F at any of the impacted intersections.

Appendix C

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED DELANO TENTATIVE TRACT
NWC CECIL AVENUE AND HIETT AVENUE
DELANO, CALIFORNIA

PROJECT NO. 022-20138
JANUARY 20, 2021

Prepared for:

MR. WALTER SCOTT
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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

January 20, 2021

Project No. 022-20138

Mr. Walter Scott
Blumer Construction, Inc.
7440 Meany Avenue, Suite A
Bakersfield, California 93308

RE: Geotechnical Engineering Investigation
Proposed Delano Tentative Tract
NWC Cecil Avenue and Hiett Avenue
Delano, California

Dear Mr. Scott:

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Ryan K. Privett, PE
Project Engineer
RCE No. 59372

RKP:ht

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INTRODUCTION

This report presents the results of our Geotechnical Engineering Investigation for the proposed Delano Tentative Tract to be located at the northwest corner of Cecil Avenue and Hiett Avenue, in Delano, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, pavement design, and soil cement reactivity.

A site plan showing the approximate boring locations is presented following the text of this report. A description of the field investigation, boring logs, and the boring log legend are presented in Appendix A. Appendix A also contains a description of the laboratory testing phase of this study, along with the laboratory test results. Appendices B and C contain guides to earthwork and pavement specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements, and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our proposal dated September 23, 2020 (KA Proposal No. P674-20) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.
- A field investigation consisting of drilling 14 borings to depths ranging from approximately 10 to 50 feet for evaluation of the subsurface conditions at the project site.
- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structure are unavailable. On a preliminary basis, it is understood that the proposed development will include the construction of a new residential subdivision comprised of approximately 181 lots. The new buildings are planned to be single- and two-story wood-framed structures utilizing concrete slab-on-grade construction. Foundation loads are anticipated to be light. On-site paved roadways and landscaping are also planned for the development.

In the event, these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION AND SITE DESCRIPTION

The site is roughly rectangular in shape and encompasses approximately 152.6 acres. The site is located at the northwest corner of Cecil Avenue and Hiett Avenue, in Delano, California. Agricultural land is located north and west of the site. Fallow land is located south and east of the site. A rural residence is located at the northwest corner of the intersection of Cecil and Hiett and is not part of the proposed development. An existing drainage basin is present just beyond the northwest corner of the site.

Presently, the area of proposed development is agricultural land planted in a vineyard. An existing water well is located in the southeast portion of the site. Buried and overhead utilities are located along the edges of the site and also extend into the site. An unlined irrigation ditch trends east-west along the southern site boundary. The site is relatively flat and level with no major changes in grade.

GEOLOGIC SETTING

Geologically, the property is situated on the eastern flank, near the south end of the Great Valley Geomorphic Province. This province is a large northwesterly trending geosyncline or structural trough between the Coast Range Mountains and the Sierra Nevada Mountains. Erosion from both of these mountain systems has resulted in the deposition of immense thickness of sediments in the Valley floor. Heavily-laden streams from the Sierra Nevada have built very prominent alluvial fans along the margins of the San Joaquin Valley. This has resulted in a rather flat topography in the vicinity of the project site. The site is composed of alluvial deposits which are mostly cohesionless sands and silts.

The south end of the San Joaquin Valley is surrounded on all sides, excluding the north, by active fault systems (San Andreas, White Wolf-Breckenridge-Kern Canyon and Garlock Faults). Numerous smaller faults exist within the valley floor.

There is on-going seismic activity in the Kern County area, with the most noticeable earthquake being the July 21, 1952 Kern County Earthquake. The initial shock was 7.7 magnitude shake with the epicenter near Wheeler Ridge. Vertical displacements of as much as three feet occurred at the fault line. Estimated average value of the maximum bedrock accelerations from the 1952 event are about 0.25 gravity at the project site.

The closest known faults to the property are subsurface faults located at the Fruitvale Oil Field. These faults cut the older sediments and, although numerous, are not thought to be active in the last two million years.

No evidence was observed that indicated surface faulting has occurred across the property during the Holocene time. Faults not yet identified, however, may exist. The site is not within an Earthquake Fault Zone (special studies zone).

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 14 borings to depths ranging from approximately 10 to 50 feet below existing site grade, using a truck-mounted drill rig. Borings 13 and 14 were drilled in the proposed drainage basin to be located west of the site, along the east side of Melcher Road. In addition, 4 bulk subgrade samples were obtained from the site for laboratory R-value testing. The approximate boring and bulk sample locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, permeability, R-value and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the corrosivity of the soil to buried concrete and metal. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our findings, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the upper soils consisted of approximately 6 to 12 inches of very loose silty sand or sandy silt. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated.

Below the loose surface soils, approximately 3 to 4 feet of loose to medium dense silty sand, sandy silt, or silty sand/sandy silt were encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 9 to 34 blows per foot.

Dry densities ranged from 100 to 123 pcf. Representative soil samples consolidated approximately 3 percent under a 2 ksf load when saturated. A representative soil sample had an angle of internal friction of 30 degrees.

Below 4 to 5 feet, predominately loose to very dense silty sand, silty sand/sandy silt, sandy silt, silty sand/sand and sand or very stiff sandy silty clay were encountered. Some of these soils had trace amounts of clay or gravel. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 12 blows per foot to more than 50 blows per 6 inches. Dry densities ranged from 102 to 129 pcf. A representative soil sample consolidated approximately 2 percent under a 2 ksf load when saturated. A representative soil sample had an angle of internal friction of 42 degrees. These soils had similar strength characteristics as the upper soils and extended to the termination depth of our borings.

For additional information about the soils encountered, please refer to the logs of borings in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was not encountered.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the loose surface soils and existing development, appear to be conducive to the development of the project. The upper soils within the project site are disturbed, have low strength characteristics, and are highly compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

In order to reduce the amount of differential settlement and provide uniform building support for the proposed buildings, it is recommended that, following stripping operations and demolition activities, the exposed subgrade within proposed building areas be excavated an additional depth of 2 feet, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content

and recompacted to a minimum of 90 percent of maximum density based on the ASTM Test Method D1557. In addition, it is recommended the proposed structure foundations be supported by a minimum of 12 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet beyond structural elements. The on-site, native soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, the bottom of the excavation should be proof-rolled and observed by Krazan & Associates to verify stability. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Fill material should be moisture-conditioned to at or above optimum moisture content and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Existing agricultural developments are located within the project site vicinity. Associated with these developments are buried structures, such as utility or irrigation lines that extend into the project site. Demolition activities should include proper removal of any buried structures. Any buried structures, including utilities, concrete irrigation pipe, or loosely backfilled excavations encountered during construction should be properly removed and the resulting excavations backfilled. It is suspected that demolition activities of the existing structures will disturb the upper soils. After demolition activities, it is recommended that these disturbed soils be removed and/or recompacted. This compaction effort should stabilize the upper soils and locate any unsuitable or pliant areas not found during our field investigation.

The site is presently occupied by a vineyard. Vine removal operations should include roots greater than 1 inch in dimension. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,000 psf for dead-plus-live loads. Footings should have a minimum embedment of 12 inches.

Groundwater Influence on Structures/Construction

Based on our findings and historical records, it is not anticipated that groundwater will rise within the zone of structural influence or affect the construction of foundations and pavements for the project. However, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Site Preparation

General site clearing should include removal of vegetation; debris; existing utilities; structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Existing agricultural developments are located in the vicinity of the site. Associated with these developments are buried structures, such as utility or irrigation lines that extend into the project site. Any buried structures, including utilities or loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled. It is suspected that demolition activities of the existing structures will disturb the upper soils. After demolition activities, it is recommended that these disturbed soils be removed and/or recompacted. Excavations, depressions, or soft and pliant areas extending below planned finished subgrade levels should be cleaned to firm undisturbed soil and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Water wells should be abandoned in accordance with local regulatory agency requirements. Existing concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. The resulting excavations should be backfilled with Engineered Fill.

The site is presently occupied by a vineyard. Vine removal operations should include roots greater than 1 inch in dimension. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

In order to reduce the amount of differential settlement and provide uniform building support for the structures, it is recommended that, following stripping operations and demolition activities, the exposed subgrade within proposed building areas be excavated an additional depth of 2 feet, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on the ASTM Test Method D1557. In addition, it is recommended the proposed structure foundations be supported by a minimum of 12 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet beyond structural elements. The on-site soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, the bottom of the excavation should be proof-rolled and observed by Krazan & Associates to verify stability. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Soft or pliant areas should be excavated to firm native ground. Fill material should be moisture-conditioned to at or above optimum moisture content and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Following stripping operations and demolition activities, it is recommended that at a minimum, the upper 12 inches of exposed subgrade soils beneath the exterior flatwork and pavement areas be excavated/scarified, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Limits of recompaction should extend a minimum of 2 feet beyond flatwork and pavements. This compaction effort should stabilize the upper soils and locate any unsuitable or pliant areas not found during our field investigation.

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to at or above optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle, which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The organic-free, on-site, upper native and fill soils are predominately silty sand and sandy silt. Preliminary testing indicates that these soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Soils with an expansion index of 15 or greater should not be used within the upper 12 inches of soil supporting slabs-on-grade or exterior flatwork.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill material should be predominately non-expansive granular material with a plasticity index less than 10 and an expansion index less than 15. Imported Fill should be free from rocks and lumps greater than 4 inches in diameter. All Imported Fill material should be submitted for approval to the Soils Engineer at least 48 hours prior to delivery to the site.

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned to at or above optimum moisture content, and compacted to achieve at least 90 percent of maximum density based on ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2019 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations – Conventional

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structures may be supported on a shallow foundation system bearing on a minimum of 12 inches of Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Soil Bearing Capacity
Dead Load Only	1,500 psf
Dead-Plus-Live Load	2,000 psf
Total Load, including wind or seismic loads	2,650 psf

Footings should have a minimum depth of 12 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load. Ultimate design of foundations and reinforcement should be performed by the project Structural Engineer.

The footing excavations should not be allowed to dry out any time prior to pouring concrete. It is recommended that footings be reinforced by at least one No. 4 reinforcing bar in both top and bottom.

The total settlement is not expected to exceed 1 inch. Differential settlement should be less than ½ inch. Most of the settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.35 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 325 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the value above may be used for short duration, wind, or seismic loads.

Floor Slabs and Exterior Flatwork

In areas that will utilize moisture-sensitive floor coverings, concrete slab-on-grade floors should be underlain by a water vapor retarder. The water vapor retarder should be installed in accordance with accepted engineering practice. The water vapor retarder should consist of a vapor retarder sheeting underlain by a minimum of 3 inches of compacted, clean, gravel of ¾-inch maximum size. To aide in concrete curing an optional 2 to 4 inches of granular fill may be placed on top of the vapor retarder. The granular fill should consist of damp clean sand with at least 10 to 30 percent of the sand passing the 100 sieve. The sand should be free of clay, silt, or organic material. Rock dust which is manufactured sand from rock crushing operations is typically suitable for the granular fill. This granular fill material should be compacted.

The exterior floors should be poured separately in order to act independently of the walls and foundation system. All fills required to bring the building pads to grade should be Engineered Fills.

Moisture within the structure may be derived from water vapors, which were transformed from the moisture within the soils. This moisture vapor can travel through the vapor membrane and penetrate the slab-on-grade. This moisture vapor penetration can affect floor coverings and produce mold and mildew in the structure. To reduce moisture vapor intrusion, it is recommended that a vapor retarder be installed. It is recommended that the utility trenches within the structure be compacted, as specified in our report, to reduce the transmission of moisture through the utility trench backfill. Special attention to the immediate drainage and irrigation around the building is recommended. Positive drainage should be established away from the structure and should be maintained throughout the life of the structure. Ponding of water should not be allowed adjacent to the structure. Over-irrigation within landscaped areas adjacent to the structure should not be performed. In addition, ventilation of the structure (i.e. ventilation fans) is recommended to reduce the accumulation of interior moisture.

Excavation Stability

Temporary excavations planned for the construction of the building and other associated structures may be excavated, according to the accepted engineering practices following Occupational Safety and Health Administration (OSHA) standards by a Contractor experienced in such work. Open, unbraced excavations in undisturbed soils should be made according to the table below.

Recommended Excavation Slopes	
Depth of Excavation (ft)	**Slope (Horizontal:Vertical)**
	Temporary
0-5	1:1
5-10	1½:1
10-15	1¾:1
15+	2:1

If, due to space limitation, excavation near existing structures or roads is performed in a vertical position, braced shorings or shields may be used for supporting vertical excavations. Therefore, in order to comply with the local and state safety regulations, a properly designed and installed shoring system would be required to accomplish planned excavation and installation. A specialty Shoring Contractor should be responsible for the design and installation of such a shoring system during construction. The lateral pressures provided below may be used in the design of a braced-type shoring system.

Recommended Lateral Earth Pressure for Braced Shoring	
Depth of Excavation Below Ground Surface (feet)	**Lateral Soil Pressure (psf)**
0	40 H
0.25 H	40 H
H	40 H
Where H is the total depth of the excavation in feet.	

The foregoing does not include excess hydrostatic pressure or surcharge loading. Fifty percent of any surcharge load, such as construction equipment weight, should be added to the lateral load given above.

Since the Contractor has the ultimate responsibility for excavation stability, he may design a different shoring system for the excavation.

The excavation/shoring recommendations provided herein are based on soil characteristics derived from limited test borings within the site. Variations in soil conditions will likely be encountered during the excavations. Krazan & Associates, Inc. should be afforded the opportunity to provide field review to evaluate the actual conditions and account for field condition variations not otherwise anticipated in the preparation of this recommendation.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 40 pounds per square foot per foot of depth. Walls that are incapable of this deflection or walls that are fully constrained against deflection may be designed for an equivalent fluid at-rest pressure of 60 pounds per square foot per foot per depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

Retaining and/or below grade walls should be drained with either perforated pipe encased in free-draining gravel or a prefabricated drainage system. The gravel zone should have a minimum width of 12 inches wide and should extend upward to within 12 inches of the top of the wall. The upper 12 inches of backfill should consist of native soils, concrete, asphaltic concrete or other suitable backfill to minimize surface drainage into the wall drain system. The aggregate should conform to Class 2 permeable materials graded in accordance with the CalTrans Standard Specifications (2018). Prefabricated drainage systems, such as Miradrain®, Enkadrain®, or an equivalent substitute, are acceptable alternatives in lieu of gravel provided they are installed in accordance with the manufacturer's recommendations. If a prefabricated drainage system is proposed, our firm should review the system for final acceptance prior to installation.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

R-Value Test Results and Pavement Design

Four subgrade soil samples were obtained from the project site for R-value testing at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM)	58
2	12-24"	Silty Sand (SM)	57
3	12-24"	Silty Sand (SM)	60
4	12-24"	Silty Sand (SM)	55

The test results are moderate and indicate good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices based on a design R-value of 55. This R-value should be confirmed once grading is completed.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"
6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.0"	12.0"
7.5	4.0"	4.0"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***

If traffic indices are not available, an estimated (typical value) index of 4.5 may be used for light automobile traffic, and an index of 7.0 may be used for light truck traffic.

The following recommendations are for light-duty and heavy-duty Portland Cement Concrete Pavement Sections based on the design procedures developed by the Portland Cement Association.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	--	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	6.5"	--	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***
******Minimum compressive strength of 3000 psi***

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to at or above optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle, which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Seismic Parameters – 2019 California Building Code

The Site Class per Section 1613 of the 2019 California Building Code (2019 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. A site modified peak ground acceleration (PGA_M) of 0.404 may be used for seismic analysis. For seismic design of the structures based on the seismic provisions of the 2019 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.225	Table 1613.2.3 (1)
S_s	0.718	Section 1613.2.1
S_{MS}	0.880	Section 1613.2.3
S_{DS}	0.587	Section 1613.2.4
Site Coefficient F_v	2.058	Table 1613.2.3 (2)
S_1	0.271	Section 1613.2.1
S_{M1}	0.558	Section 1613.2.3
S_{D1}	0.372	Section 1613.2.4
T_S	0.633	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples were less than 150 ppm (74.4 ppm and 46.1 ppm) and are below the maximum allowable values established by HUD/FHA and CBC. However, it is recommended that Type II cement be used in formulation of concrete to compensate for sulfate reactivity with the cement.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in-situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the

Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

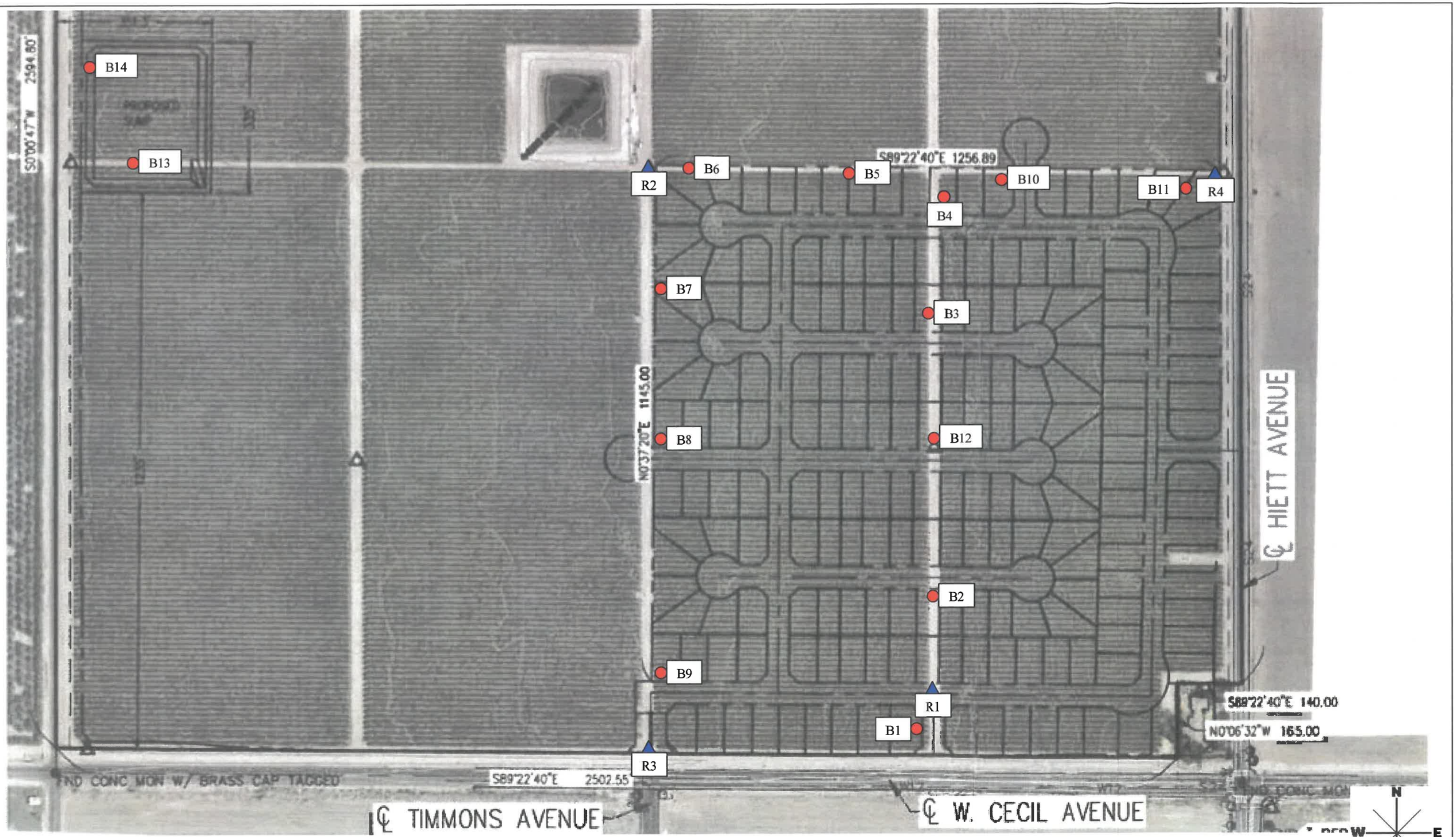
If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Ryan K. Privett, PE
Senior Engineer
RCE No. 59372

David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

RKP/DRJ:ht



APPROXIMATE BORING LOCATION

APPROXIMATE R-VALUE LOCATION

SITE MAP	**Scale:** NTS	**Date:** January 2021	Krazan GEOTECHNICAL ENGINEERING
Delano Tentative Tract **NWC Cecil Avenue and Hiett Avenue** **Delano, California**	**Drawn by:** HT	**Approved by:** DJ	
	Project No. 022-20138	**Figure No.** 1	

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Fourteen 4½-inch to 6½-inch exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring logs with a full shaded in block. The standard penetration tests are identified in the sample type on the boring logs with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In-situ moisture content, dry density, consolidation, direct shear, permeability and sieve analysis tests were completed for the undisturbed samples representative of the subsurface material. R-value tests were completed for select bag samples obtained from the auger cuttings. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

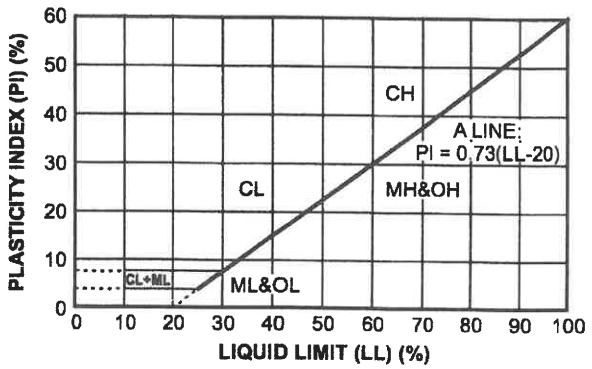
UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART			
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

CONSISTENCY CLASSIFICATION	
Description	**Blows per Foot**
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION		
Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.042
Fine-grained	No. 40 to No. 200	0.042 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-1

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches				
2			116.1	5.2		11
4		Medium dense and damp below 5 feet				
6			116.2	4.9		16
8						
10		***SILTY SAND/SANDY SILT (SM/ML)*** Very dense, fine- to medium-grained; brown, moist, drills firmly	115.3	13.4		76
12						
14		Medium dense below 15 feet				
16			102.2	11.8		32
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 4½ Inches

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B2

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-2

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily				
2		Loose below 12 inches With thin lenses of SANDY SILT below 2 feet	119.9	7.0		9
4		Medium dense below 5 feet				
6			110.3	8.6		25
8		***SANDY SILT (ML)*** Dense, fine- to medium-grained with trace CLAY; olive, moist, drills easily	115.4	14.2		45
10						
12						
14						
16		End of Borehole				
18						
20						

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B3

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-3

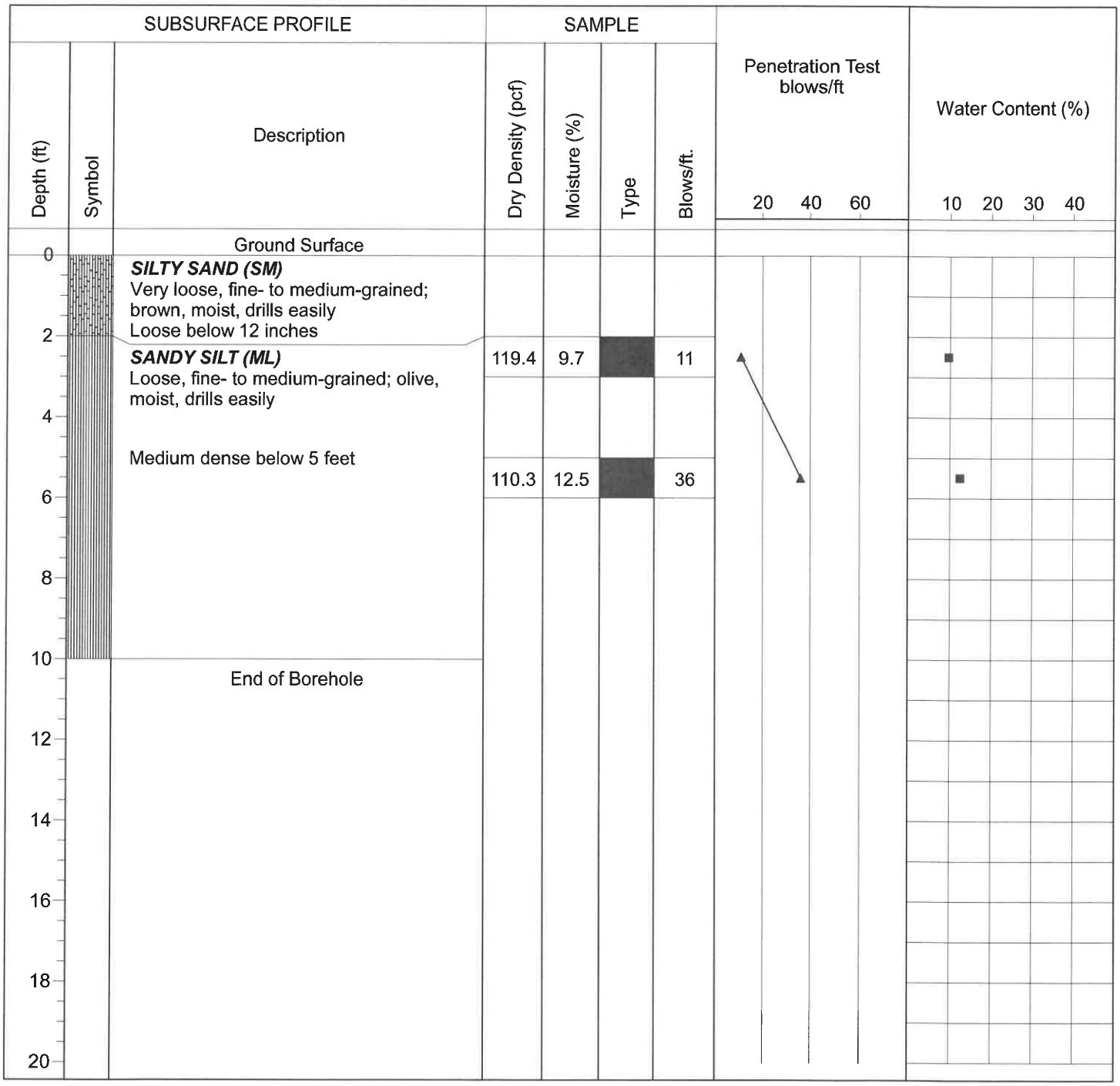
Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B4

Project: Delano Tentative Tract

Project No: 022-20138

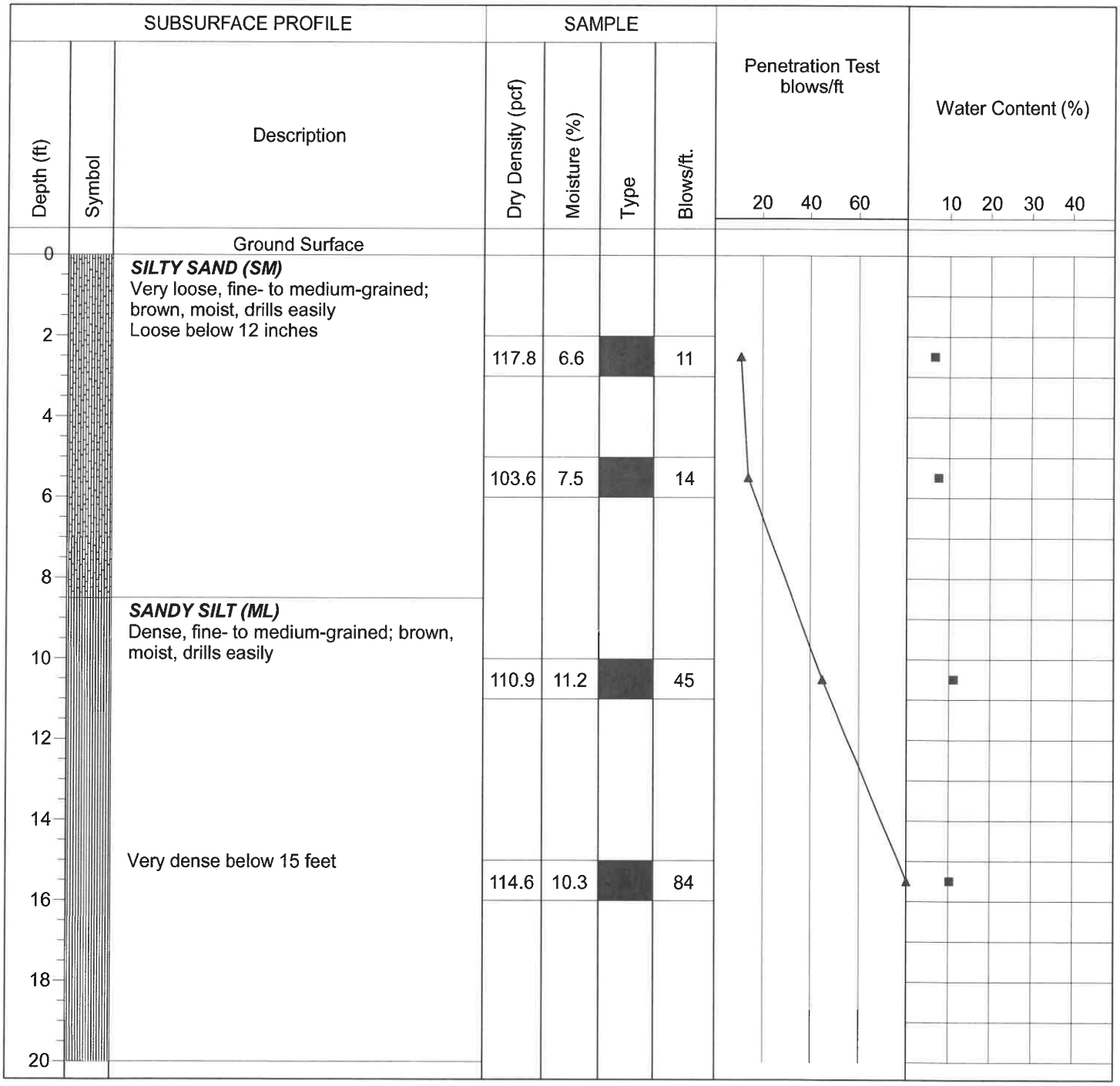
Client: Blumer Construction, Inc.

Figure No.: A-4

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water> **Initial:** None **At Completion:** None



Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B5

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-5

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			121.9	4.1		20		
4								
6			118.5	4.3		17		
8		***SANDY SILT (ML)*** Dense, fine- to medium-grained; brown, moist, drills easily	121.9	7.6		45		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B6

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-6

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	Penetration Test blows/ft (20 40 60)	Water Content (%) (10 20 30 40)
0		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2			117.9	5.3		14		
4		Medium dense below 5 feet						
6			118.5	5.8		16		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B7

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-7

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SANDY SILT (ML)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches				
2			119.2	9.1		14
4		Medium dense below 5 feet				
6			110.5	9.1		21
8						
10		Dense below 10 feet	111.6	14.5		50
12						
14						
16		***SILTY SAND (SM)*** Dense, fine- to medium-grained; light brown, moist, drills easily	104.0	12.5		46
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 4½ Inches

Elevation: 20 Feet

Log of Boring B8

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-8

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily				
2		Loose below 12 inches	100.4	8.3		12
4						
6			109.7	8.7		13
8		Dense and drills firmly below 7½ feet	116.0	10.7		64
10						
12						
14						
16		End of Borehole				
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 4½ Inches

Elevation: 15 Feet

Log of Boring B9

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-9

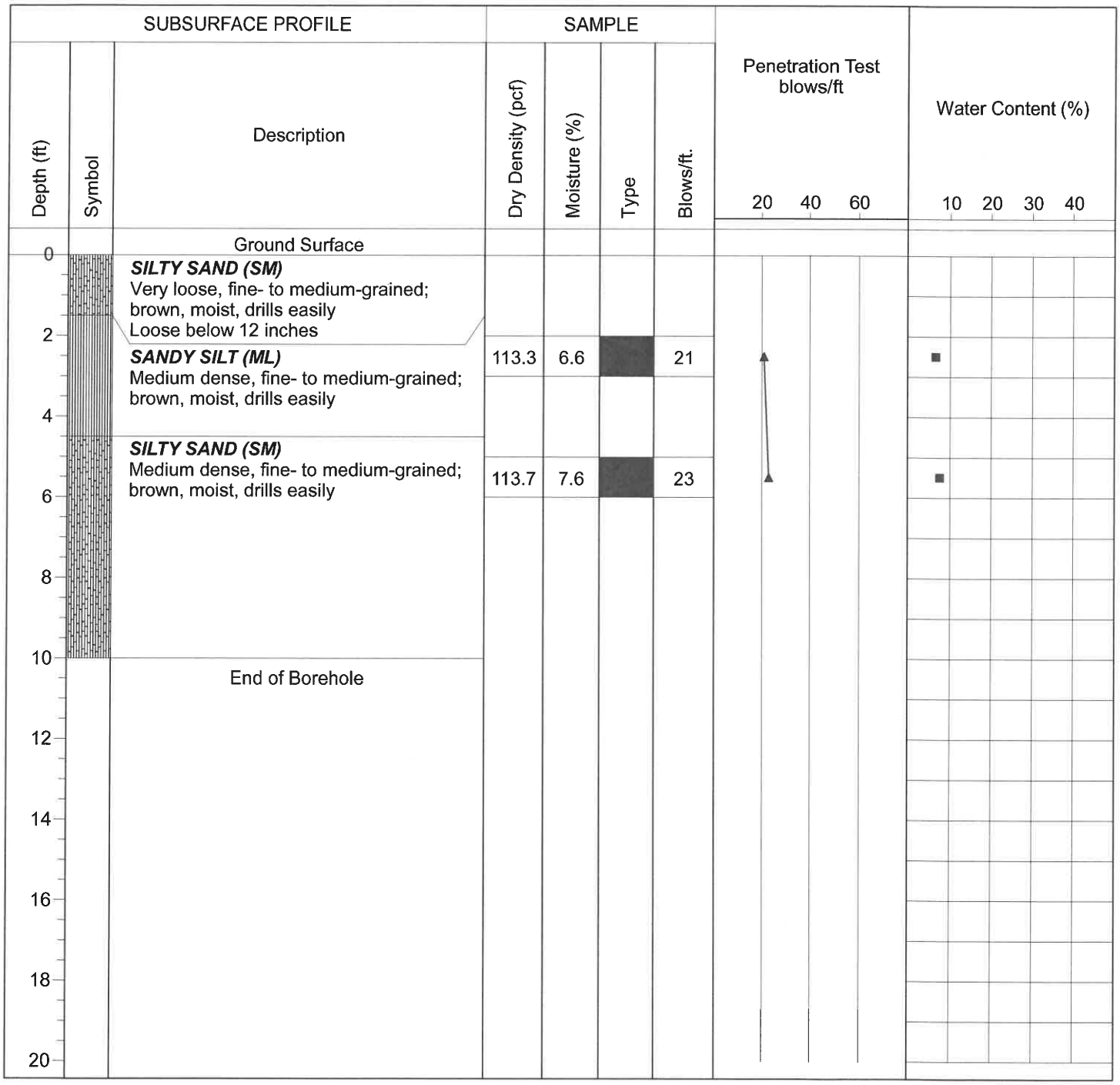
Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B10

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-10

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2			114.5	7.6		11		
4								
6			112.8	7.6		12		
8		***SILTY SAND/SANDY SILT (SM/ML)*** Dense, fine- to medium-grained; gray, moist, drills firmly	111.3	12.4		54		
10								
12								
14								
14		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B11

