Silicon Sage Centerville Mixed Use Project

Initial Study

37358 through 37494 Fremont Boulevard, 3768 through 3820 Peralta Avenue, 3921 through 3943 Rose Court, and 37417 Jason Way, Fremont, CA.

City of Fremont

July 16, 2018

FINAL

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Quality information

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Revision History

Revision	Revision date	Details
0	4/30/18	Draft for City Review
1	6/29/18	Screencheck Draft
2	7/16/18	Final - For Public Release

Distribution List

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Acronyms and Abbreviations

$\mu g/m^3$	micrograms per meter cubed
AAA	All Ages and Abilities
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC Transit	Alameda–Contra Costa Transit District
ACE	Altamont Corridor Express
ACFCWD	Alameda County Flood Control and Water Conservation District
ACM	asbestos-containing materials
ACTC	Alameda County Transportation Commission
ACWD	Alameda County Water District
ADA	Americans with Disabilities Act
ADT	average daily traffic
AF/yr	acre-feet per year
AMP	Archaeological Monitoring Plan
ARB	California Air Resources Board
AUF	acoustical usage factor
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit District
BAU	business-as-usual
bgs	below ground surface
BMP	best management practices
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	*Climate Action Plan*
CDFW	California Department of Fish and Wildlife
Centerville	Centerville’s main commercial strip along Fremont Boulevard
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geologic Survey
CH_4	Methane
City	City of Fremont
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide-equivalents
CRHR	California Register of Historical Resources
dB	Decibels
dBA	A-weighted sound levels

DNL	day-night average noise level
DOF	California Department of Finance
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
ESLs	Environmental Screening Levels
FAR	Floor Area Ratio
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLB	fluorescent light ballasts
FMC	Fremont Municipal Code
FTA	Federal Transit Administration
FUSD	Fremont Unified School District
General Permit	Statewide General Construction Activities Stormwater Permit
General Plan	City of Fremont General Plan
GHG	greenhouse gas
GWP	global warming potential
HARB	Historic Architectural Review Board
HEPA	High efficiency particulate air
HOT	high occupancy toll
HOV	high occupancy vehicle
HPD	Historic Properties Directory
I-680	Interstate 680
I-880	Interstate 880
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
ITS	intelligent transport system
LBP	lead-based paint
L_{dn}	day-night average noise level
L_{eq}	equivalent noise level
LID	low impact development
L_{max}	maximum noise level
LOS	Level of Service
LUST	Leaking Underground Storage Tank
MEI	maximally exposed individual
mgd	million gallons per day
MMT	million metric tons
MRP	Municipal Regional Permit
MSL	mean sea level
MT	metric tons
MTC	Metropolitan Transportation Commission
MUTCD	Manual on Uniform Traffic Control Devices
N_2O	nitrous oxide
NAHC	Native American Heritage Commission

NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	federal Occupational Health and Safety Administration
PCB	Polychlorinated Biphenyl
PDAs	priority development areas
PM	particulate matter
PM_{10}	particulate matter equal to or less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in diameter
ppm	parts per million
PPV	peak particle velocity
rms	root mean square
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
Scoping Plan	Climate Change Scoping Plan
SF	square-foot or square feet
SFBAAB	San Francisco Bay Area Air Basin
SLF	Sacred Lands File
SO_2	sulfur dioxide
SR	State Route
SR-84	State Route 84
SVOCs	semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCM	Transportation Control Measures
TC-P	Town Center-Pedestrian
TIA	transportation impact analysis
TOD	Transit-Oriented Development
tpd	tons per day
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons as diesel
TPH-g	total petroleum hydrocarbons as gasoline
TSCA	Toxic Substances Control Act
U.S. EPA	U.S. Environmental Protection Agency
USD	Union Sanitary District
USGS	United States Geological Survey
UWMP	urban water management plan
VdB	vibration decibels
VOCs	volatile organic compounds
WTP2	Water Treatment Plant No. 2

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1. Introduction

1. Project Title:	Fremont Boulevard Mixed-Use Project (PLN2017-00229)
2. Lead Agency Name and Address:	City of Fremont, Community Development Department, 39550 Liberty Street, 1st Floor, Fremont, CA 94538
3. Lead Agency Contact:	Joel Pullen, Senior Planner Phone: (510) 494-4436 Email: jpullen@fremont.gov
4. Project Location:	37358 through 37494 Fremont Boulevard, 3768 through 3820 Peralta Avenue, 3921 through 3943 Rose Court, and 37417 Jason Way, Fremont, CA.
5. Assessor Parcel Number(s):	501-1475-28-2, 501-1475-32-06, 501-1475-33, 501-1475-34, 501-1475-35-2, 501-1475-36-2, 501-1475-37, 501-1475-38, 501-1475-39, 501-1475-40-2, 501-1475-41-1, 501-1475-43-4, 501-1475-49-2, and 501-1475-50-2.
6. Project Sponsor's Name and Address:	SiliconSage Builders, LLC. Attn.: Shaivali Desai 560 S. Mathilda Avenue, Sunnyvale, CA 94086
7. General Plan Designation(s):	Town Center
8. Zoning Designation(s):	Town Center - Pedestrian (TC-P) with Transit-Oriented Development (TOD) Overlay District

2. Project Description

2.1 Project Site and Vicinity

The project site consists of 14 existing parcels totaling approximately 4.6-acres (200,707 square feet [SF]) bounded by Fremont Boulevard, Peralta Boulevard, Jason Way, and Parish Avenue, in the Centerville Community Plan Area of the City of Fremont (City). The project site and vicinity is shown in Figure 2-1. The site is relatively flat, and is at an elevation of approximately 54 feet mean sea level (MSL). The subject property contains mostly commercial buildings (including retail stores, restaurants, and a small warehouse) and associated surface parking. An unoccupied single-family residence (37367 Jason Way) and a decommissioned fire station (37412 Fremont Boulevard) are also present on the site. The former fire station building has been evaluated as potentially eligible for the California Register of Historical Resources and National Register of Historic Places (Page & Turnbull, 2018).

Figure 2-2 shows the project site and the existing uses, and Figure 2-3 shows the former fire station.