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-11

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		***SILTY SAND/SANDY SILT (SM/ML)*** Loose, fine- to medium-grained; brown, moist, drills easily	114.2	12.0		14		
4		Dense below 5 feet						
6			103.1	7.0		54		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 12-4-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B12

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-12

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches				
2			118.8	7.2		11
4		Medium dense below 5 feet				
6			118.4	7.0		19
8						
10		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	108.7	13.1		19
12						
14		Dense below 15 feet				
16			114.8	13.8		44
18						
20		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, damp, drills easily				

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B12

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-12

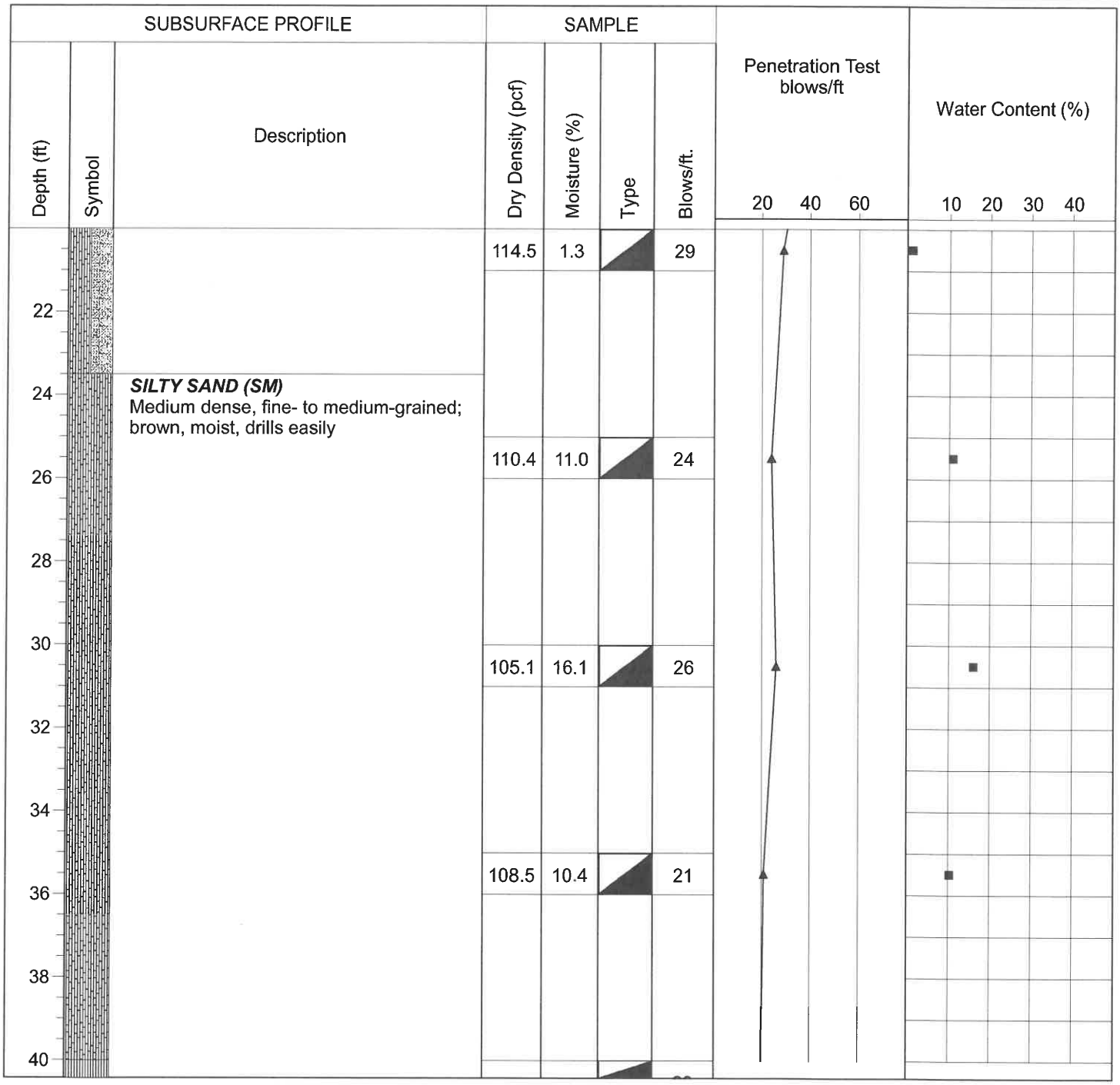
Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B12

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-12

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water> **Initial:** None **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
42		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	99.3	19.3		20
44						
46			102.1	19.5		24
48						
50		End of Borehole				
52						
54						
56						
58						
60						

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-4-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B13

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-13

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet				
2			123.3	10.7		34
4						
6			129.3	9.5		30
8		***SANDY SILTY CLAY (CL)*** Very stiff, fine- to medium-grained; gray, moist, drills easily				
10		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	111.5	26.7		24
12						
14		With thin lenses of SILTY SAND below 15 feet	113.0	11.5		25
16						
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B13

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-13

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
			108.7	17.4		34
22						
24		Dense below 25 feet				
			117.0	14.8		44
26						
28						
30		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, moist, drills easily	116.4	15.3		51
32						
34		***SAND (SP)*** Dense, fine- to medium-grained; light brown, damp, drills easily				
			118.4	2.5		49
36						
38						
40		Very dense with trace GRAVEL below 40 feet				

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B13

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-13

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
42			121.3	2.9		50+		
44		Moist below 45 feet						
46			113.0	5.2		50+		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B14

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-14

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

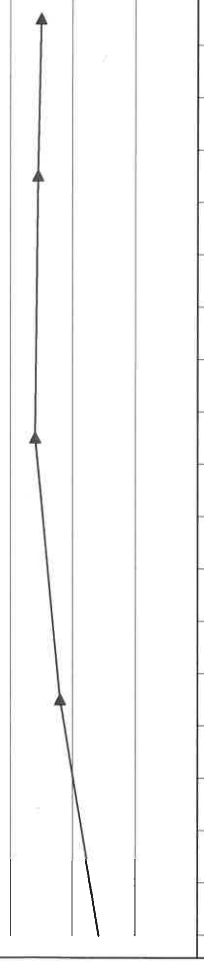
Logged By: Dave Adams

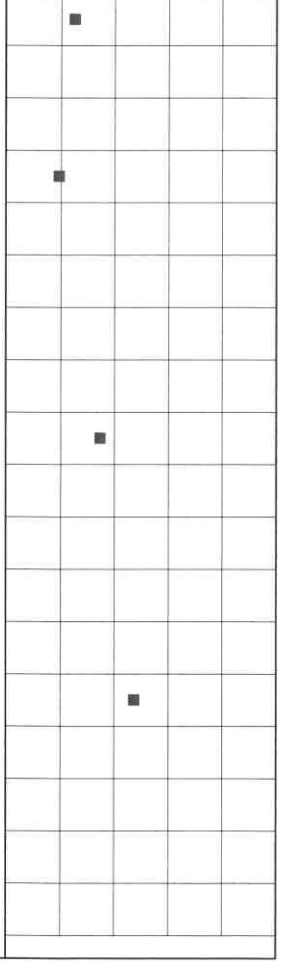
Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet				
2			121.0	12.6		30
4		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily				
6			115.7	9.7		29
8						
10			102.2	17.4		28
12		***SAND (SP)*** Medium dense, fine- to coarse-grained with trace GRAVEL; brown, moist, drills easily				
14						
16		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	104.1	23.7		36
18						
20		***SAND (SP)*** Very dense, fine- to medium-grained; light brown, moist, drills firmly				





Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B14

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-14

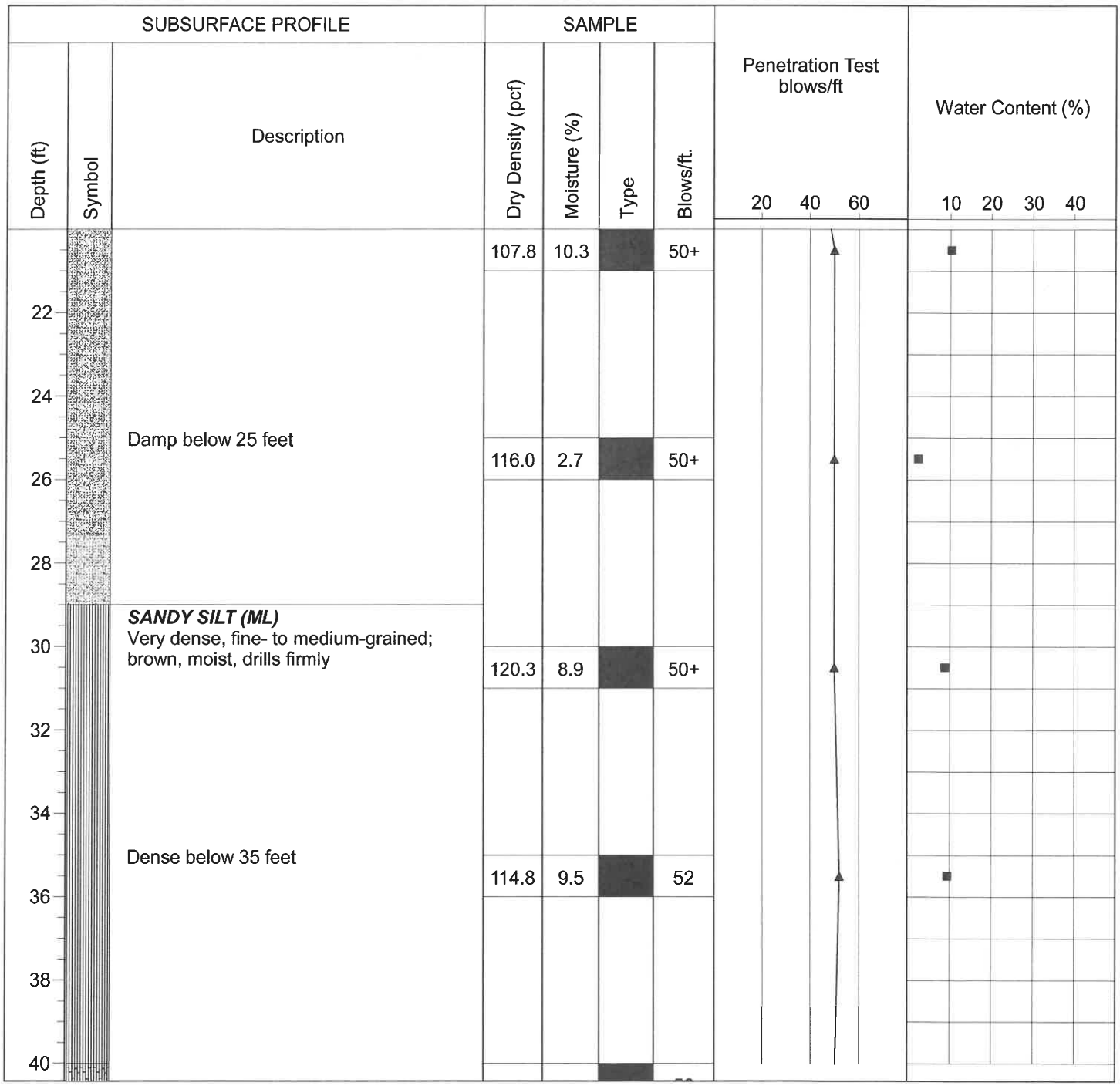
Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B14

Project: Delano Tentative Tract

Project No: 022-20138

Client: Blumer Construction, Inc.

Figure No.: A-14

Location: NWC Cecil Avenue and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
42		***SILTY SAND (SM)*** Dense, fine- to medium-grained; gray, moist, drills firmly	109.5	6.4		50		
44								
46			111.0	8.8		47		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

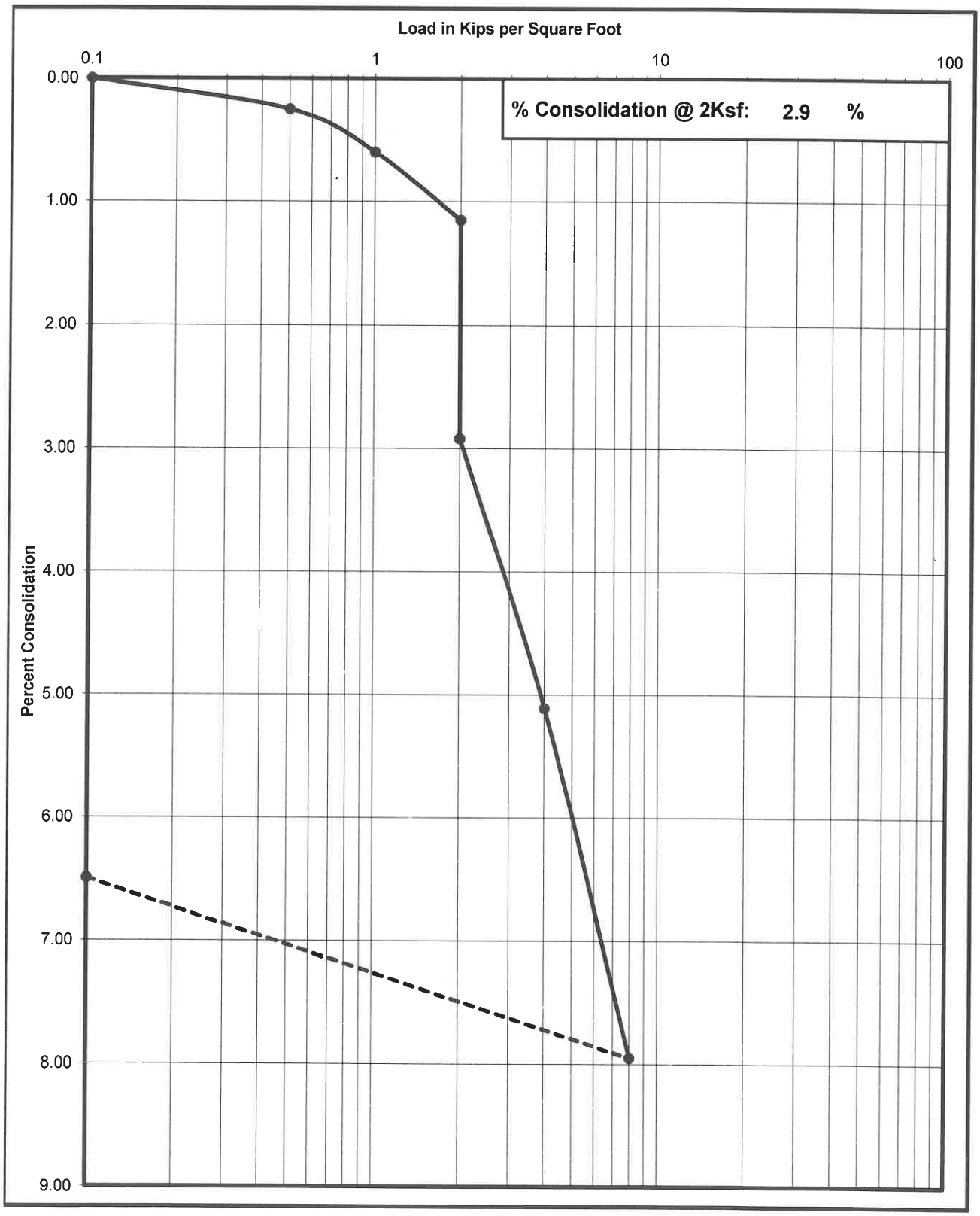
Drill Date: 12-10-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
022-20138	B2 @ 2-3'	1/5/2021	SM



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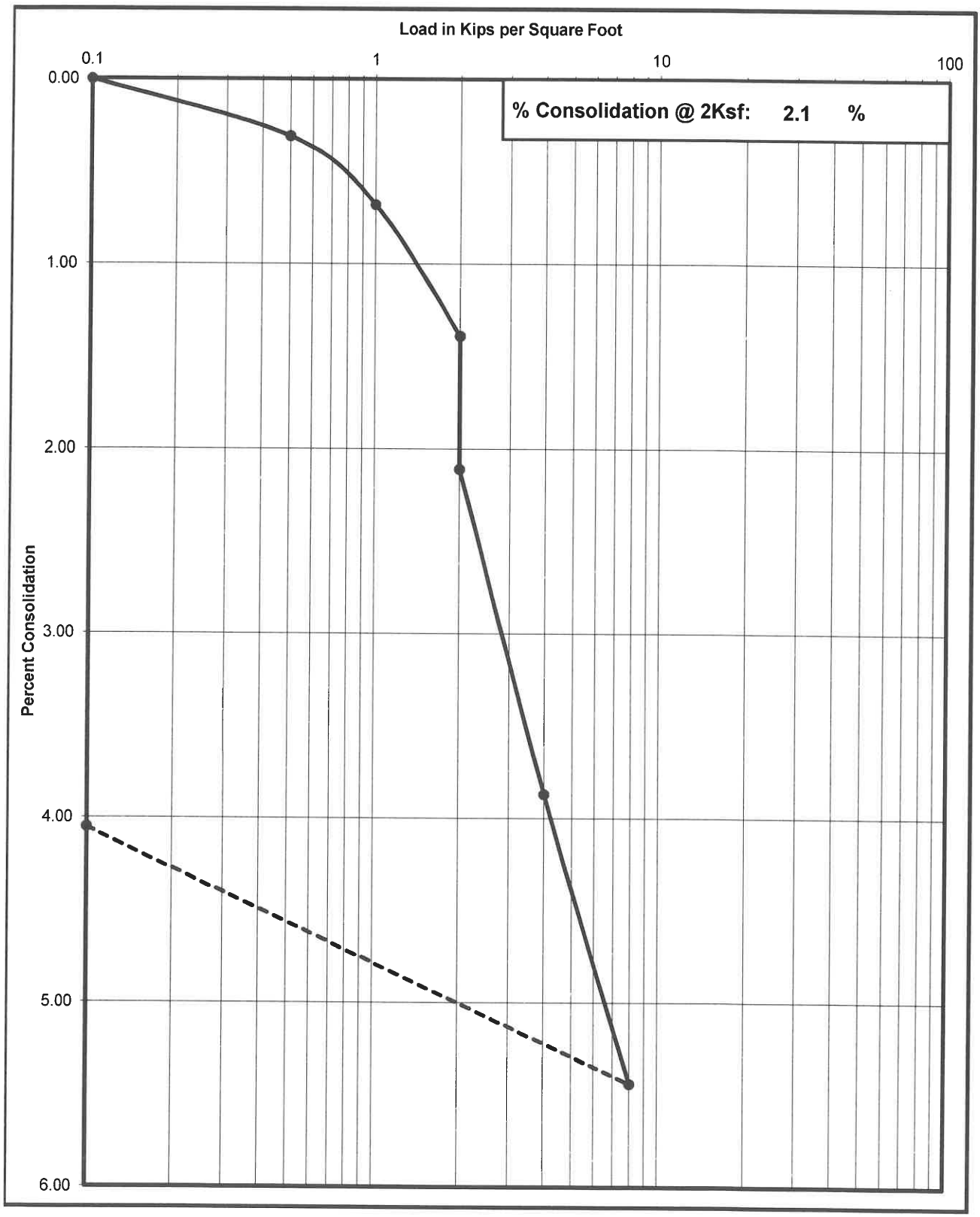
Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
022-20138	B2 @ 5-6'	1/5/2021	SM