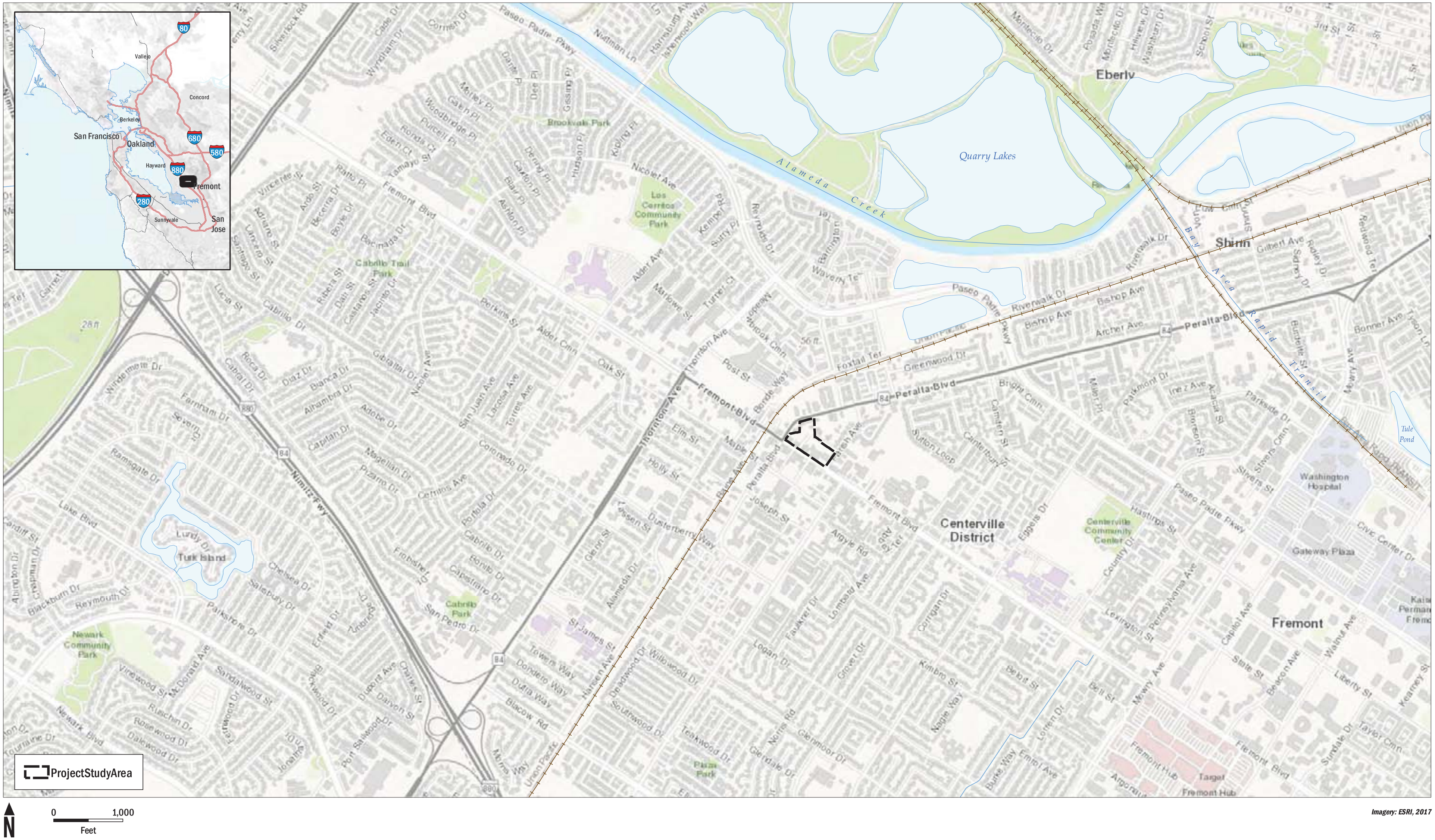
The project site has a General Plan land use designation of Town Center, and is zoned TC-P (TOD), Town Center-Pedestrian with Transit-Oriented Development Overlay District.

2.2 Surrounding Land Uses

Areas to the north and west of Peralta Boulevard and south of Fremont Boulevard in the vicinity of the project site are predominantly commercial, while areas to the north of Jason Way are predominantly residential. Land to the southeast of Parish Avenue is occupied by the Holy Spirit Church and Holy Spirit School and associated uses.

The businesses in the Centerville Town Center area serve the needs of the surrounding community. Commercial and mixed-use land uses are concentrated along Fremont Boulevard, which follow the land use objectives of the Centerville Community Plan Element of the General Plan (City of Fremont, 2011), which incorporated recommendations from the Centerville Framework Plan (City of Fremont, 2010). The zoning allows for a mix of commercial and residential uses along Fremont Boulevard, typically with ground-floor commercial uses and residential uses above. Businesses in the Centerville Town Center are typically small, locally owned enterprises or franchisees. The types of commercial uses include neighborhood-serving restaurants, markets, small shops, and personal services.

Peralta Boulevard, adjacent to the project site, is also designated as State Route 84. Railroad tracks utilized by the Altamont Corridor Express (ACE), Amtrak, and Capitol Corridor passenger services and freight services run approximately parallel to Peralta Boulevard, about 300 to 400 feet north of the project site.



Imagery: ESRI, 2017

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Fremont Blvd Mixed Use

FIGURE 2-1
Project Site and Vicinity Map

Imagery: ESRI, 2017

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FIGURE 2-2
Aerial View of Site and Existing Uses

AECOM, 2018

FIGURE 2-3

Existing Conditions - Former Fire Station

2.3 Project Objectives

The objectives for the proposed project are to:

- Redevelop an aging, underutilized commercial site with a new mixed-use project that would transform an entire block within the heart of the Centerville Town Center into a vibrant, pedestrian-friendly environment, consistent with the visions of the Centerville Community Plan (2011) and Centerville Framework Plan (2010).
- Enhance the character of the Centerville Town Center with a project that is compatible in scale and design with existing development and historic resources located along Fremont Boulevard and in the surrounding neighborhood, features a complementary mix of land uses that would help to enliven the area, and provide a comfortable and safe environment for pedestrians through the provision of new street improvements and various traffic-calming measures.
- Provide a mid-block pedestrian connection between Peralta Boulevard and Parish Avenue connecting Fremont Boulevard to Jason Way and extend Jason Way all the way to Peralta Boulevard in order to further improve connectivity and walkability in the heart of the historic Town Center.
- Develop high-quality and well-designed housing at higher densities within a Transit-Oriented Development Overlay District which would contribute towards meeting the City's Regional Housing Needs Allocation and encourage transit ridership by locating new housing within walking distance of the Centerville Train Depot and several AC Transit bus lines.
- Promote land use compatibility between the proposed project and the adjoining neighborhood and reinforce the existing pattern of continuous storefronts along Fremont Boulevard by locating the mixed-use buildings directly up to the front property line and the townhomes at the rear of the site adjacent to the existing single-family neighborhood along Jason Way and Parish Avenue.
- Create a continuous and safe walking environment for pedestrians along the subject blocks of Fremont Boulevard, Peralta Boulevard, Parish Avenue, and Jason Way in conformance with the goals and policies of the Mobility Element of the General Plan by eliminating and consolidating driveways, constructing all new sidewalks, and installing a new traffic signal at the intersection of Fremont Boulevard and Parish Avenue.

2.4 Project Characteristics

Table 2-1 below provides a summary of the proposed development, indicating the mix of residential types, amount of retail space, and intended use of the former fire station. In addition to the proposed project, the applicant has proposed a variant, which would increase the amount of residential units, retail floor area, and parking spaces, and demolish the former fire station. The proposed project and the variant are both described in detail in the following sections and are analyzed in this document at an equal level of detail.

2.4.1 Proposed Project (Fire Station Retained)

The proposed project would develop 72 townhomes, 64 apartments, and approximately 25,000 SF of retail uses, along with a community clubhouse, swimming pool, children's playground, and outdoor amenity areas, for use by residents and their guests. The fire station would be retained and refurbished, with a new use as determined by City Council. The residential density of the proposed project would be 29.9 dwelling units per acre. The proposed site plan for the project is shown in Figure 2-4.

Retail uses would be located on the ground floor of two buildings (Buildings A and B) fronting Fremont Boulevard, with residential apartments above. These two buildings would be three stories, except for a small portion of Building A fronting Peralta Boulevard, which would be four stories.

Table 2-1 Comparison of Proposed Project and Variant

Project Component	Proposed Project	Variant
Residential townhomes	72 units	72 units
Residential apartments	64 units	93 units
Retail	25,000 SF	26,000 SF
Parking	255 total on-site spaces 20 on-street spaces	299 total on-site spaces 20 on-street spaces
Proposed use of former fire station building	Seismically upgraded and rehabilitated for future use (to be decided by City Council, possibly as a restaurant/café or daycare). 3,300 SF	Demolished.
Residential density	29.9 dwelling units/acre (rounds to 30)	35.8 dwelling units/acre

The townhomes would be three-story structures behind the commercial/apartment buildings (i.e., on the northern portion of the site) along Jason Way. An entry plaza to the project site would be provided approximately half way along the project's Fremont Boulevard frontage and adjacent to the existing fire station building, which would be retained on the site. An underground parking garage would extend below Building B and the entry plaza, with an entry/exit ramp near the eastern end of the garage.

The proposed project would adjust the parcel boundary of the fire station site to match the size of the building. The other existing structures on the project site (i.e., the commercial businesses and single residence) would be demolished, and the parcels combined.

2.4.2 Variant (Fire Station Demolished)

The variant would develop 72 townhomes, 93 apartments, and approximately 26,000 SF of retail uses, along with a community clubhouse, pool and children's playground, and a community garden, for use by residents and their guests. The residential density of the variant would be 35.8 dwelling units per acre.

The portion of the site proposed for townhomes and the community clubhouse, swimming pool, playground, and outdoor amenity areas would be identical to the layout and development program of the proposed project; the only differences under the variant pertain to the fire station building and the mixed use portion of the project site along the Fremont Boulevard boundary. The proposed site plan for the portion of the variant that varies from the proposed project is shown in Figure 2-5.

Under the variant, the former fire station would be demolished, and proposed Building A would be extended east to include the space occupied by the former fire station building. Above the ground floor, residential apartments on the second and third floors would span the entry plaza to connect Buildings A and B, allowing vehicular and pedestrian access at the street level. The underground parking garage would be extended to the entire length of the combined Buildings A and B, with a second exit ramp at the western end of the garage.

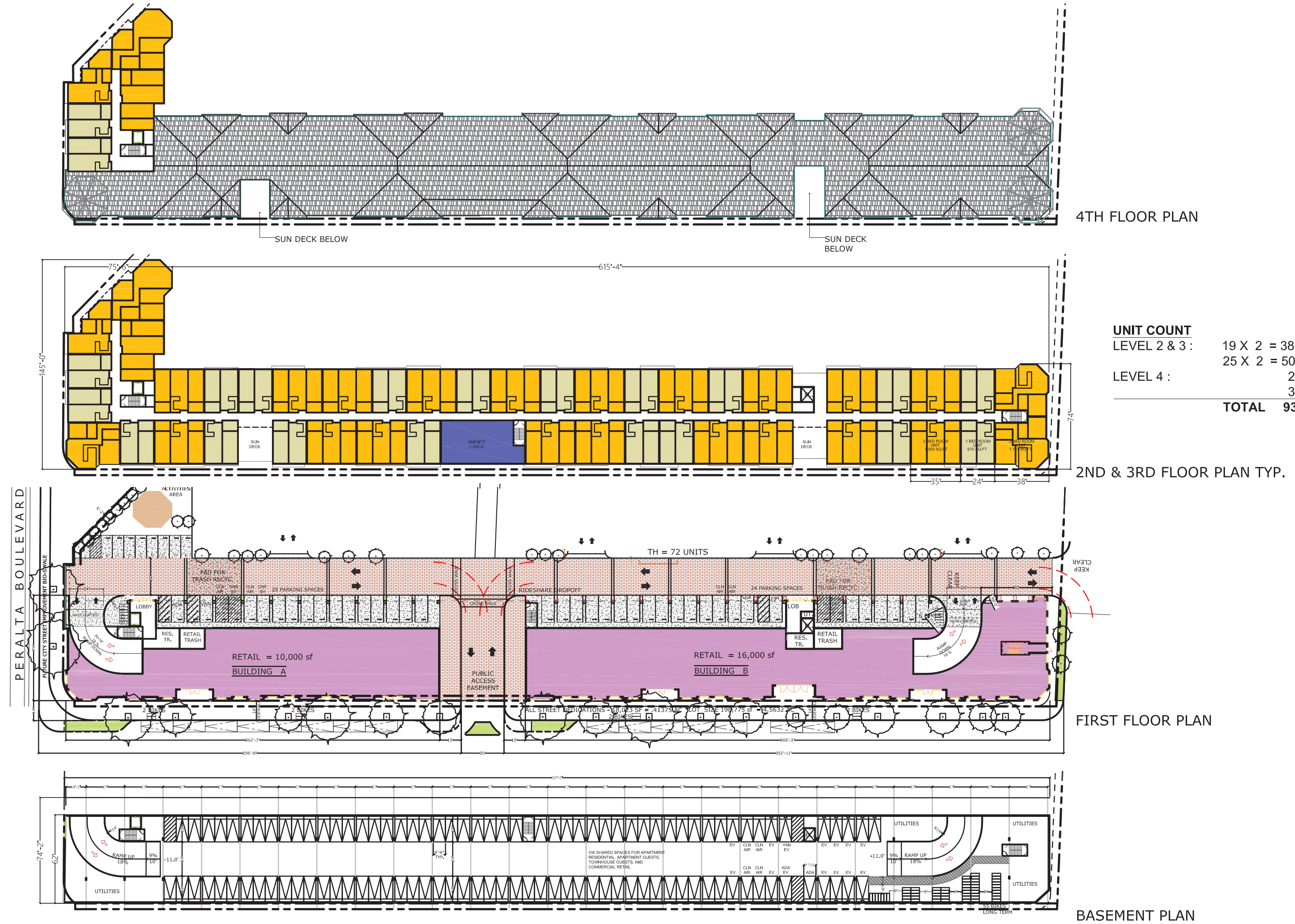
Elevations showing the proposed Fremont Boulevard mixed use frontage under both the proposed project and the variant are presented in Figure 2-6.

2.4.3 New Residential Townhomes and Community Areas

Both the proposed project and variant would include construction of 72 new three-story townhomes on the northeastern portion of the project site, with a mixture of three-bedroom and four-bedroom floor plans. Each home would have a footprint of between approximately 775 and 900 SF, and gross floor area of between approximately 1,800 and 2,100 SF. Maximum building height for the townhomes would be 40 feet.

SOURCE: Silicon Sage Builders

FIGURE 2-4
Proposed Project Site Layout



UNIT COUNT

LEVEL 2 & 3 :	19 X 2 = 38	1-BD UNITS
	25 X 2 = 50	2-BD UNITS
LEVEL 4 :	2	1-BD UNITS
	3	2-BD UNITS
TOTAL	93	UNITS

Note: Remainder of site under the Project Variant is identical to the Proposed Project (refer Figure 2-4).

SOURCE: Silicon Sage Builders

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FIGURE 2-5
Project Variant Site Layout

PROPOSED PROJECT - CONCEPTUAL MIXED USE BUILDINGS

FREMONT BLVD ELEVATION

PROJECT VARIANT - CONCEPTUAL MIXED USE BUILDINGS

FREMONT BLVD ELEVATION

SOURCE: Silicon Sage Builders

AECOM
City of Fremont
Fremont Blvd Mixed Use

FIGURE 2-6

Conceptual Mixed Use Building Elevations

Community facilities such as a club house, swimming pool, and children's playground ("tot-lot") are proposed near the center of the site, with a publicly-accessible paseo providing a pedestrian link from the entry plaza on Fremont Boulevard to Jason Way. Several outdoor amenity areas, including a covered lounge, meditation garden, and chess plaza are proposed in the western portion of the site. The variant would be identical to the proposed project in terms of the siting and size of the residential townhomes and community areas.

The 3-story buildings would feature symmetrical facades in the front, with rear garage entrances on the ground floor, and balconies on the second floor. The buildings would feature stucco siding with stone veneer cladding and shingle, tile, and wood accents. The buildings would exhibit a mix of traditional architectural styles used for California Train Depots, including elements of Gothic Revival and Richardsonian Romanesque styles.

Typical elevations of the proposed townhomes are shown in Figure 2-7. The above footprints and floor areas are approximate and would be refined as the final plans and maps are prepared for project entitlement.