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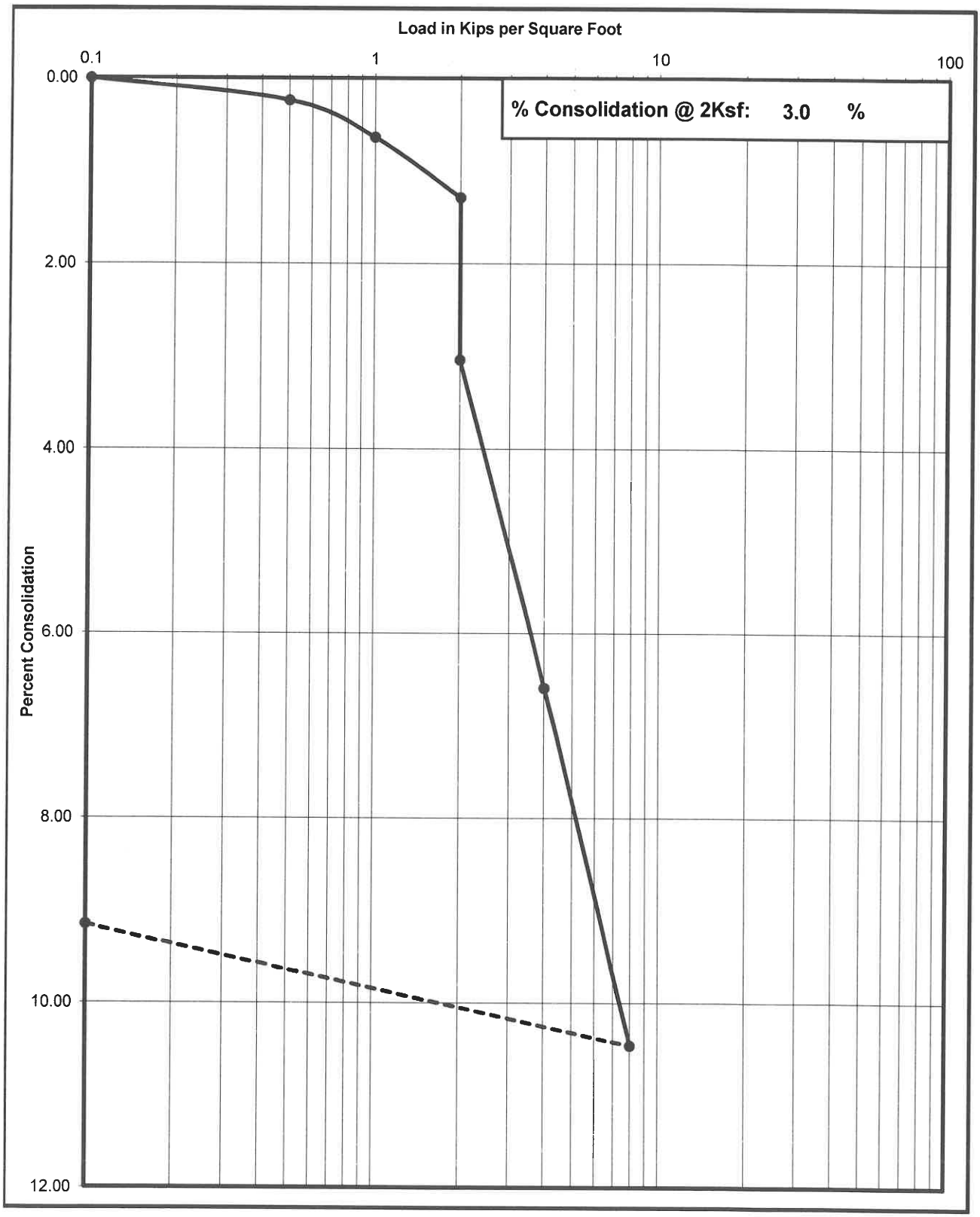
Consolidation Test

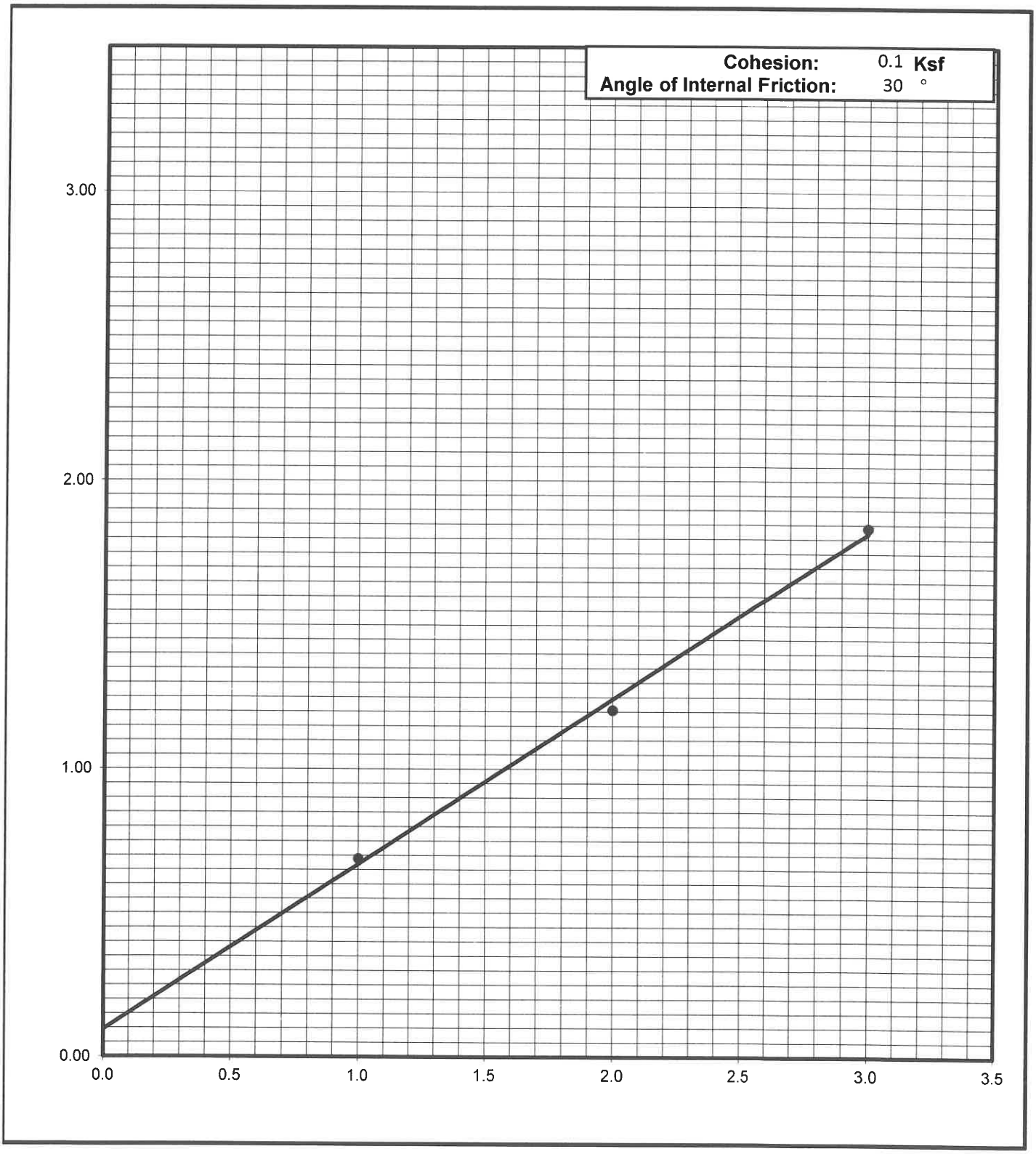
Project No	Boring No. & Depth	Date	Soil Classification
022-20138	B10 @ 2-3'	1/5/2021	SM



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

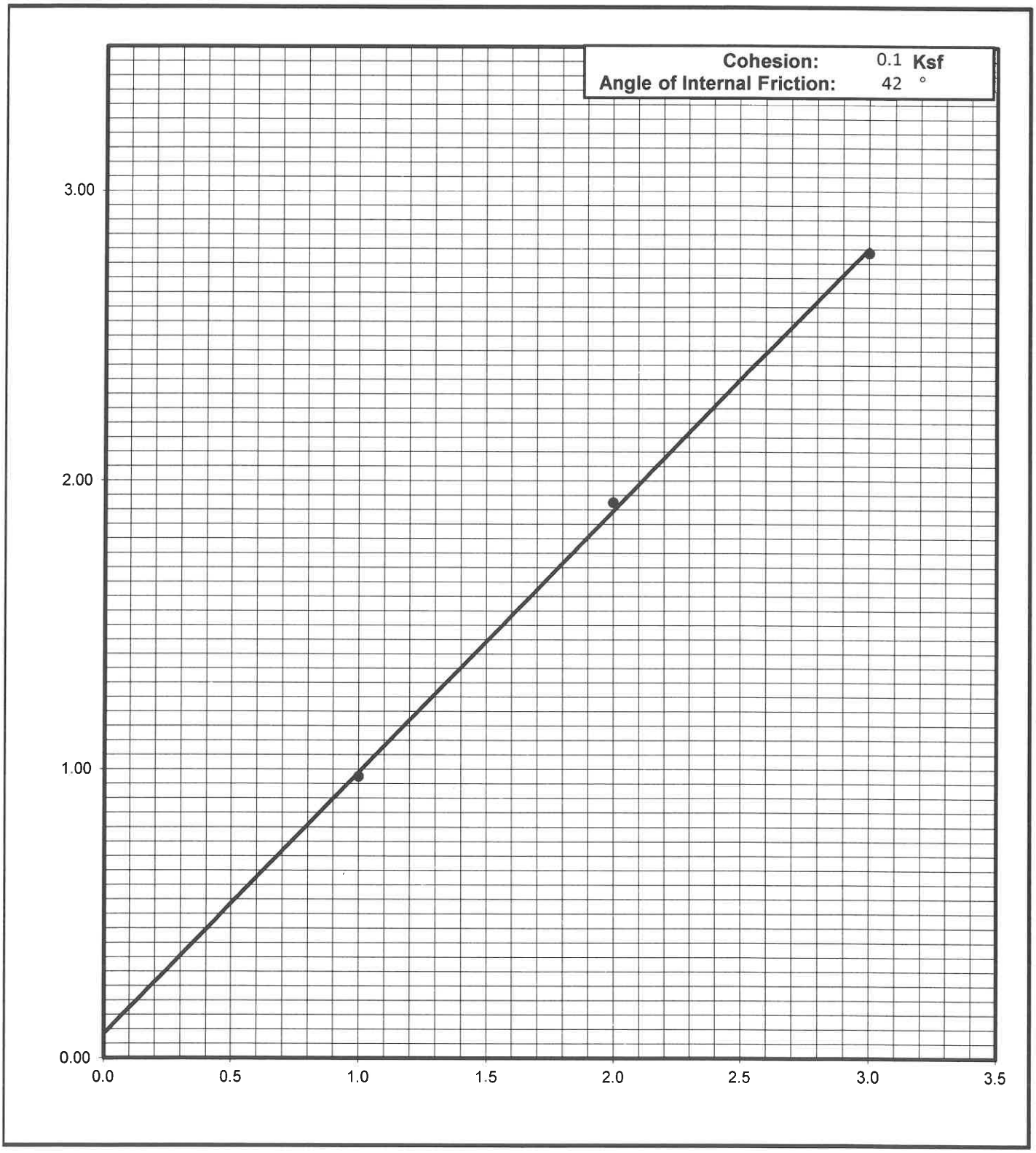
Project Number	Boring No. & Depth	Soil Type	Date
022-20138	B3 @ 2-3'	ML	1/5/2021



Krazan Testing Laboratory

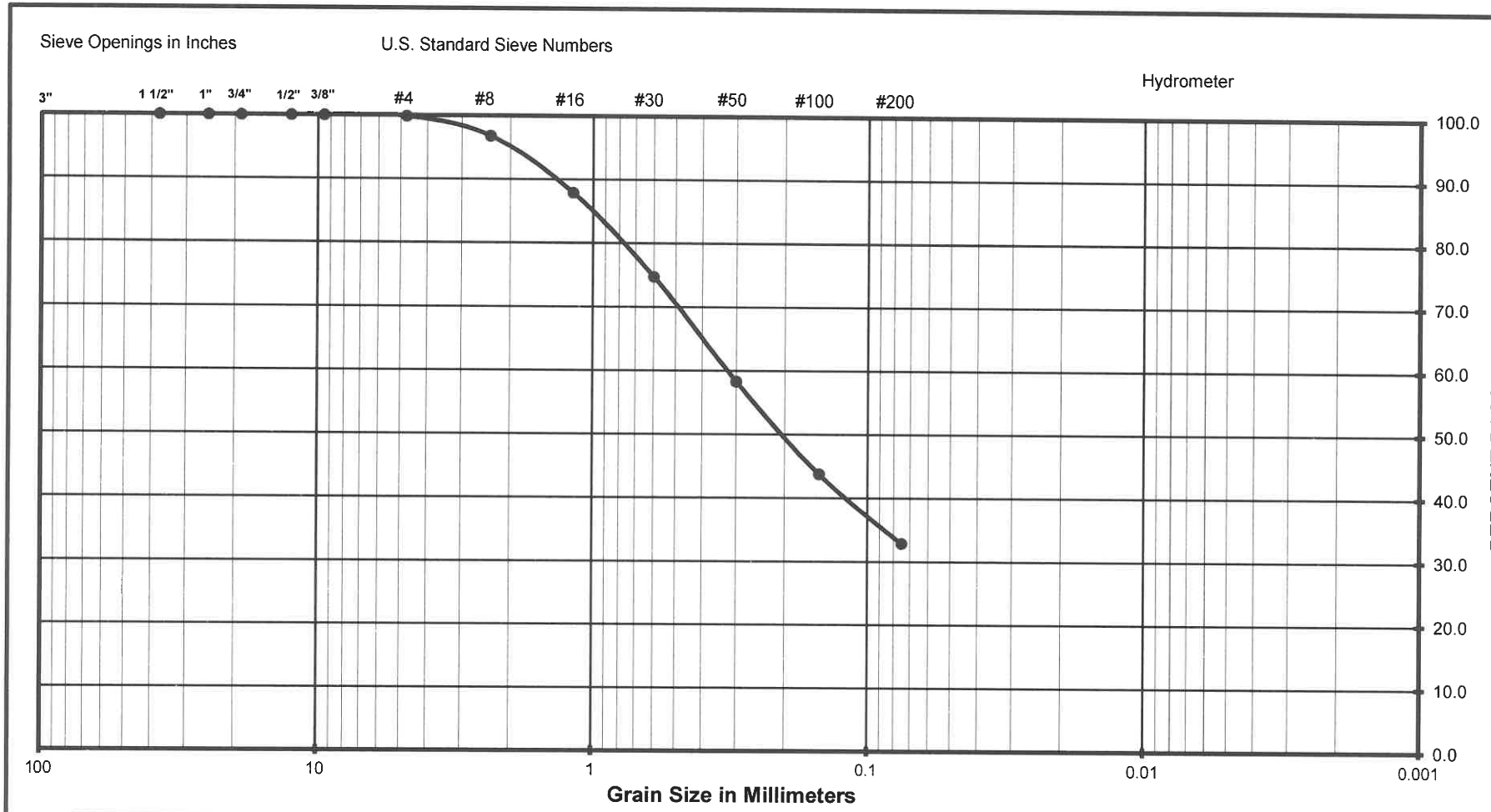
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
022-20138	B13 @ 5-6'	SM	12/28/2020



Krazan Testing Laboratory

Grain Size Analysis

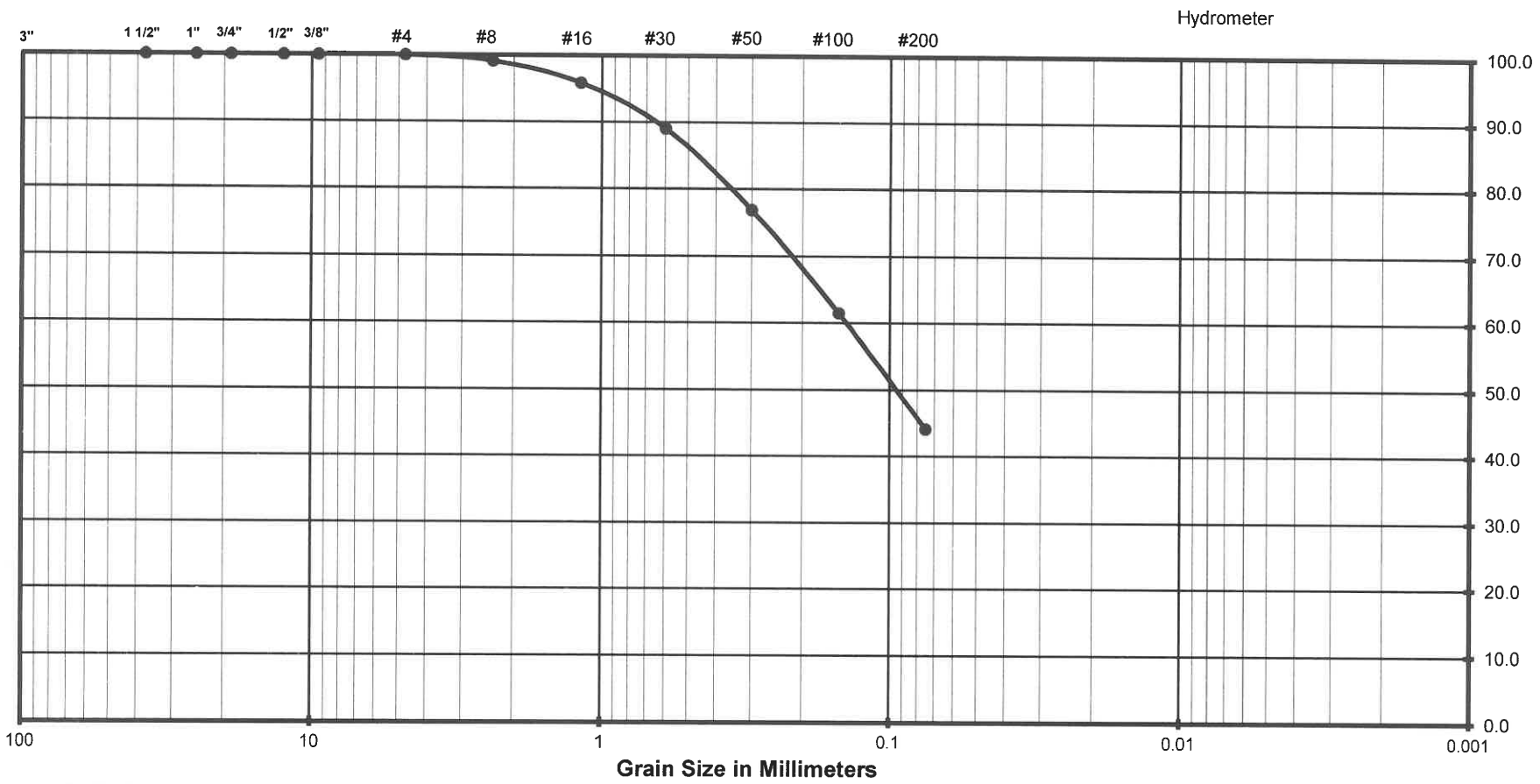


(Unified Soils Classification)

Project Name	Delano Tentative Tract Map
Project Number	022-20138
Soil Classification	SM
Sample Number	B2 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Delano Tentative Tract Map
Project Number	022-20138
Soil Classification	SM
Sample Number	B10 @ 2-3'

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 022-20138
Project Name	: Delano Tentative Tract Map
Date	: 12/23/2020
Sample Number	: -
Sample Location	: B13 @ 15-16'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	113.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	11.5	Initial Length,cm	7.11	% Passing # 200	34.9
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	6:19	6:30	0.22	3.52	9.64	6.22	14.0	12.5	15.0
2	6:31	6:42	0.24	3.54	9.32	5.94	14.0	12.5	15.0
3	6:43	6:56	0.46	4.18	9.24	5.48	14.0	12.5	15.0
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	660	0.65866	5.9E-05	5.945E-05
2	660	0.65286	6.1E-05	6.071E-05
3	780	0.60837	6.0E-05	5.987E-05
4				
5				
6				

Permeability
6.00E-05 cm/sec
6E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Constant Head

ASTM D-2434 / Cal 220

Project Number	: 022-20138
Project Name	: Delano Tentative Tract Map
Date	: 12/23/2020
Sample Number	: -
Sample Location	: B13 @ 35-36'
Soil Classification	: SP

Max Dry Density	--	lb/cu.ft	Relative Density	--	Max. Particle Size	--
Optimum Moisture	--	%	%Over Optimum	--	% Passing 3/8"	--
Sample Dry Density	118.4	lb/cu.ft	Sample Diameter	7.6	% Passing # 10	--
Sample Moisture	2.5	%	Sample Length,cm	7.5	% Passing # 200	4.0
Sample Compaction	--	%	Sample Area sq.cm	45.4	Temperature	20.0
Comp. Procedure	Remolded to approximate In-Situ density				Type of Permeant	Tap Water

Test	Time sec	H1 cm	H2 cm	Flow Q
1	45	76	43.0	237.0
2	60	74	42.0	293.0
3	75	77	47.0	345.0
4				
5				
6				

Test	Time sec	Head Const.	Flow Q	K cm/sec	k20 cm/sec
1	45	33.0	237.0	2.64E-02	2.636E-02
2	60	32.0	293.0	2.52E-02	2.521E-02
3	75	30.0	345.0	2.53E-02	2.533E-02
4					
5					
6					

Permeability
2.6E-02 cm/sec
72.41062 ft/day
26429.88 ft/year

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 022-20138
Project Name	: Delano Tentative Tract Map
Date	: 12/23/2020
Sample Number	: -
Sample Location	: B14 @ 20-21'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	107.8	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	10.3	Initial Length,cm	7.11	% Passing # 200	30.5
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:12	5:24	0.38	4.00	9.84	6.22	15.0	14.0	16.0
2	5:26	5:39	0.56	4.24	9.54	5.86	15.0	14.0	16.0
3	5:40	6:01	0.46	5.52	9.70	4.66	15.0	14.0	16.0
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	720	0.50679	8.9E-05	8.87E-05
2	780	0.47910	8.9E-05	8.865E-05
3	1260	0.30061	9.0E-05	8.964E-05
4				
5				
6				

Permeability
8.90E-05 cm/sec
8.9E-07 m/sec

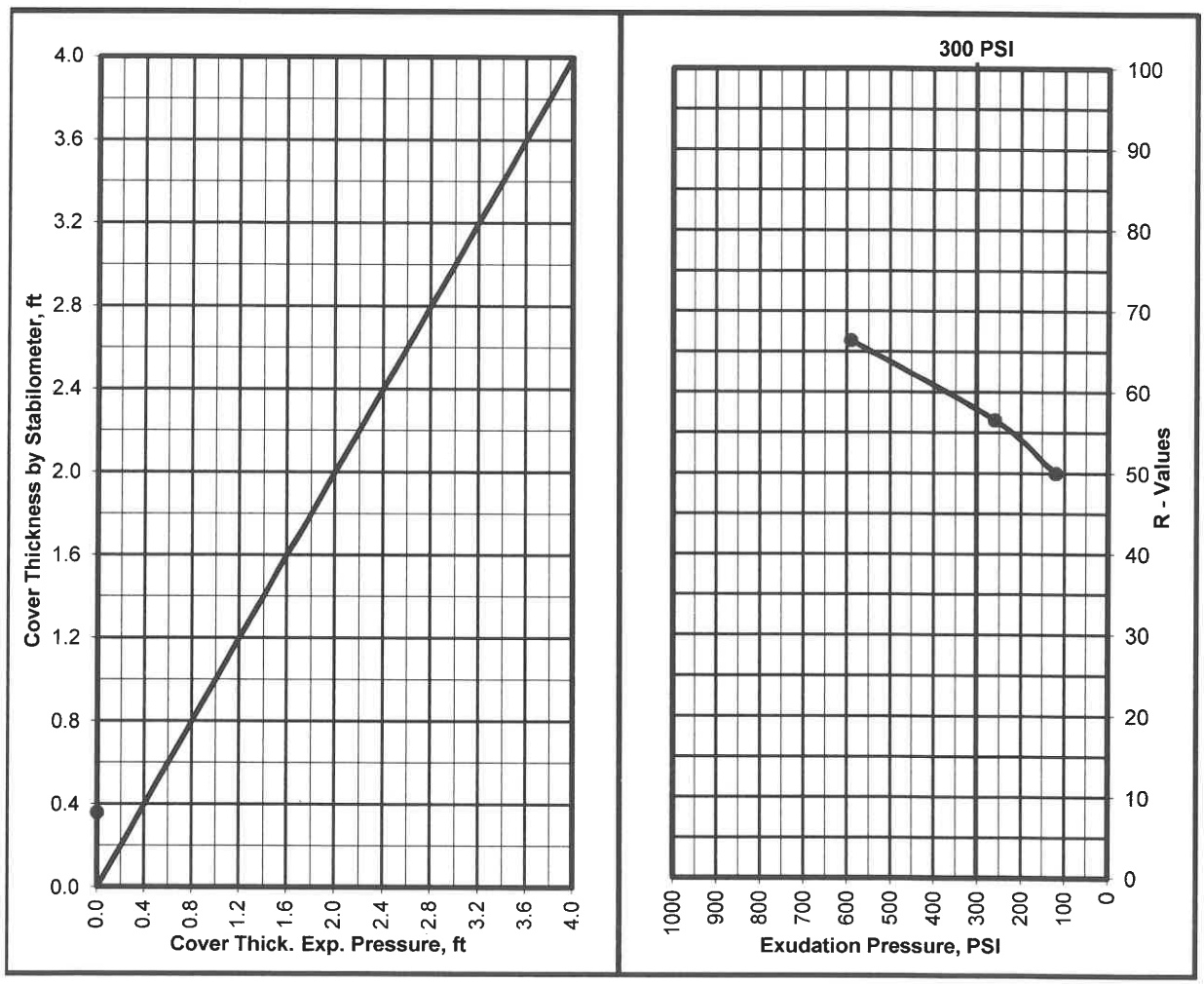
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20138
Project Name	:	Delano Tentative Tract Map
Date	:	12/22/2020
Sample Location/Curve Number	:	RV#1
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	8.9	9.9	10.5
Dry Density, lbm/cu.ft.	128.5	126.6	126.1
Exudation Pressure, psi	590	260	120
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	66	57	50

R Value at 300 PSI Exudation Pressure	**58**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



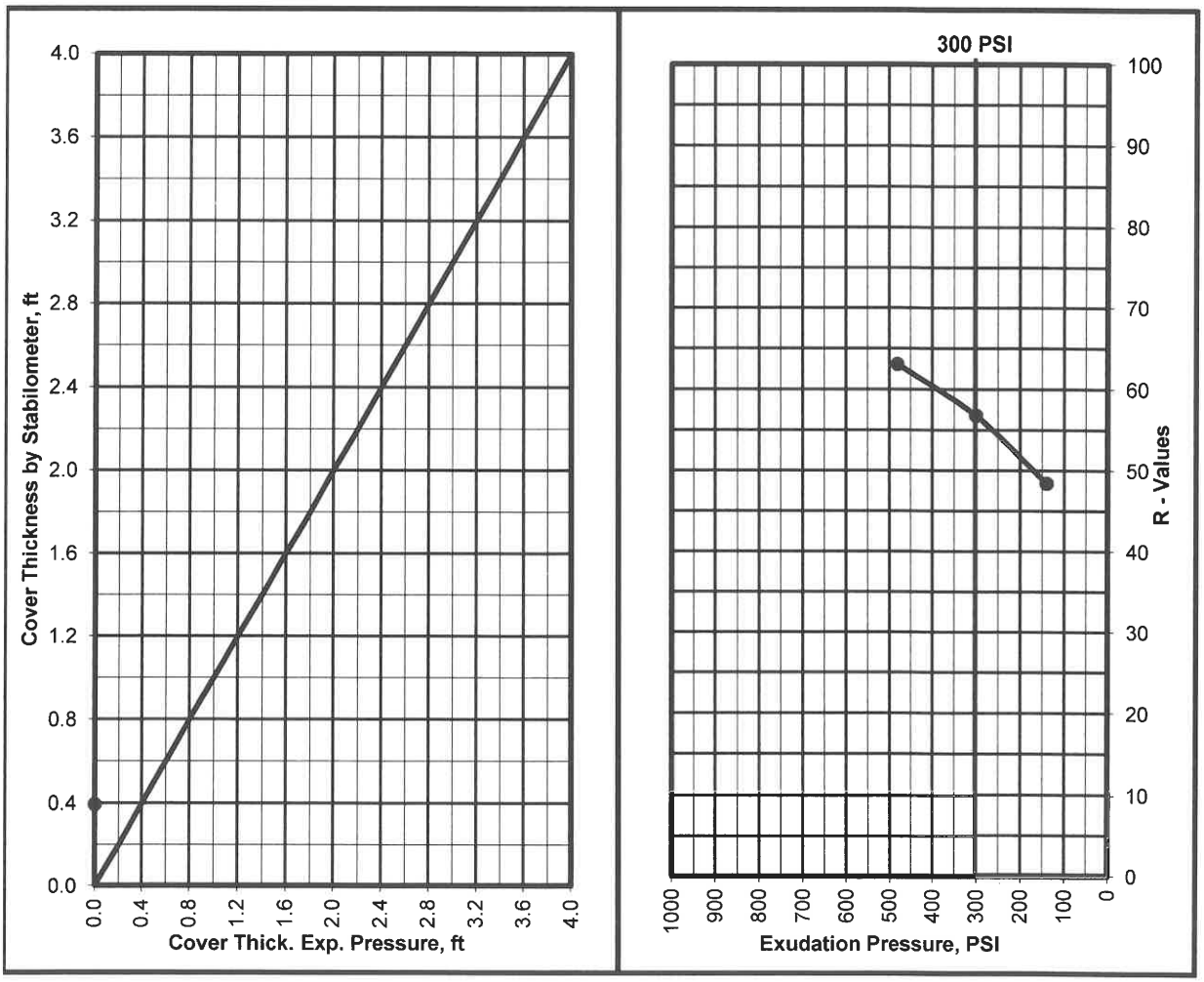
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20138
Project Name	:	Delano Tentative Tract Map
Date	:	12/22/2020
Sample Location/Curve Number	:	RV#2
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	8.5	9.4	9.0
Dry Density, lbm/cu.ft.	129.7	128.2	128.7
Exudation Pressure, psi	480	140	300
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	63	48	57

R Value at 300 PSI Exudation Pressure	**57**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



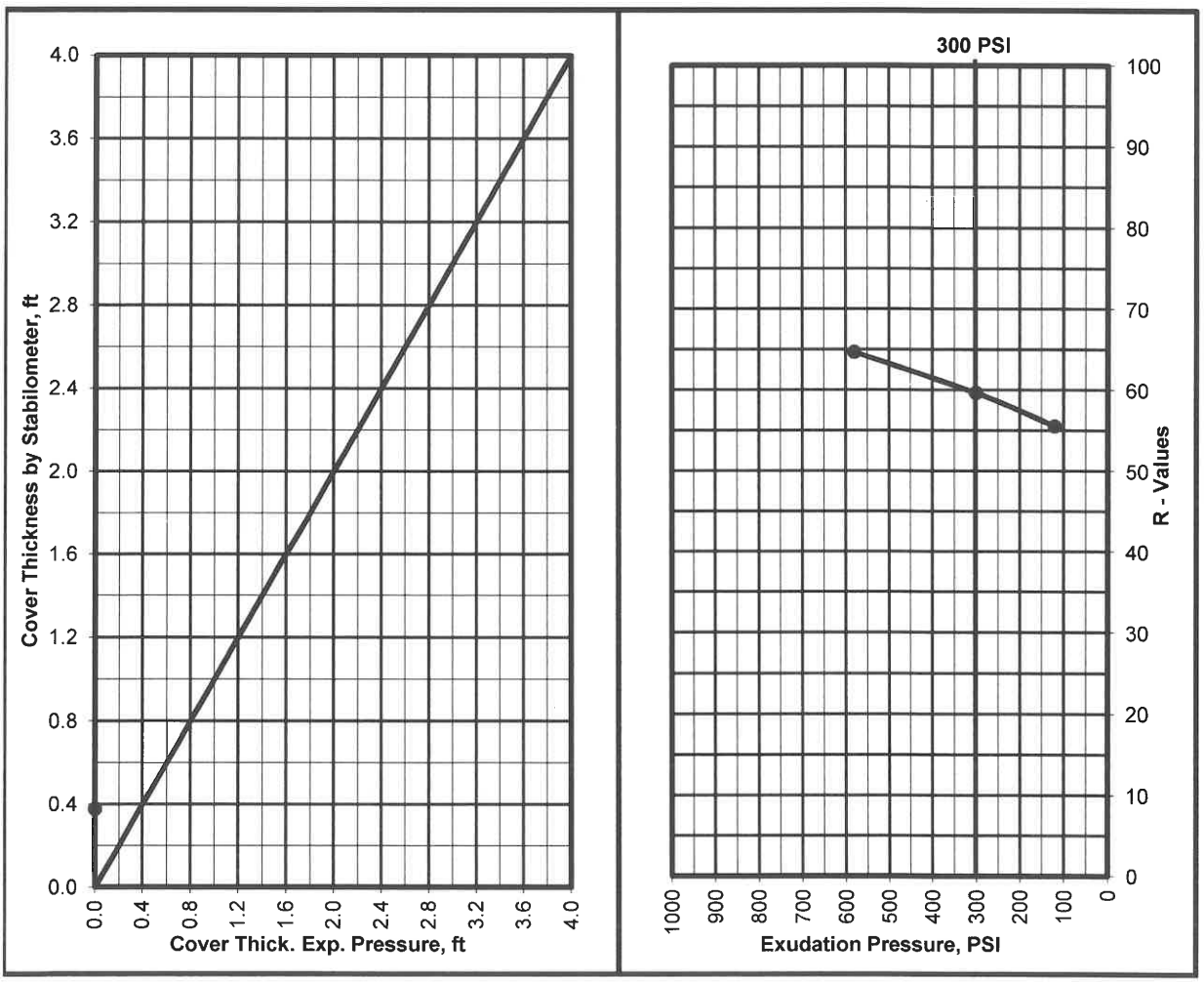
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20138
Project Name	:	Delano Tentative Tract Map
Date	:	12/22/2020
Sample Location/Curve Number	:	RV#3
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	7.5	8.4	7.9
Dry Density, lbm/cu.ft.	131.4	129.3	130.5
Exudation Pressure, psi	580	120	300
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	65	56	60