2.4.4 New Retail Uses and Residential Apartments

Proposed Project

Under the proposed project, Building A would contain 9,000 SF of ground-floor retail along the frontage of Fremont Boulevard between Peralta Avenue and the existing fire station, with 13 apartments on each of the second and third floors. The portion of the building along the Peralta Boulevard frontage would be one floor taller (four floors) and would contain four additional apartments on the fourth floor.

Building B would contain 16,000 SF of ground-floor retail along the Fremont Boulevard frontage between the proposed entry plaza and Parish Avenue, with 17 residential apartments on each of the second and third floors. Together, Buildings A and B would contain 25,000 SF of retail and 64 two- and three- bedroom apartments.

Buildings A and B would exhibit a mix of Mediterranean and Spanish Revival architectural styles. The ground floors of each building would feature stone veneer cladding and evenly spaced arched openings and multi-lite storefront glazing. Conceptual elevations of the Fremont Boulevard frontage under the proposed project are shown in Figure 2-6 above.

Variant

Under the variant, Building A would contain 10,000 SF of ground-floor retail along the frontage of Fremont Boulevard between Peralta Avenue and the entry plaza. Residential apartments on the second and third floors would extend over the entry plaza to connect with Building B. Similar to the proposed project, the portion of Building A along the Peralta Boulevard frontage would extend to four floors, with five residential apartments on this level.

Building B would contain 16,000 SF of ground-floor retail along the Fremont Boulevard frontage between the proposed entry plaza and Parish Avenue, with residential apartments on both the second and third floors, connecting across the entry plaza to Building A. Together, Buildings A and B would contain 26,000 SF of retail and 93 one- and two- bedroom apartments.

The architectural style and materials of the mixed use buildings would be similar to the proposed project. Conceptual elevations of the Fremont Boulevard frontage under the variant are shown in Figure 2-6 above.

FRONT ELEVATION-PARISH AVE.

RIGHT ELEVATION - JASON WAY
NOT TO SCALE

REAR ELEVATION- GARAGE SIDE

EXTERIOR VIEW - PARISH AVE.

SOURCE: Silicon Sage Builders

FIGURE 2-7

Conceptual Townhome Elevations

2.4.5 Former Fire Station Building

Proposed Project

The proposed project would seismically upgrade the former fire station building in its current location, and rehabilitate/renovate the building for future use, possibly as a restaurant or café, subject to City Council approval. Conceptual design for the fire station rehabilitation is shown in Figure 2-8. The parcel boundary would be adjusted to match the footprint of the building.

Existing cement plaster on all façades would be retained and repainted. The only exterior changes proposed at the primary (south) façade would be to replace the existing metal pedestrian door and metal roll-up garage door with a metal-framed, fully glazed door and a metal-framed multi-lite garage door, respectively. The transom window above the door and ribbon windows at the second story would be retained. An American flag would also be remounted at the second story below the roofline.

At the rear (north) façade, exterior alterations would include the removal of the existing metal stairs at the northwest corner, and construction of a new, painted metal stair at the opposite rear corner, to access the existing second-story terrace above and the proposed underground parking garage. The existing rear metal canopy would be removed, and the existing rear garage door replaced with a new glazed garage door to match the primary façade. No changes to the rear second story are proposed, except minimal changes related to the proposed removal of the existing staircase and connection with the proposed new staircase at the terrace landing.

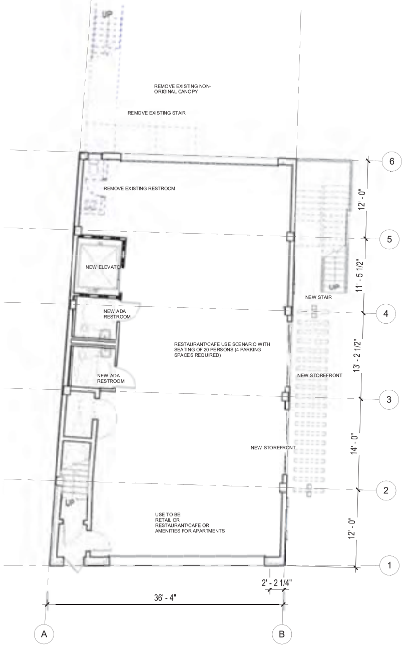
No changes are proposed to the western façade of the building, except that a climbing vine would be planted in front of the cement plaster portion of the façade. The existing alleyway along the western façade would be retained for pedestrian access.

The existing building to the east of the former fire station would be demolished, exposing the eastern façade. Two sets of metal-framed storefront sliding doors would be installed along this façade, to provide access from the interior of the building to a seating area of the proposed public entry plaza east of the building. A freestanding wood-framed trellis would be constructed to frame the new doors, and a vertical ladder-like trellis would scale the façade to the left and right of the doors.

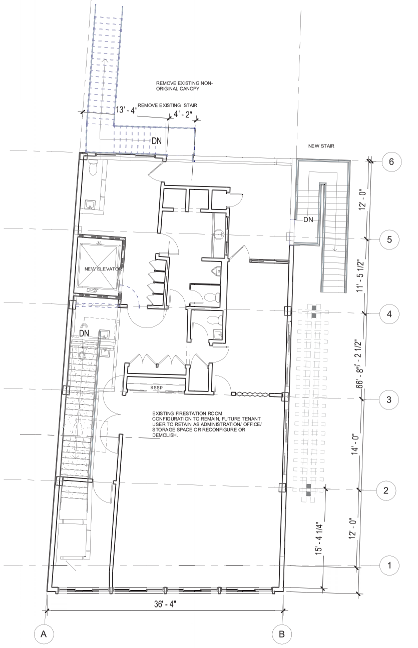
In the interior of the former fire station building, the proposed project would retain the existing open fire station apparatus room at the ground story, and the visual and physical connection to the rear of the site. New Americans with Disabilities Act (ADA) accessible restrooms would be constructed along the western wall, flanked to the south by the existing stairway and to the north by a new elevator. The existing restroom would be removed. On the second story, the overall configuration of space would not be altered. The fire station would provide approximately 3,300 SF of space.

Variant

Under the variant, the former fire station building would be demolished. Demolished materials would be recycled to the maximum extent practical, to minimize waste and waste disposal costs, and to conform to City demolition waste recycling requirements.

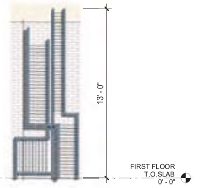


GROUND LEVEL PLAN



SECOND FLOOR PLAN

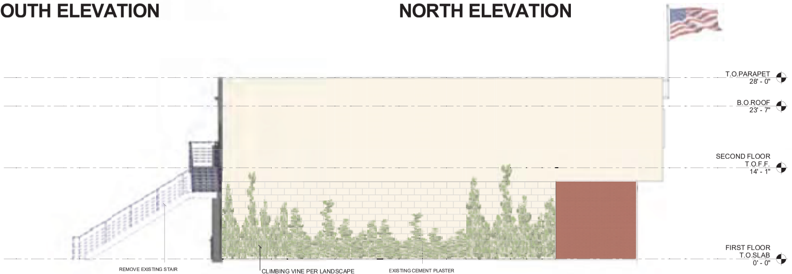
EAST ELEVATION



TRELLIS DETAIL

SOUTH ELEVATION

NORTH ELEVATION



WEST ELEVATION

SOURCE: Silicon Sage Builders

FIGURE 2-8

Proposed Rehabilitation of Former Fire Station

2.5 Access and Circulation

2.5.1 Proposed Project

Site Access and Circulation. Access to the project site would be provided via a dedicated driveway on Fremont Boulevard, with a right-turn in and right-turn out restriction and rolled curb median. A dedicated driveway would also be provided on Parish Avenue, with two-way ingress/egress. A new traffic signal would be installed at the Parish Avenue/Fremont Boulevard intersection. The project proposes to extend Jason Way from its current terminus near the middle of the northern site boundary, to connect with Peralta Boulevard via a new street easement. Street parking along the south side of Peralta Boulevard would be prohibited within 240 feet west and 60 feet east of the new intersection with Jason Way, with appropriate landscape design and maintenance to provide adequate sight distance.

Several driveways would serve the project site from the existing and proposed extension of Jason Way, each of which would provide for two-way ingress and egress, and four of which would connect with the internal driveway from Parish Avenue, described above, that extends behind the proposed mixed use buildings, parallel to Fremont Boulevard.

In addition, a gated one-lane trash/recycling truck and emergency vehicle access driveway would be installed on Peralta Boulevard, connecting to the northernmost driveway off Jason Way. Proposed access and circulation is shown on the site plan in Figure 2-4.

Parking. An underground parking garage would be provided under Building B and the adjacent entry plaza, with an ingress/egress ramp near the eastern end of the garage. The parking garage would include 67 parking spaces, for shared use by apartment residents and guests, and retail employees and customers. An additional 44 on-site parking spaces for shared use would be provided at ground level, behind Buildings A and B. A total of 144 on-site parking spaces for townhome residents would be provided in private garages. The total number of on-site parking spaces for the proposed project would, therefore, be 255 spaces, and an additional 15 on-street parking spaces on Fremont Boulevard would be available for retail customers. Five new on-street parking spaces would also be provided along the Jason Way frontage for use by residential visitors.

Bicycle, Pedestrian, and Transit Facilities. A total of 84 bicycle parking spaces would be provided on site: 52 long-term spaces within the underground parking garage, and 32 short-term bicycle parking spaces at various locations throughout the project site, including along the Fremont Boulevard and Jason Way frontages, and adjacent to the surface parking near Buildings A and B. Ten motorcycle parking spaces would be provided in the underground parking garage.

A publicly accessible pedestrian paseo would be provided through the center of the site, connecting the public entry plaza on Fremont Boulevard with Jason Way. An additional pedestrian paseo would traverse the townhome portion of the site, connecting Parish Avenue with Peralta Boulevard. The existing crosswalks at the Fremont/Peralta Boulevard intersection and Fremont Boulevard/Parish Avenue intersections would be maintained, and a new crosswalk would be provided across Fremont Boulevard, adjacent to the pedestrian entry plaza, with high-visibility crosswalk striping. Three new crosswalks and associated traffic-calming “speed tables” would be provided at the Jason Way/Parish Avenue intersection. A new bus shelter would be constructed on Fremont Boulevard, near the Parish Avenue intersection.

2.5.2 Variant

Site Access and Circulation. Access and circulation under the variant would be identical to the proposed project, except that the underground parking garage would extend the entire length of Buildings A and B (along the Fremont Boulevard frontage), and a second ingress/egress ramp would be provided at the western end of the garage, connecting to the internal driveway behind Building A.

Parking. Under the variant, the parking garage would include 106 parking spaces for shared use by apartment residents and guests, and retail employees and customers, (i.e., 39 additional spaces compared to the proposed project). A total of 49 shared parking spaces would be provided behind

Buildings A and B (i.e., five more than the proposed project). The 144 on-site private garage spaces for townhome residents would be identical to the proposed project. The total number of on-site parking spaces for the variant would be 299 spaces. Identical to the proposed project, 15 on-street parking spaces on Fremont Boulevard and five on-street parking spaces on Jason Way would be provided.

Bicycle, Pedestrian, and Transit Facilities. A total of 88 bicycle parking spaces and 10 motorcycle parking spaces would be provided under the variant. Pedestrian access through the site under the variant would be identical to the proposed project, except that the entry plaza off Fremont Boulevard would be narrower and would pass beneath the second and third stories of Buildings A and B, which would connect overhead.

2.6 Utilities and Service Systems

Utilities and service systems under the proposed project and variant would be almost identical, except for minor differences in the vicinity of the former fire station building and proposed Building A. The project and variant would include utility connections to adjacent existing services in surrounding streets, and existing overhead utility lines on Parish Avenue would be undergrounded. Three underground transformers would be installed within the project site, and various utilities would be placed underground beneath the internal driveways and extended portion of Jason Way. New stormwater planters would be constructed to City standards along the extended portion of Jason Way.

The following utility providers would serve the project site:

Water Supply	Alameda County Water District
Fire Protection	City of Fremont Fire Department
Sanitary Sewer	Union Sanitary District
Storm Drain	City of Fremont and Alameda County Flood Control District
Gas and Electricity	Pacific Gas and Electric
Telephone	AT&T
Cable Television	Comcast

2.7 Landscaping and Other Improvements

Landscaping and other improvements under the proposed project and variant would be almost identical, except for minor differences in the vicinity of the former fire station building and proposed Building A. In this location, the proposed project would feature a wide entry plaza adjacent to the rehabilitated former fire station, including six large palm trees. Under the variant, the entry plaza would be narrowed due to the extension of Building A across the former fire station site, and the connection of Buildings A and B across the entry plaza at the second and third floor levels would preclude planting of large trees in this area.

The project site and adjoining sidewalks contain approximately 54 existing trees, including several coast redwood (*Sequioa sempervirens*), northern red oak (*Quercus rubra*), interior live oak (*Quercus wizlizenii*), Mexican fan palm (*Washingtonia robusta*), Japanese zelkova (*Zelkova serrata*), crepe myrtle (*Lagerstroemia indica*), and mayten (*Maytenus boaria*). Of these trees, 48 are considered protected trees under the Tree Preservation Ordinance (Fremont Municipal Code [FMC] Chapter 18.215).

The proposed project and variant would remove 35 of the existing trees and would retain 19 trees. Of the 35 trees to be removed, 29 are protected under the Tree Preservation Ordinance. The remaining 19 protected trees would be retained.

The removal of protected trees is subject to City requirements involving the planting of replacement trees or the payment of in-lieu fees to mitigate the removal of trees that cannot be replaced on the site due to land area constraints, in accordance with the City's mitigation requirements.

Approximately 145 new trees, at minimum 24-inch box size, would be planted as part of the proposed project or variant, in accordance with City requirements. The proposed replacement trees (quantity and type) to mitigate the loss of protected trees are subject to the approval of the City of Fremont Landscape Architect.

2.8 Construction Activities and Schedule

2.8.1 General Construction Activities

Typical construction equipment such as graders, backhoes, excavators, and dozers would be used for site preparation and construction. No pile-driving or blasting is anticipated. Equipment and materials would be staged for construction within established work areas on the project site.

The proposed project would include site grading to prepare the site for the proposed development. The preliminary estimates of site grading volumes for the proposed project and variant are shown in Table 2-2 below. The maximum depth of excavation under both the proposed project and variant is estimated to be 15 feet.

Table 2-2 Estimated Cut and Fill Volumes for Proposed Project and Variant

	Proposed Project	Variant
Estimated Fill Volume	400 cubic yards	400 cubic yards
Estimated Cut Volume	20,500 cubic yards	29,400 cubic yards
Estimated Balance to be exported	20,100 cubic yards	29,000 cubic yards

Heavy vehicles (i.e., haul [tractor-trailer] trucks, machinery) would access the project site via construction entrances off Fremont Boulevard, Peralta Boulevard, and/or Parish Avenue.

Construction of the project is estimated to require an average of 100 construction workers on a typical work day. Up to 400 construction workers per day may be required periodically. Parking for construction workers would be provided on the project site, unless construction activities preclude such use. In such cases, an off-site parking lot would be rented to provide for construction worker parking. There would be no multi-day staging of vehicles or equipment on or along existing roadways.