R Value at 300 PSI Exudation Pressure	**60**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



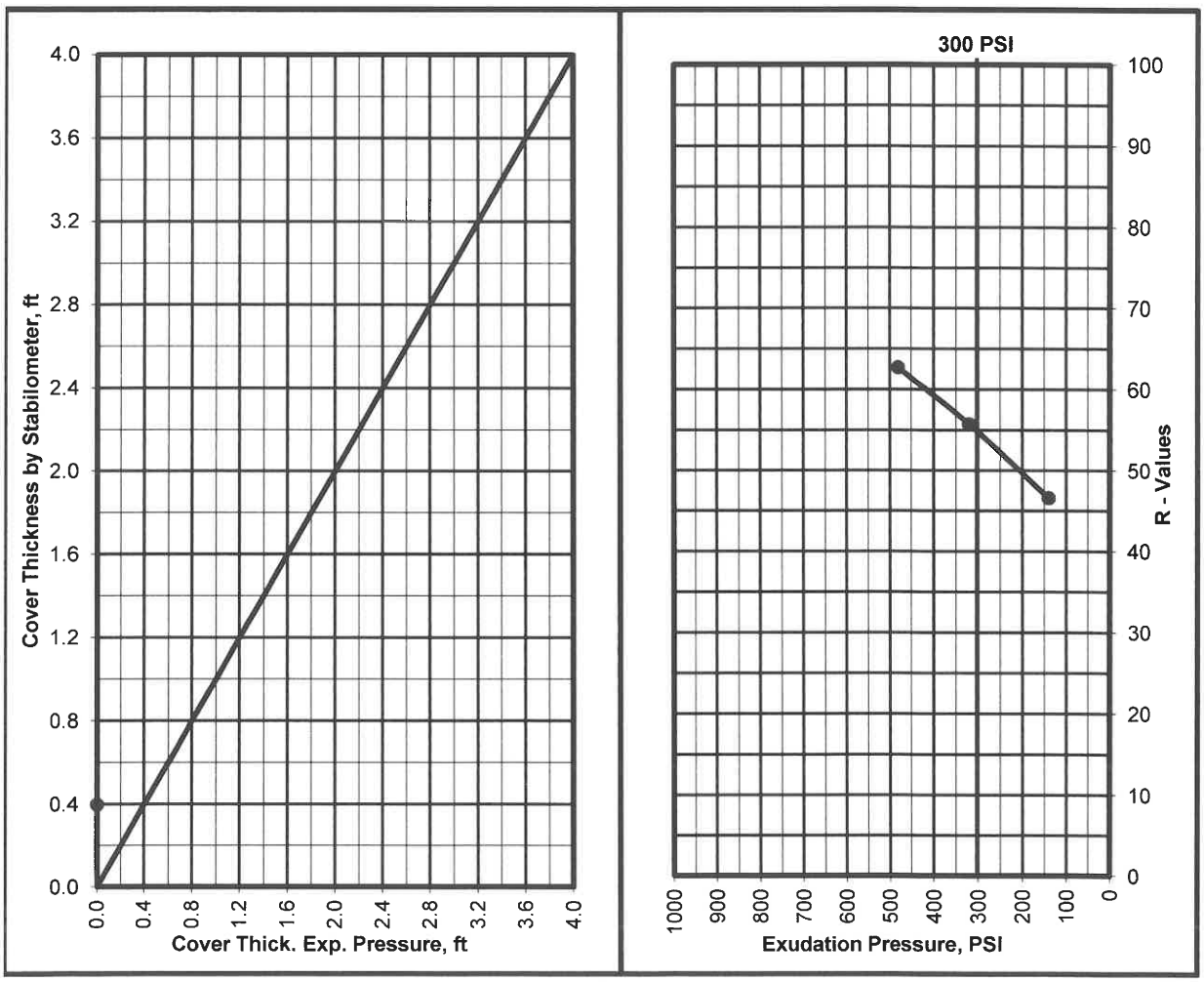
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20138
Project Name	:	Delano Tentative Tract Map
Date	:	12/22/2020
Sample Location/Curve Number	:	RV#4
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	8.8	9.7	9.2
Dry Density, lbm/cu.ft.	128.1	125.8	126.9
Exudation Pressure, psi	480	140	320
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	63	47	56

R Value at 300 PSI Exudation Pressure	**55**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



Krazan Testing Laboratory

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 90 percent relative compaction based on ASTM Test Method D1557 or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contract documents for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious or otherwise unsuitable. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree roots removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill of tree root excavations should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, excavated/scarified to a depth of 12 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill areas shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term "Standard Specifications": hereinafter referred to is the 2018 Standard Specifications of the State of California, Department of Transportation, and the "Materials Manual" is the Materials Manual of Testing and Control Procedures, State of California, Department of Public Works, Division of Highways. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as defined in the applicable tests outlined in the Materials Manual.

2. SCOPE OF WORK - This portion of the work shall include all labor, materials, tools, and equipment necessary for, and reasonably incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically noted as "Work Not Included."

3. PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 90 percent. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

4. UNTREATED AGGREGATE BASE - The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class 2 material, 1½ inches maximum size. The aggregate base material shall be spread and compacted in accordance with Section 26 of the Standard Specifications. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent.

5. AGGREGATE SUBBASE - The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class 2 material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent, and it shall be spread and compacted in accordance with Section 25 of the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

6. ASPHALTIC CONCRETE SURFACING - Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at a central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades and dimensions shown on the plans. The viscosity grade of the asphalt shall be PG 64-10. The mineral aggregate shall be Type B, ½ inch maximum size, medium grading and shall conform to the requirements set forth in Section 39 of the Standard Specifications. The drying, proportioning and mixing of the materials shall conform to Section 39.

The prime coat, spreading and compacting equipment and spreading and compacting mixture shall conform to the applicable chapters of Section 39, with the exception that no surface course shall be placed when the atmospheric temperature is below 50° F. The surfacing shall be rolled with a combination of steel wheel and pneumatic rollers, as described in Section 39-6. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

7. FOG SEAL COAT - The fog seal (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of Section 37.

Project No: 627-02

TRAFFIC STUDY

PROPOSED SINGLE-FAMILY RESIDENTIAL DEVELOPMENT
CECIL AVENUE AND HIETT AVENUE
CITY OF DELANO

Prepared for:

BLUMER CONSTRUCTION, INC.

January 2021

Appendix D

Prepared by:

RUETTGERS & SCHULER
CIVIL ENGINEERS

1800 30th Street, Suite 260
Bakersfield, California 93301

Ian J. Parks, RCE 58155

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INTRODUCTION

The purpose of this study is to evaluate the potential traffic impacts of a proposed single-family residential development located on the west side of Hiett Avenue, north of Cecil Avenue, in the City of Delano, California. A vicinity map is presented in Figure 1 and a location map is presented in Figure 2.

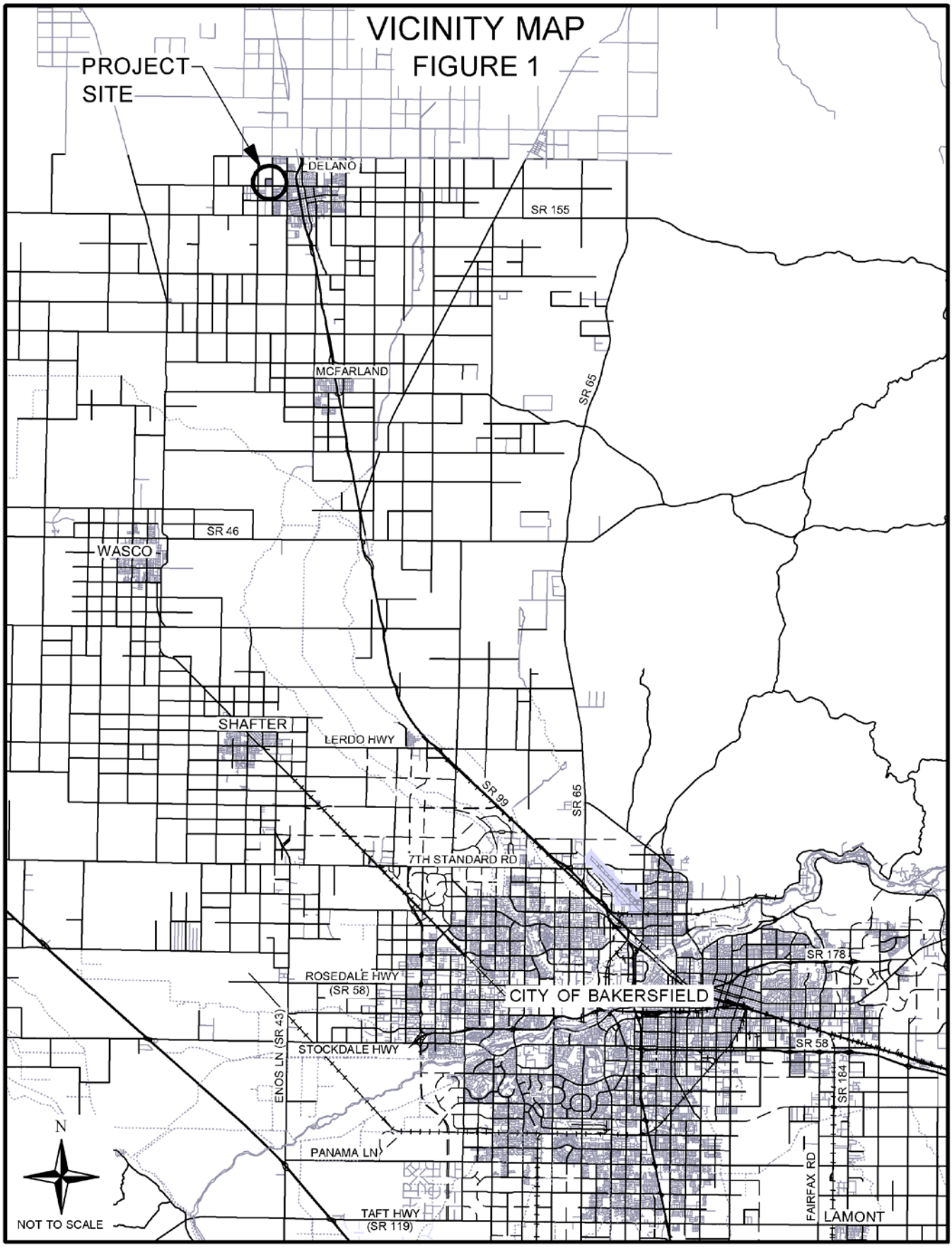
The study methodology is consistent with the California Department of Transportation (Caltrans) "Guide for the Preparation of Traffic Impact Studies," dated December 2002, and Section 15064.3(b) of the California Environmental Quality Act (CEQA), which became effective July 1, 2020. The scope of the study includes four intersections (all signalized) and was developed in coordination with staff from the City of Delano and Caltrans.

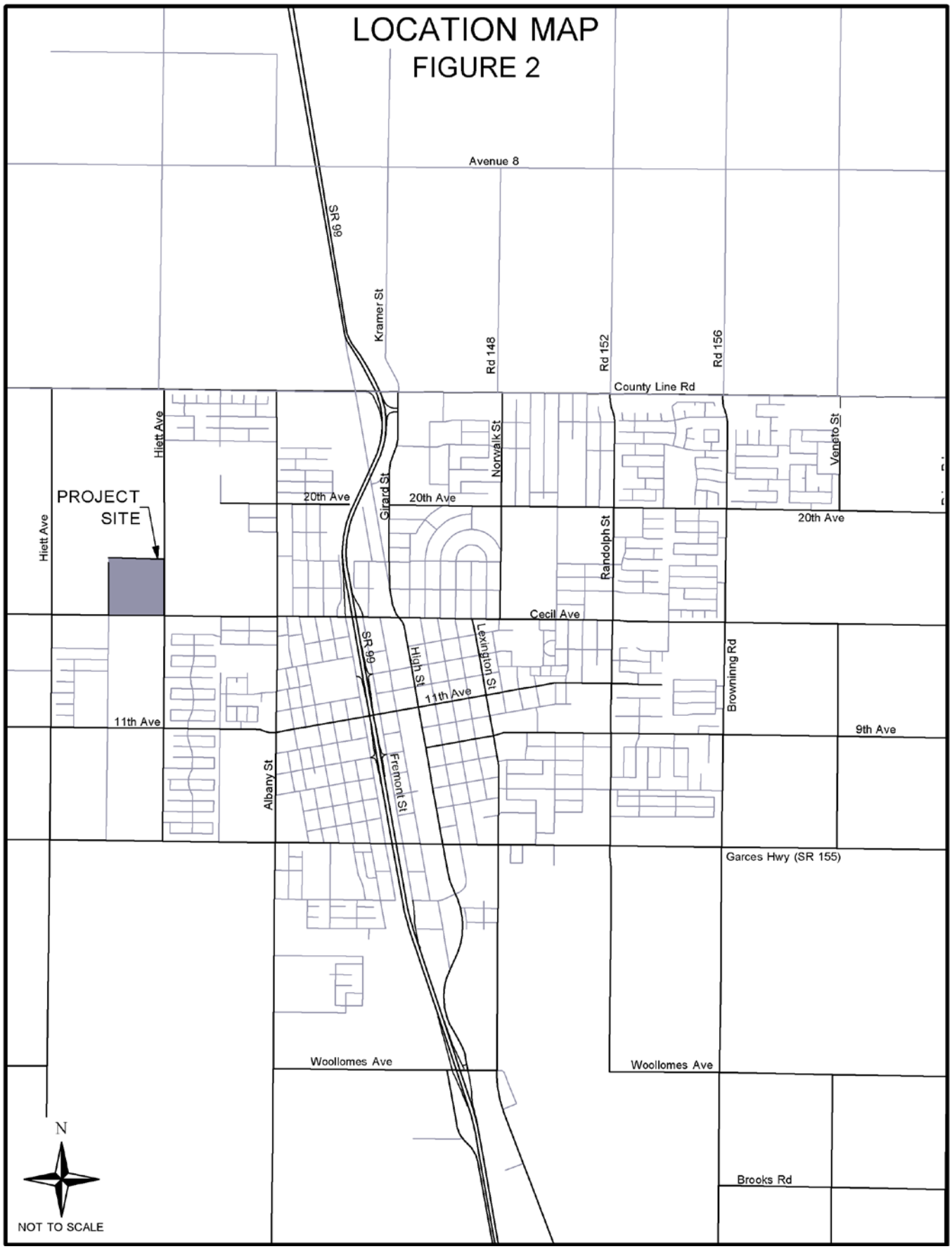
A. Project Land Use and Site Access

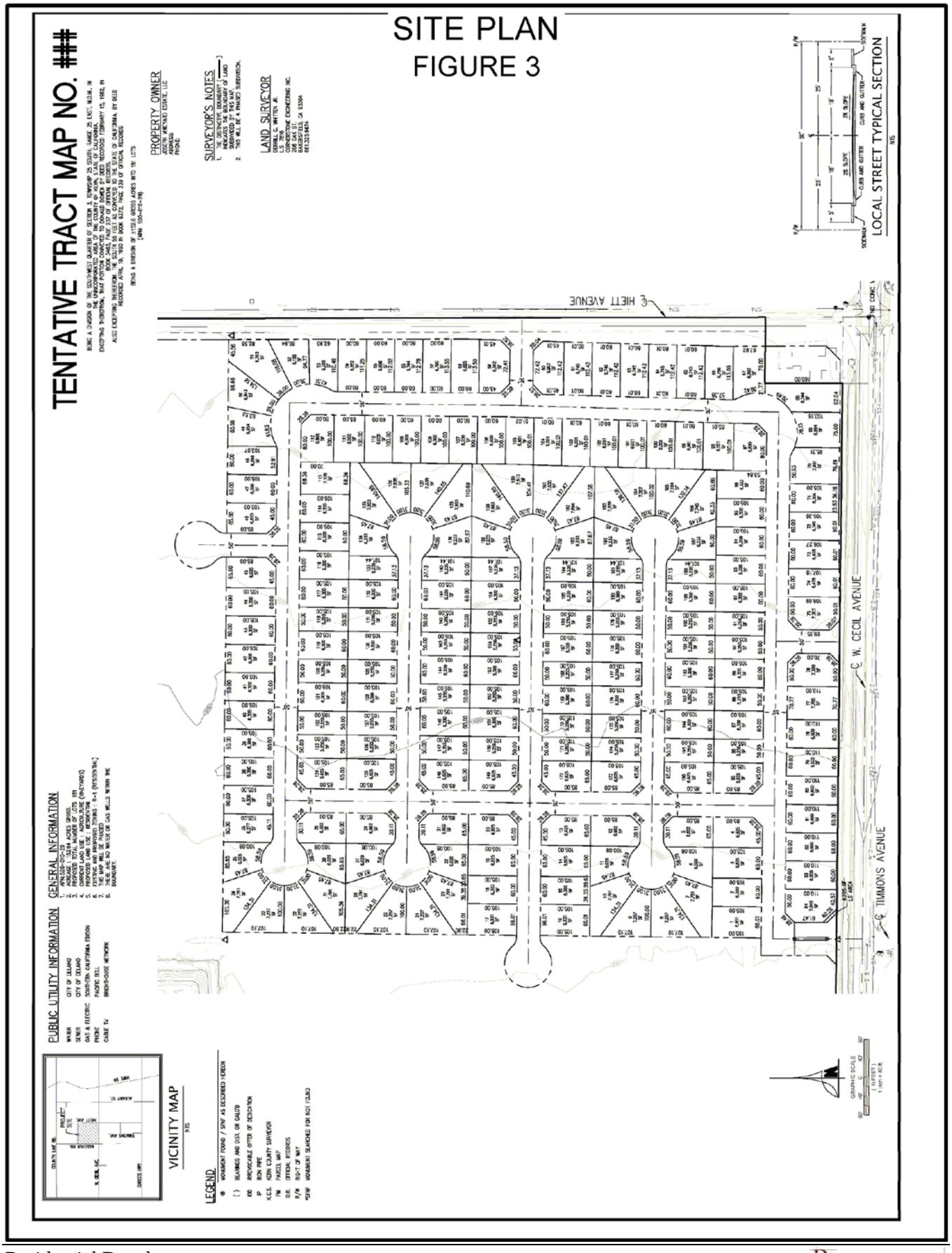
The project site is situated on approximately 38 acres of land currently used for agricultural production. The property is zoned R-1 (Single-Family Residential) and has a General Plan Land Use designation of Low Residential. The proposed development would include 196 single-family lots. Access to the project would be provided by way of Hiett Avenue and Cecil Avenue. A tentative subdivision map is provided in Figure 3.