2.8.2 Construction Schedule and Phasing

Construction activities would occur between 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Saturdays and holidays (no construction activities would be allowed on Sundays), in accordance with FMC Chapter 18.160. There would likely be multiple destinations for off-haul materials. Construction workers would also be arriving from different directions. Travel routes for workers, soils export, and material import would be determined in consultation with the City Public Works Department, but would likely travel from Interstate 880, along Fremont Boulevard, to the project site.

Project construction would commence with demolition of existing on-site structures (except the former fire station under the proposed project), followed by site preparation and grading. Retail and residential construction (including fire station rehabilitation under the proposed project), civil utilities, and paving would follow. Project construction is expected to last 18 months, commencing in February 2019 with completion in October 2020. This project schedule is dependent on market conditions, regulatory approvals, and other factors and, therefore, is subject to change.

2.9 Standard Development Requirements

The City of Fremont has established standard development requirements to address resource protection (FMC Chapter 18.218). These requirements apply to air quality (construction-related emissions), biological resources (special-status species), and cultural resources (notification of affiliated California Native American Tribes and accidental discovery of cultural resources).

The proposed project would comply with these standard development requirements, which are described in greater detail in the relevant topical area of the Initial Study (see Sections 4.3, Air Quality; 4.4, Biological Resources; and 4.5, Cultural Resources).

2.10 Project Approvals

The project is a private development proposal that involves private funds (no City, State, or federal funds). The approvals that would require discretionary actions by the City include:

- Discretionary Design Review
- Vesting Tentative Tract Map
- Conditional Use Permit (dependent on possible future uses of commercial component)
- Private Street
- Tree Removal Permit

The project would be reviewed and discussed at public hearings before the Historic Architectural Review Board (HARB), Planning Commission, and City Council.

The project may also require permits and/or approvals from the following agencies:

- Alameda County Flood Control and Water Conservation District
- Alameda County Water District
- Alameda County Department of Environmental Health
- Bay Area Air Quality Management District
- San Francisco Bay Area Regional Water Quality Control Board
- Union Sanitary District
- State Department of Toxic Substances

References:

City of Fremont, 2010. *Centerville Framework Plan*. Available: https://fremont.gov/DocumentCenter/Home/View/3662. Accessed April 5, 2018.

City of Fremont, 2011. *City of Fremont General Plan*. Community Plans Element. Adopted December 2011. Available: https://fremont.gov/398/General-Plan. Accessed February 8, 2018.

Page and Turnbull, 2018. 37412 Fremont Boulevard Historic Resource Impact Analysis. Fremont, California. Prepared for Fremont Community Development Department. Revised May 7.

3. Environmental Factors Potentially Affected

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

☐ Aesthetics
☐ Agriculture Resources
☐ Air Quality
☐ Biological Resources
☒ Cultural Resources
☐ GHG Emissions/Climate Change
☐ Hazards & Hazardous Materials
☐ Hydrology / Water Quality
☐ Geology / Soils
☐ Land Use / Planning
☐ Mineral Resources
☒ Noise
☐ Population / Housing
☐ Public Services
☐ Recreation
☐ Transportation / Traffic
☐ Utilities / Service Systems
☒ Mandatory Findings of Significance

ENVIRONMENTAL DETERMINATION

On the basis of this Initial Study, the City of Fremont finds:

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

☐ 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 EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

____________________________________ ________________________
Signature Date
City of Fremont

____
Title

____
Printed Name

4. Environmental Checklist

4.1 Aesthetics

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

Setting:

The City of Fremont is located on the east side of the San Francisco Bay with the Mission Hills to the east, Union City to the north, and Milpitas to the south. Fremont is characterized as a large, mostly developed suburban community with residential areas mainly located in the eastern portion of the City and industrial and regional commercial areas located in the western portion of the City, along Interstate 880 (I-880).

Visual Character and Views

The 4.6-acre project site is bounded by Fremont Boulevard, Peralta Boulevard, Jason Way, and Parish Avenue in the Centerville Community Plan Area (see Figure 2-1 in Chapter 2, “Project Description”). The project site is within the historic Centerville Town Center, which extends along both sides of Fremont Boulevard between Thornton and Central Avenues and contains the district’s largest and oldest concentration of retail structures. Surrounding the central commercial district are low-density residential neighborhoods composed of single-family detached homes characteristic of the post-war period, newer multi-family units, and a few mixed-use buildings (City of Fremont, 2011).

The project site is relatively flat, and is at an elevation of approximately 54 feet mean sea level. The project site consists mostly of one- and two-story commercial buildings, including retail stores, restaurants, and a small warehouse; paved parking lots; an abandoned lot with weeds and grasses; and landscaped areas planted with ornamental trees and bushes (see Figure 2-2 in Chapter 2, “Project Description”). Buildings on the project site vary in architectural style, height, color, and bulk. An unoccupied single-family residence is located on the project site at 37367 Jason Way. The fenced area behind the house includes garbage and a rusted pick-up truck.

In addition, the project site contains a historic two-story former fire station that is located in the southwestern corner of the project site (37412 Fremont Boulevard). The fire station was built in the early 1950s and is representative of mid-century architecture. The fire station has been decommissioned and is in a state of disrepair (see Figure 2-3 in Chapter 2, “Project Description”).

Areas to the north and west of Peralta Boulevard and south of Fremont Boulevard in the vicinity of the project site are predominantly commercial uses that include neighborhood-serving restaurants, markets, small shops, and personal services as well as small, locally-owned enterprises or franchisees. These buildings are generally consistent with the existing visual character of the project site. Viewers of the project site from these locations include motorists, employees and patrons of local businesses, pedestrians, and bicyclists.

Areas to the north of Jason Way are predominantly single- and multi-story residences. Land to the southeast of Parish Avenue is occupied by the Holy Spirit Church and Holy Spirit School and associated uses. Occupants of these residences and pre-school students, parents, and other visitors to the school and church have views of the project site.

Railroad tracks utilized by the Altamont Corridor Express, Amtrak, and Capitol Corridor passenger services and freight services run approximately parallel to Peralta Boulevard, about 300 to 400 feet north of the project site. Currently, views of the project site are not available from passenger trains due to the flat topography of the project site and intervening commercial and residential uses.

Scenic Highways and Corridors

The California Department of Transportation (Caltrans) administers the California Scenic Highways Program. There are no officially designated California Scenic Highways in the vicinity of the project site (Caltrans, 2017).

The Fremont General Plan designates a 15-mile segment of Paseo Padre Parkway between State Route (SR) 84 and East Warren Avenue, a 6-mile segment of SR 84 between Dumbarton Bridge and Interstate 880, and a 10-mile segment of the Bay Area Rapid Transit District (BART) Line between the Union City border and the Milpitas border as scenic routes (City of Fremont, 2011). The project site is 0.7 mile south of the designated segment of Paseo Padre Parkway, 1.5 miles north of the designated segment of SR 84, and 1.3 miles south and southwest from the designated segment of the BART Line.

Scenic Vistas

Although there are no designated scenic vistas in the project vicinity, East Bay Regional Park District's Mission Peak Regional Preserve is located southeast of the project site and panoramic views of the project area occur from Mission Peak. These viewpoints are approximately seven miles southeast of the project site and provide park visitors distant views of the site and the San Francisco Bay in the background.

Light and Glare

The project area is located in a highly urbanized environment and is surrounded by existing sources of light and glare. These sources of light and glare include existing streetlights along Fremont Boulevard, Peralta Boulevard, Parish Avenue, and Jason Way; exterior lighting on commercial and residential buildings; outdoor lighting on surface parking lots; illuminated signage; reflective building material; and vehicular headlights.

Discussion:

1a) Would the project have a substantial adverse effect on a scenic vista?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Although there are no designated scenic vistas in the project vicinity, the Mission Peak Regional Preserve is located southeast of the project site and panoramic views of the project area occur from Mission Peak. These viewpoints are approximately seven miles southeast of the project site and provide park visitors distant views of the site and the San Francisco Bay in the background. Distant views from Mission Peak overlook urban development, most of which is visually similar to the commercial and residential development proposed for the project site. Because of the distance of the project site from Mission Peak and the density of urban development in the project area, the mixed-use development on the project site would be indistinguishable from the surrounding area. Therefore, the proposed project or variant would not substantially affect views from Mission Peak.

Thus, impacts to scenic vistas would be **less than significant**, and this impact will not be further addressed in the EIR.

1b) Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Construction and Operation – Proposed Project or Variant: **No Impact**

There are no officially designated California Scenic Highways in the vicinity of the project site. As described above, the project site is 0.7 miles south of the segment of Paseo Padre Parkway designated as a scenic route by the Fremont General Plan, 1.5 miles north of the designated segment of SR 84, and 1.3 miles south and southwest from the designated segment of the BART Line. Because of the flat topography in the area, and surrounding urban development, the project site would not be visible from these City-designated scenic routes. Thus, there would be **no impact** scenic resources, and this impact will not be further addressed in the EIR.

1c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Implementation of the proposed project or variant would noticeably alter the visual character of the project site. Construction of the proposed project would demolish all buildings on the site except for the former fire station, which would be retained and rehabilitated. The proposed project would develop 72 townhomes, 64 apartments, and approximately 25,000 SF of retail uses, along with a community clubhouse, pool and children's playground, and a community garden on the site (see Figure 2-4 in Chapter 2). Rehabilitation of the former fire station would include repainting the cement plaster on all façades; removing the existing rear metal canopy; and removing and replacing existing metal pedestrian doors, metal roll-up garage doors, and the existing metal stairs.

Construction of the variant would demolish all buildings on the site (including the former fire station), and would develop 72 townhomes, 93 apartments, and approximately 26,000 SF of retail uses, along with a community clubhouse, pool and children's playground, and a community garden. The portion of the site proposed for townhomes and the community clubhouse, pool, playground and garden areas would be identical to the layout and development program of the proposed project; the only differences under the variant pertain to the fire station building and the mixed use portion of the project site along the Fremont Boulevard frontage.

The following plans recognize the unique land use and design opportunities and issues in the Centerville Town Center:

- City of Fremont General Plan Chapter 4, Community Character, and Chapter 11, Community Plans (City of Fremont, 2011)
- City of Fremont Centerville Framework Plan (City of Fremont, 2010)
- Citywide Design Guidelines (City of Fremont, 2017)
- Multifamily Design Guidelines (City of Fremont, 2018).

Collectively, the design standards and guidelines in these documents are intended to provide an overall framework for strengthening the interconnections between land uses, Fremont Boulevard, and buildings that influence the identity of the district; ensuring that the scale and design of new development contributes to the vision for Centerville as an attractive, walkable Town Center; and providing a stronger sense of identity, visual quality, and vitality. The list below summarizes some of the design requirements from these documents, with which project site design should conform.

- New buildings should respond and contribute to their context both in the functional and architectural sense. To activate Centerville, buildings should be oriented toward Fremont Boulevard and have a carefully designed frontage oriented parallel to the street that is welcoming to the public.
- New development is encouraged to vertically mix uses.
- A variety of climate appropriate street trees to unify the street.

- Building heights are encouraged to be multi-level, two to three stories in height, and possibly taller.
- Building should be located relatively close to the street right of way and close in adjacency to one another.
- Building facades should create visual interest for pedestrians; break up massing through facade modulation; and have a distinct base, middle, and top zone.
- Project design should complement surrounding development and the character of community.
- Project design should provide authentic representations of architectural styles and details.
- At least two different building types should be included in projects with multiple buildings. Materials, textures, and colors should be used to enhance different parts of a building's facade where appropriate to the architectural style.
- All sides of a building should include architectural detailing. Stucco-textured foam trim molding should not be used as the only application to provide architectural detailing. Architectural detailing includes railings, trellises, trim, cornices, or similar architectural elements.
- Durable/textured building materials (e.g., stone, brick, masonry block, slate, tile) shall be incorporated at the base of buildings in areas where pedestrian activity is expected.

The proposed project and variant would be consistent with the visual and design policies and requirements enumerated above, as well as the intent and purpose of the source documents. The proposed project and variant would redevelop an aging, underutilized commercial site with a new mixed-use project that would alter an entire block within the Centerville Town Center into a pedestrian-active, mixed use environment, consistent with the visions of the Centerville Framework Plan and the City's General Plan. In addition, the proposed project or variant would reinforce the character of the Centerville Town Center with a project that is compatible in use, scale, and design with existing development along Fremont Boulevard and in the surrounding neighborhood.

Under either the proposed project or variant, the townhomes would be three-story structures behind the commercial/apartment buildings (i.e., on the northern portion of the site). The three-story buildings would feature symmetrical facades in the front, with rear garage entrances on the ground floor, and balconies on the second floor. The buildings would feature stucco siding with stone veneer cladding and shingle, tile, and wood accents. The buildings would exhibit a mix of traditional architectural styles used for California Train Depots, including elements of Gothic Revival and Richardsonian Romanesque styles. Typical elevations of the proposed townhomes are shown in Figure 2-7 in Chapter 2. As such, the project design would complement the surrounding development and enhance different parts of the building facades.

Under either the proposed project or variant, the retail uses would be located on the ground floor of two buildings (Buildings A and B), with residential apartments above. These two buildings would be three stories, except for a small portion of Building A fronting Peralta Boulevard, which would be four stories. Buildings A and B would exhibit a mix of Mediterranean and Spanish Revival architectural styles. The ground floors of each building would feature stone veneer cladding and evenly spaced arched openings and multi-lite storefront glazing. Conceptual elevations of the Fremont Boulevard frontage are shown in Figure 2-6 in Chapter 2. These design features fulfill the design objectives for vertically mixed uses and architectural details that distinguish the different floors and pedestrian activity.

Landscaping and other improvements under the proposed project and variant would be almost identical. Approximately 145 new trees would be planted as part of the proposed project or variant, following construction in accordance with City requirements.[1] The proposed project or variant would be required to comply with the landscaping standards and requirements in the City's Zoning Ordinance (Chapter

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[1] The project site and adjoining sidewalks currently contain approximately 54 existing trees. The proposed project (and project variant) would remove 35 of the existing trees, of which 29 are protected under the Tree Preservation Ordinance (Fremont Municipal Code [FMC] Chapter 18.215), and the remaining 19 protected trees would be retained. See Section 3.5, "Biological Resources," for further discussion of the City's Tree Preservation Ordinance.

18.45.030(c)) for all commercial and mixed-use districts, which requires all yard areas be landscaped according to their purpose and requires planting Bay friendly and water efficient landscapes meeting State standards. Furthermore, the proposed project would be required to meet Citywide Design Guidelines landscaping requirements that state trees and shrubs should be spaced to allow for mature and long-term growth and unpaved areas should be covered with shrubs and/or ground cover (City of Fremont, 2017). New trees and landscaping would generally contribute to the visual character of the site's interior and exterior appearance and unify the street.

In summary, the proposed project or variant would be consistent with the Centerville Framework Plan and City General Plan and would implement the City's design standards and guidelines for improvements to Centerville Town Center, as described above. The proposed project or variant would be consistent with the City's Place Types Manual for development within a Town Center.[2] The proposed project or variant provide a mixture of low- to mid-rise building ranging from one to three stories, create smaller blocks for convenient pedestrian access, provide traditional architecture, and consist of narrow lots that provide a compact development pattern.