B. Existing Land Uses in Project Vicinity

Land used for agricultural purposes is located immediately north, south, east and west of the project. Residential developments lie further to the south and east.


VICINITY MAP
FIGURE 1
PROJECT SITE
DELANO
SR 155
MCFARLAND
SR 65
SR 46
WASCO
SHAFTER
LERDO HWY
SR 99
SR 65
7TH STANDARD RD
SR 178
ROSEDALE HWY (SR 58)
CITY OF BAKERSFIELD
STOCKDALE HWY
SR 58
ENOS LN (SR 43)
SR 184
PANAMA LN
FAIRFAX RD
TAFT HWY (SR 119)
LAMONT
N
NOT TO SCALE


LOCATION MAP
FIGURE 2
Avenue 8
SR 99
Kramer St
Rd 148
Rd 152
Rd 156
County Line Rd
Hiett Ave
PROJECT SITE
Hiett Ave
20th Ave
Girard St
20th Ave
Norwalk St
Veneto St
20th Ave
Randolph St
Cecil Ave
SR 99
High St
Lexington St
11th Ave
11th Ave
Browninng Rd
9th Ave
Albany St
Fremont St
Garces Hwy (SR 155)
Woollomes Ave
Woollomes Ave
Brooks Rd
N
NOT TO SCALE


SITE PLAN
FIGURE 3
TENTATIVE TRACT MAP NO. ###
PROPERTY OWNER
SURVEYOR'S NOTES
LAND SURVEYOR
LOCAL STREET TYPICAL SECTION
PUBLIC UTILITY INFORMATION
GENERAL INFORMATION
VICINITY MAP
LEGEND
HIETT AVENUE
C. W. CECIL AVENUE
C. TIMMONS AVENUE

C. Roadway Descriptions

Albany Street is an arterial that extends south from County Line Road approximately 0.5 miles west of State Route 99. It operates as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere. Albany Street provides access to agricultural and residential land uses within the study area.

Cecil Avenue extends from State Route 43 to Famoso Porterville Highway and provides access to commercial, residential, and agricultural land uses. In the vicinity of the project it operates as a four-lane arterial with curb and gutter.

Ellington Street extends south of County Line Road approximately 0.2 miles west of State Route 99 and provides access to residential and commercial land uses. It operates as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere.

Freemont Street extends south of County Line Road approximately 0.2 miles east of State Route 99 and provides access to residential and commercial land uses. It operates as a two-lane roadway with curb and gutter.

Hiett Street is a collector that extends south from County Line Road midway between Albany Street and Melcher Road. It exists as a two-lane roadway with improvements adjacent to development and graded shoulders elsewhere. Hiett Street provides access to agricultural and residential land uses within the study area.

State Route 99 is a major north-south route through the central valley of California, extending from Interstate 5 south of Bakersfield to Sacramento. State Route 99 operates as a four-to-six lane freeway within the study area.

PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The project trip generation and design hour volumes shown in Table 1 were estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition (2017). Trip equations and directional splits for ITE Land Use Code 210 (Single-Family Detached Housing) was used to estimate project trips for weekday peak hour of adjacent street traffic based on information provided by the project applicant.

Table 1
Project Trip Generation

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	196 Dwelling Units	eq	1931	eq	25% 36	75% 108	eq	63% 122	37% 72

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of project peak hour trips is shown in Table 2 and represents the movement of traffic accessing the project site by direction. The project trip distribution was developed based on site location and travel patterns anticipated for the proposed land use.

Table 2
Project Trip Distribution

Direction	Percent
North	30
East	30
South	30
West	10

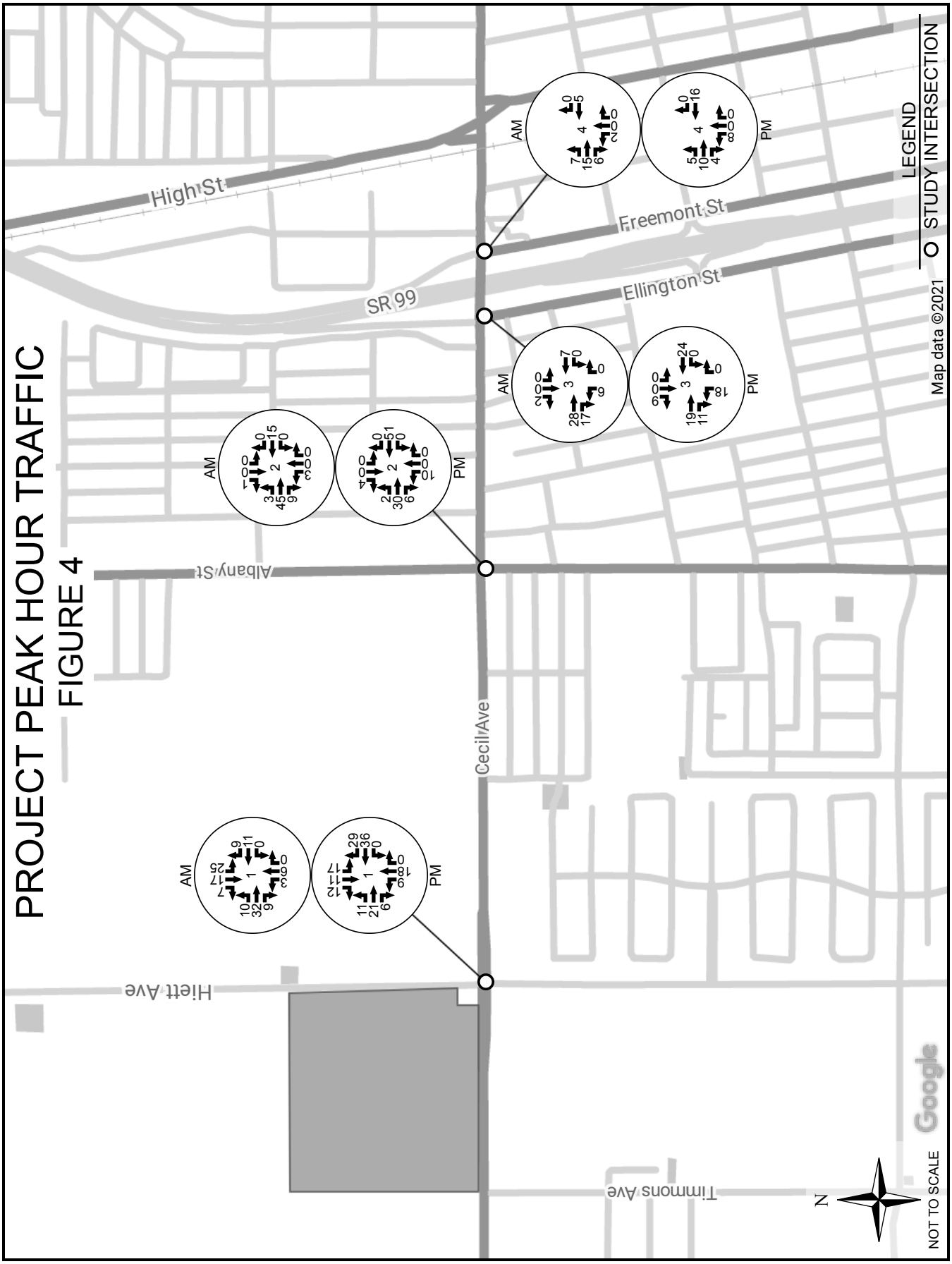
Project peak hour trips were assigned to the study intersections as shown in Figure 4. Project trip assignment was developed based on trip generation, trip distribution and likely travel routes for traffic accessing the project site.

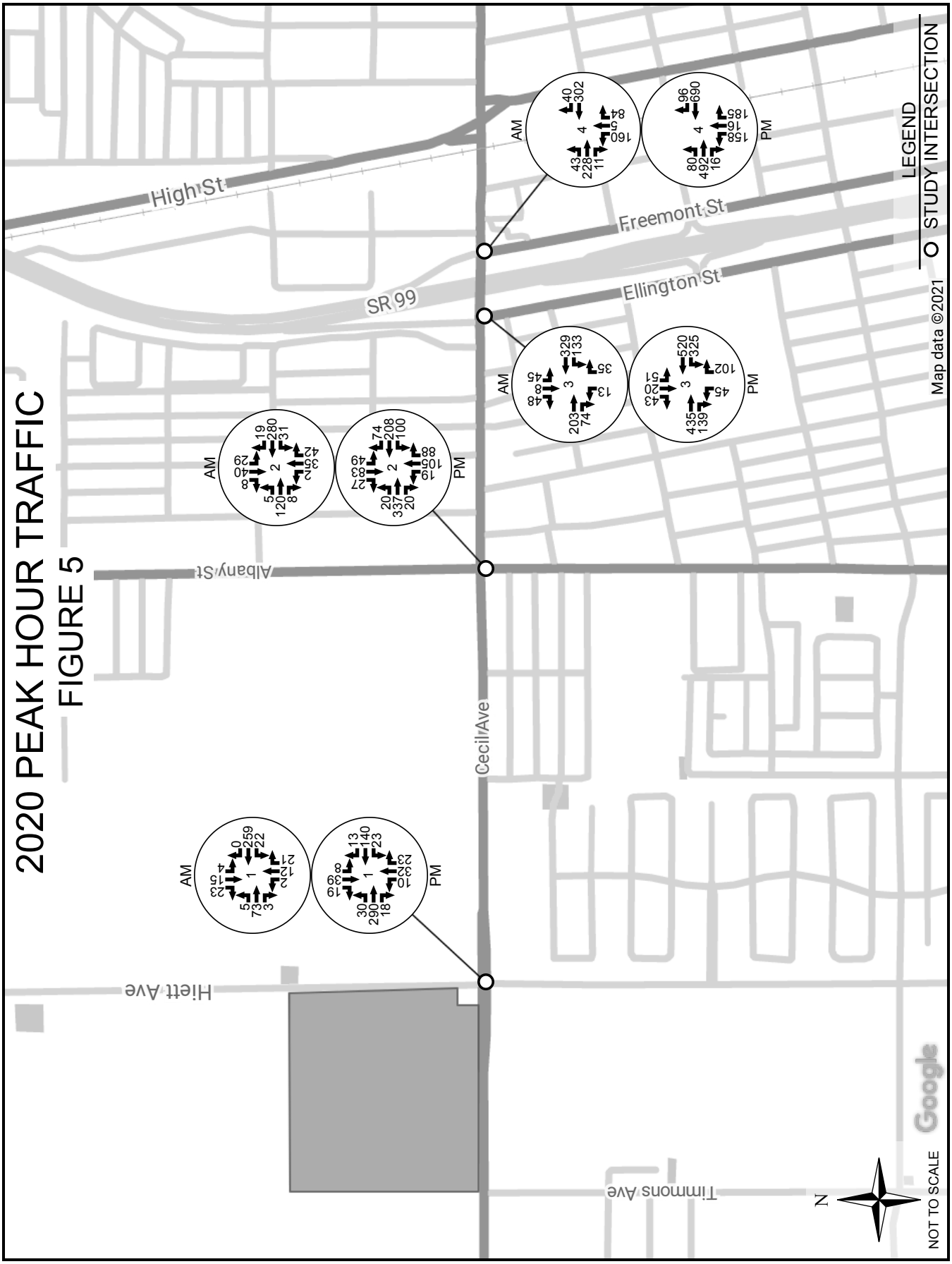
EXISTING AND FUTURE TRAFFIC

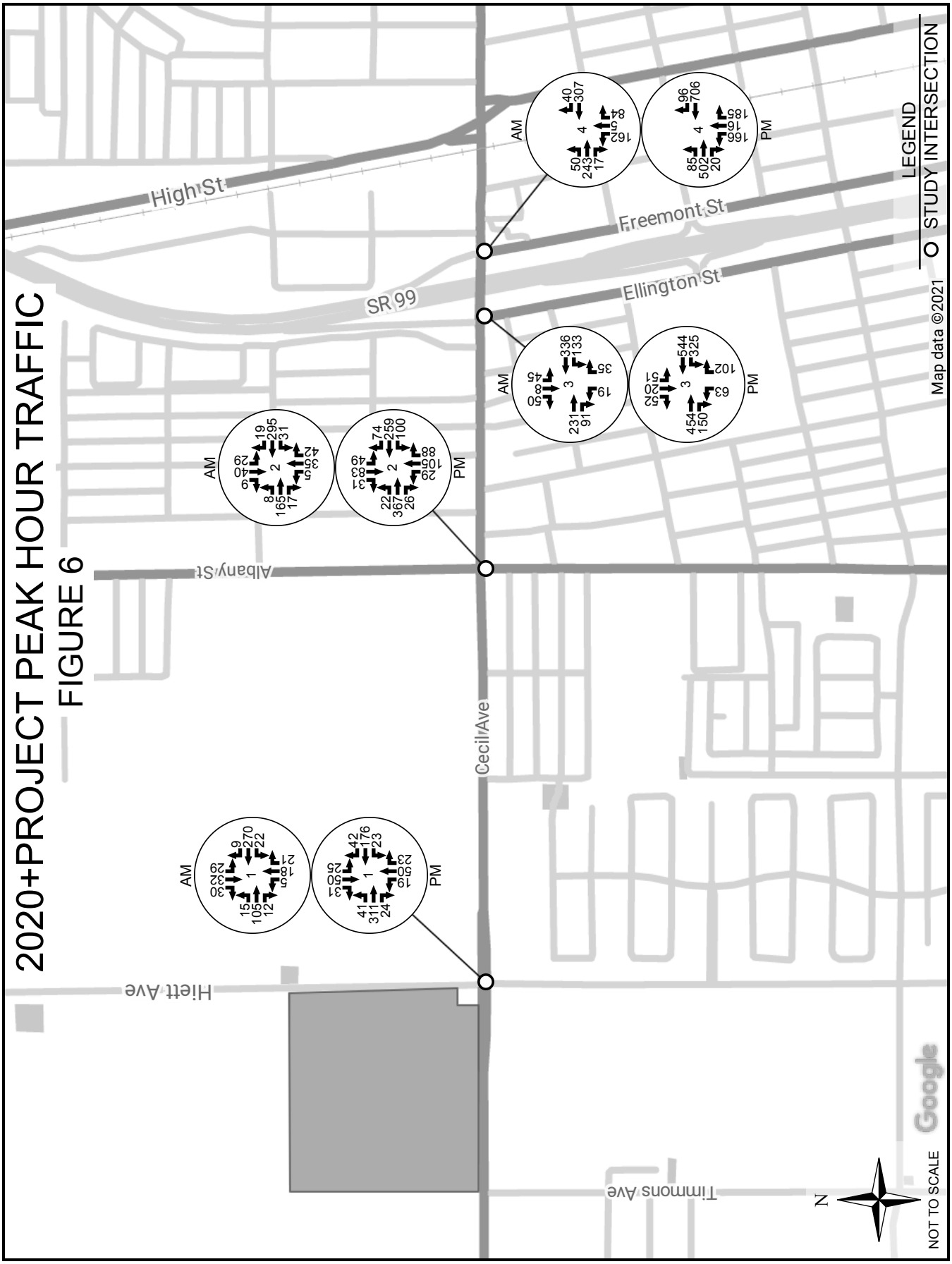
Weekday peak hour turning movements were counted at the study intersections in December 2020. Traffic counts were obtained between the hours of 7:30 and 8:30 AM, and 4:30 and 5:30 PM. Count data is included in the Appendix. Due to the current COVID-19 pandemic and the various shelter-in-place orders, the traffic counts were compared to historical turn movement volume data in the vicinity of the project. It was determined that the counts performed were generally accurate and do not represent an appreciable reduction. Therefore, no adjustments were made to the counts.

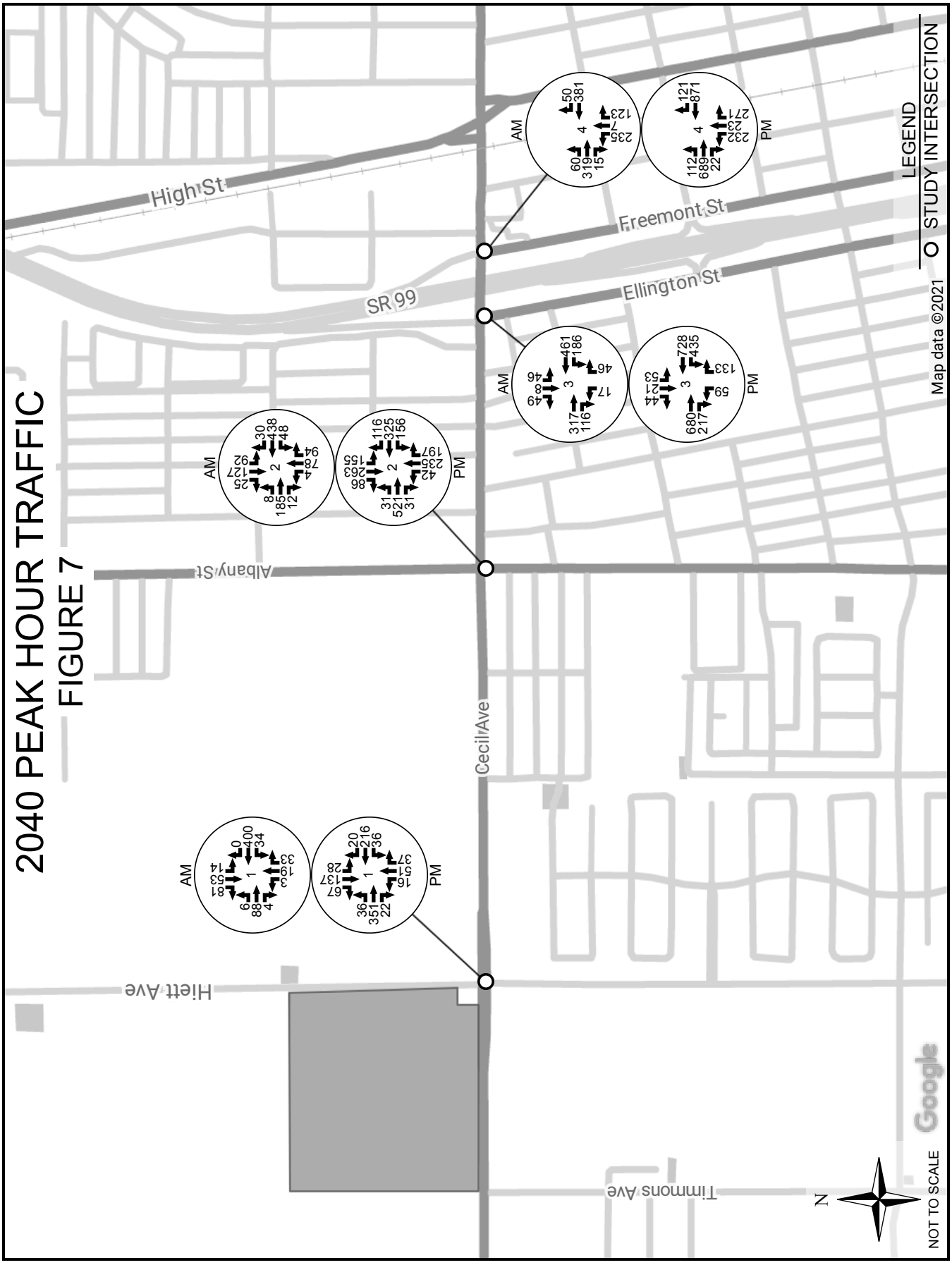
Annual growth rates ranging between 0.15 and 6.47 percent were applied to existing peak hour volumes to estimate future peak hour volumes for the year 2040 (planning horizon year). These growth rates were estimated based on a review of regional travel demand model data from the Kern Council of Governments (KernCOG).

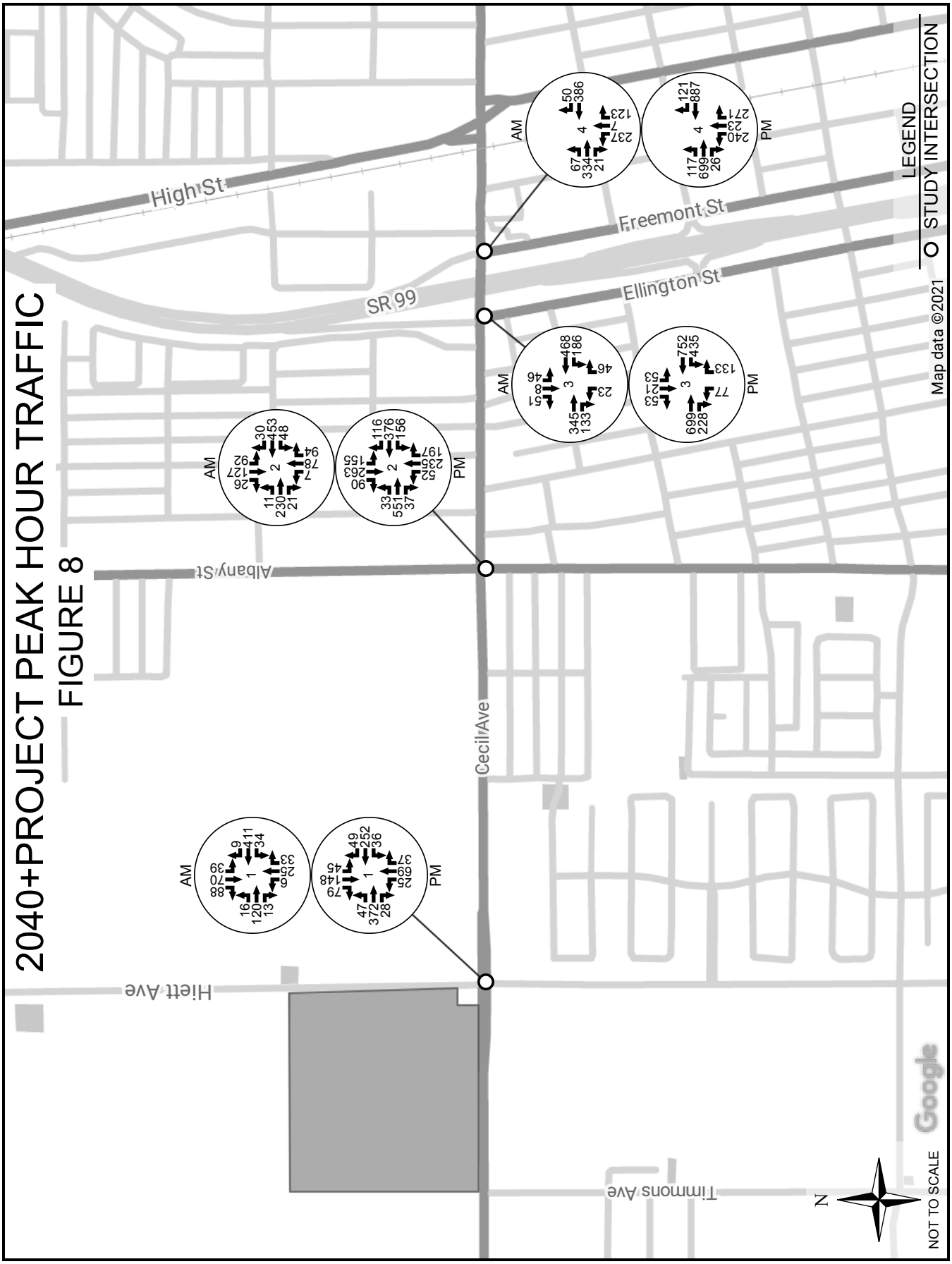
Existing peak hour volumes are shown in Figure 5. Existing plus project peak hour volumes are shown in Figure 6. Future peak hour volumes for the year 2040, both without and with project traffic, are shown in Figures 7 and 8, respectively.


PROJECT PEAK HOUR TRAFFIC
FIGURE 4
LEGEND
STUDY INTERSECTION
Map data ©2021
NOT TO SCALE
N
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Google
AM
PM


2020 PEAK HOUR TRAFFIC
FIGURE 5
LEGEND
STUDY INTERSECTION
High St
Freemont St
SR 99
Ellington St
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
AM
PM
Map data ©2021
Google
N
NOT TO SCALE


2020+PROJECT PEAK HOUR TRAFFIC
FIGURE 6
LEGEND
STUDY INTERSECTION
AM
PM
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Map data ©2021
Google
N
NOT TO SCALE


2040 PEAK HOUR TRAFFIC
FIGURE 7
LEGEND
STUDY INTERSECTION
Map data ©2021
NOT TO SCALE
N
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
Google
AM
PM


2040+PROJECT PEAK HOUR TRAFFIC
FIGURE 8
LEGEND
STUDY INTERSECTION
High St
Freemont St
Ellington St
SR 99
Albany St
Cecil Ave
Hiett Ave
Timmons Ave
AM
PM
Map data ©2021
Google
NOT TO SCALE
N

INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro 9 software from Trafficware. This software utilizes the capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual 2010 (HCM 2010). The analysis was performed for each of the following traffic scenarios.

- Existing (2020)
- Existing (2020) + Project
- Future (2040)
- Future (2040) + Project

Level of service (LOS) criteria for unsignalized and signalized intersections, as defined in HCM 2010, are presented in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

Level of Service	Average Control Delay (sec/veh)	Expected Delay to Minor Street Traffic
A	≤ 10	Little or no delay
B	> 10 and ≤ 15	Short delays
C	> 15 and ≤ 25	Average delays
D	> 25 and ≤ 35	Long delays
E	> 35 and ≤ 50	Very long delays
F	> 50	Extreme delays

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay (sec/veh)	Volume-to-Capacity Ratio
A	≤ 10	< 0.60
B	> 10 and ≤ 20	0.61 - 0.70
C	> 20 and ≤ 35	0.71 - 0.80
D	> 35 and ≤ 55	0.81 - 0.90
E	> 55 and ≤ 80	0.91 - 1.00
F	> 80	> 1.00

As stated in the City of Delano General Plan Circulation Element, the City has set a level of service standard of LOS C, except at freeway interchanges and other high-volume locations, where the standard

is LOS D. Caltrans also has a level of service standard of C. A minimum acceptable level of service threshold of LOS C was used for the purposes of this study.

Peak hour level of service for the study intersections is presented in Tables 3a and 3b. Intersection delay in seconds per vehicle is shown within parentheses for intersections operating below LOS C.

Table 3a
Intersection Level of Service
Weekday PM Peak Hour

#	Intersection	Control	2020	2020+ Project	2040	2040+ Project
1	Hiett Ave & Cecil Ave	Signal	B	C	C	C
2	Albany St & Cecil Ave	Signal	B	B	B	B
3	SR 99 SB Off Ramp/Ellington St & Cecil Ave	Signal	B	C	C	C
4	SR 99 NB On Ramp/Fremont St & Cecil Ave	Signal	B	B	C	C

Table 3b
Intersection Level of Service
Weekday AM Peak Hour

#	Intersection	Control	2020	2020+ Project	2040	2040+ Project
1	Hiett Ave & Cecil Ave	Signal	B	B	C	C
2	Albany St & Cecil Ave	Signal	A	A	B	B
3	SR 99 SB Off Ramp/Ellington St & Cecil Ave	Signal	B	B	B	B
4	SR 99 NB On Ramp/Fremont St & Cecil Ave	Signal	B	B	C	C

ROADWAY ANALYSIS

As noted previously, the City of Delano General Plan Circulation Element states that the City has a level of service standard of LOS C, except at freeway interchanges and other high-volume locations, where the standard is LOS D. Caltrans also has a level of service standard of LOS C. A minimum acceptable level of service threshold of LOS C was used for the purposes of this study.

Average daily traffic (ADT) volumes and roadway capacities are presented in Tables 5a and 5b, respectively. As defined in HCM 2010, a volume-to-capacity ratio (v/c) of greater than 0.80 corresponds to a LOS of less than C.

Table 4a
ADT Volumes

Roadway Segment	2020	Project ADT	2020+Proj ADT	2040 ADT	2040+Proj ADT
Cecil Ave: Hiett Ave to Albany St	10,329	1,025	11,354	15,968	16,993
Cecil Ave: Albany St to Ellington St	13,313	806	14,119	17,931	18,737
Cecil Ave: Ellington St to Freemont St	17,135	428	17,563	20,908	21,336

2020 ADT estimated based on 2019 count data obtained from KernCOG's Transportation Data Management System
Average annual growth rates applied to 2020 ADT to estimate 2040 ADT

Table 4b
Roadway Capacity

Roadway Segment	Existing Capacity	Mitigated Capacity	v/c 2020	v/c 2020+Proj	v/c 2040	v/c 2040+Proj	v/c (Mit) 2040+Proj
Cecil Ave: Hiett Ave to Albany St	13,100	27,360	0.79	**0.87**	**1.22**	**1.30**	0.41
Cecil Ave: Albany St to Ellington St	27,360	-	0.49	0.52	0.66	0.68	-
Cecil Ave: Ellington St to Freemont St	27,360	-	0.63	0.64	0.76	0.78	-

Existing Capacity (vehicles/day) taken from Table 3-2, City of Delano General Plan Circulation Element (page 3-9)

QUEUE LENGTH ANALYSIS

Existing and future peak hour volumes, both with and without project traffic, were used to analyze whether traffic queues exceed storage capacities at the State Route 58 ramps at Ellington Street and Freemont Street. The queue length analysis was conducted using Synchro 9 and SimTraffic software. The analysis results shown in Tables 5a and 5b are provided for informational purposes only. All lengths are reported in feet.

Table 5a
PM Queue Length Analysis
Weekday Peak Hour

Intersection	Cecil Ave & SR 99 SB Off Ramp/ Ellington St		Cecil Ave & SR 99 NB On Ramp/ Feemont St		
Movement	SBLT	SBR	EBL	WBR	NBT
Storage Capacity	1200	1200	120	-	-
2020	126	69	104	130	183
2020+Project	106	75	97	109	212
2040	112	70	114	261	315
2040+Project	120	70	81	190	271

Table 5b
AM Queue Length Analysis
Weekday Peak Hour

Intersection	Cecil Ave & SR 99 SB Off Ramp/ Ellington St		Cecil Ave & SR 99 NB On Ramp/ Feemont St		
Movement	1200	1200	120	-	-
Storage Capacity	SBLT	SBR	EBL	WBR	NBT
2020	110	70	67	45	160
2020+Project	120	69	52	25	148
2040	102	70	57	46	264
2040+Project	106	63	120	31	223

MITIGATION

Roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project are presented in Table 6. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.

Table 6
Future Roadway Improvements and Local Mitigation

Roadway Segment	Total Improvements Required by 2040
Cecil Ave: Hiett Ave to Albany St	Add two lanes

VMT ANALYSIS

An evaluation of vehicle miles traveled (VMT) for project traffic was conducted based on applicable California Environmental Quality Act (CEQA) guidelines. The analysis involved comparing an estimate of VMT attributable to the project to a baseline VMT for the greater Delano area and assessing whether project VMT would result in a significant transportation impact.

VMT data was obtained from the Kern Council of Governments (KernCOG) in order to establish a baseline for daily vehicle miles traveled in the Kern County area. Based on household and employment populations in the greater Kern County area, as well as travel patterns throughout the region, KernCOG data shows an average VMT per trip of 9.76 miles.

Several factors were taken into consideration when estimating project VMT, including project trip generation and distribution, trip type and probable trip destination. As shown in Table 9, it is anticipated that the project would result in an average VMT per trip of 6.56 miles.

Table 7
Project Vehicle Miles Traveled

Trip Type	Daily Project Trips	Avg Trip Length (miles)	Daily Miles Traveled
AM Commuter Trips	144	21	3,024
PM Commuter Trips	194	21	4,074
Other Trips	1,593	4	5,576
		Average	6.56

Average commuter trip length based on trip generation/distribution and probable destinations
Assumed majority of commuter trips are work trips and half of work trips travel outside of Delano
Average trip length for other trips assumes majority of trips remain within greater Delano area

The project average VMT of 6.61 miles is approximately 32% lower than the average regional VMT of 9.76 miles. Therefore, the project will not result in a significant transportation impact under CEQA.

SUMMARY AND CONCLUSIONS

The purpose of this study is to evaluate the potential traffic impacts of a proposed single-family residential development located on the west side of Hiett Avenue, north of Cecil Avenue, in the City of Delano, California. The scope of the study includes four intersections (all signalized) and was developed in coordination with staff from the City of Delano and Caltrans.

All intersections currently operate at an acceptable level of service prior to, and with the addition of project traffic and are anticipated to continue to do so through 2040.

The segment of Cecil Avenue between Hiett Avenue and Albany Street currently operates below LOS C with the addition of project traffic and is shown to continue to operate below an acceptable level of service through the year 2040, both with and without project traffic. This segment can be mitigated to operate above LOS C with roadway widening.

The mitigation measures identified in Table 6 will be required, as described above, in order to reduce the impacts for the listed facilities to less-than-significant levels in the year 2040. Mitigation measures will be accomplished through improvements identified in the Delano Transportation Impact Fee program and adjacent development.

The average project VMT is approximately 32% less than the baseline average regional VMT. Therefore, the project will not result in a significant transportation impact under CEQA.

REFERENCES

1. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2014 Edition, California Department of Transportation (Caltrans)
2. City of Delano General Plan, December 2005
3. Highway Capacity Manual 2010, Transportation Research Board
4. Technical Advisory on Evaluating Transportation Impacts in CEQA, State of California, Governor's Office of Planning and Research (OPR), December 2018
5. Transportation Data Management System, Kern Council of Governments (KernCOG)
6. Trip Generation Manual, 10th Edition, Institute of Transportation Engineers (ITE)

EXHIBIT J

CO “HOT SPOTS” ANALYSIS

CO “Hot Spot” modeling is required if a traffic study reveals that the proposed project will reduce the LOS on one or more streets to E or F; or, if the proposed project will worsen an existing LOS F.

A traffic study is currently was prepared to detail the LOS change associated with the project. With the recommended mitigation measures, the proposed project is not expected to reduce the composite LOS to E or F at any of the impacted intersections.