The proposed project or variant would be compatible with the existing visual character and quality of the project site and its surrounding, and overall, would improve the visual quality and character of the project area in a manner consistent with the City's vision for future development in the area. Therefore, the proposed project or variant would not substantially degrade the existing visual character or quality of the site and its surroundings. Impacts related to the visual character of the surrounding community would be **less than significant**, and this impact will not be further addressed in the EIR.

1d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

<u>Construction – Proposed Project or Variant:</u> **Less-than-Significant Impact**

Construction activities for the proposed project or variant would comply with the City's construction hours, which are limited to daytime (7am to 7pm on weekdays; 9am to 6pm on Saturdays and holidays; no construction allowed on Sundays). Since construction is limited to daytime hours, new sources of light would not be required to enable construction. While some night time lighting may be required for site security during the construction period, this would be shielded to reduce spillover onto neighboring properties and public rights-of-way. Construction-related impacts from light and glare would be **less than significant**. This impact will not be addressed further in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

The light and glare created by development under the proposed project or variant would be consistent with the levels of lighting and glare currently emitted by development surrounding the project site, and the existing one- and two-story commercial buildings, including retail stores, restaurants, and a small warehouse, and parking lots at the project site.

New lighting would be required to meet the Citywide Design Guidelines that are intended to minimize glare on neighboring properties and public rights-of-way by shielding security lighting, and lighting would not project above the fascia or roof line of buildings (City of Fremont, 2017). The City's Multifamily Design Guidelines require pedestrian-scaled lighting to be less than 16 feet in height and be used to illuminate areas used for pedestrian circulation (City of Fremont, 2018). In addition, the proposed project or variant would be required to comply with the development standards and requirements in the City's Zoning Ordinance (Chapter 18.45.030(c)) for all commercial and mixed-use districts, which requires that all exterior light sources be designed so as not to create significant glare on adjacent properties through the use of concealed source and/or downcast light fixtures.

Because the proposed project or variant would not introduce new sources of light and glare different from the existing light and glare from current uses and street lighting and new lighting would be regulated by

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[2] The Place Types Manual is included in the Community Character Element of the City's General Plan. The Place Type Manual is an urban design tool used to guide and evaluate urban development in terms of form, scale, and function in the built environment, and includes descriptions, standards, and graphic examples of each place type.

City guidelines and regulations, the proposed project or variant would not generate a substantial new source of light and glare that would adversely affect day or nighttime views in the area. Thus, the project's impacts related to light and glare would be **less than significant**, and this impact will not be further addressed in the EIR.

References:

California Department of Transportation, 2017. Alameda County. Officially Designated Scenic Highway Map. Available: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed: April 13, 2018.

City of Fremont, 2010. *Centerville Framework Plan*. Available: https://fremont.gov/DocumentCenter/Home/View/3662. Accessed April 5, 2018.

City of Fremont, 2011. *City of Fremont General Plan*. Land Use Element. Adopted December 2011. Available: https://fremont.gov/398/General-Plan. Accessed February 8, 2018.

City of Fremont, 2017. City of Fremont Citywide Design Guidelines. Adopted February, 11, 2014. As amended October 17, 2017. Available: https://fremont.gov/DocumentCenter/View/21012. Accessed April 12, 2018.

City of Fremont, 2018. City of Fremont Multifamily Design Guidelines. Adopted October 8, 2013, Amended March 6, 2018. Available: https://fremont.gov/DocumentCenter/View/18609/Multifamily-Design-Guidelines-Amended-March-2018. Accessed May 23, 2018.

4.2 Agricultural and Forestry Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
2.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?	☐	☐	☐	☒
2.b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
2.c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
2.d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
2.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?	☐	☐	☐	☒

Discussion:

2a-2e) Would the proposed project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use? Would the proposed project conflict with existing zoning for agricultural use, or a Williamson Act contract? Would the proposed project conflict with existing zoning for, or cause rezoning of, forest land or timberland? Would the proposed project result in the loss of forest land or conversion of forest land to non-forest use? Would the proposed project 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?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

The California Department of Conservation classifies the project site and the surrounding areas as Urban and Built-up Land; therefore, the project site is not considered Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), and is not subject to any Williamson Act contracts (California Department of Conservation 2014; 2015). The site does not contain any forest or timberlands. The 4.6-acre project site is occupied by twelve buildings, including a former fire station, minimal landscaped areas, pedestrian sidewalks, and several paved parking lots. The project area is currently zoned as Town Center-Pedestrian (TC-P) with Transit-Oriented Development overlay (TOD) (City of Fremont, 2016).

Neither the proposed project nor variant would rezone the project site. Consequently, neither the proposed project nor the variant would convert farmland to non-agricultural use, convert forest land to non-forest use, or conflict with existing agricultural or timberland zoning. Construction or operation of the proposed project or variant would, therefore, have **no impact** on agricultural and forest resources, and these impacts will not be further addressed in the EIR.

References:

California Department of Conservation, 2014. Alameda County Important Farmland. Available at ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/ala14.pdf. accessed January 25, 2018.

_____, 2015. Alameda County Williamson Act FY 2014/2015. Available at ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Alameda_14_15_WA.pdf. Accessed January 25, 2018.

City of Fremont, 2016, Zoning Districts: Brief summation, Available at https://fremont.gov/DocumentCenter/Home/View/2031, accessed January 25, 2018

4.3 Air Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3.a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
3.b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
3.c. Result in 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)?	☐	☐	☒	☐
3.d. Expose sensitive receptors to substantial pollutant concentrations	☐	☒	☐	☐
3.e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Setting:

Air quality is defined by the concentration of pollutants in relation to their impact on human health. Concentrations of air pollutants are determined by the rate and location of pollutant emissions released by pollution sources, and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, and sunlight. Therefore, ambient air quality conditions within the local air basin are influenced by such natural factors as topography, meteorology, and climate, in addition to the amount of air pollutant emissions released by existing air pollutant sources.

The project site is located within the City of Fremont in Alameda County, under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD monitors air quality within Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa counties and portions of Solano and Sonoma counties in the San Francisco Bay Area Air Basin (SFBAAB). Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate air quality problems in the SFBAAB. The climate of the SFBAAB is characterized by warm, dry summers and mild winters.

Individual air pollutants at certain concentrations may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. Six air pollutants have been identified by the United States Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) as being of concern both on a nationwide and statewide level: ozone; carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); lead; and particulate matter (PM), which is subdivided into two classes based on particle size, PM equal to or less than 10 micrometers in diameter (PM_{10}) and PM equal to or less than 2.5 micrometers in diameter ($PM_{2.5}$). Because the air quality standards for these air pollutants are regulated using human and environment health based criteria, they are commonly referred to as "criteria air pollutants."

Areas are classified under the federal Clean Air Act and California Clean Air Act as attainment, non-attainment, or maintenance (previously non-attainment and currently attainment) for each criteria pollutant based on whether the federal and state air quality standards have been achieved. With respect to federal standards, the SFBAAB is designated as a nonattainment area for ozone and $PM_{2.5}$, and as an attainment or unclassified area for all other pollutants. With respect to the state standards, the SFBAAB is designated as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$, and as an attainment area for all other pollutants.

Discussion:

3a) Would the project conflict with or obstruct implementation of any applicable air quality plan?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Air quality plans describe air pollution control strategies to be implemented by a city, county, or region. The primary purpose of an air quality plan is to bring an area that does not attain federal and state air quality standards into compliance with the requirements of the federal Clean Air Act and California Clean Air Act requirements. BAAQMD prepares plans to attain state and national ambient air quality standards in the SFBAAB. BAAQMD adopted the *2017 Clean Air Plan: Spare the Air, Cool the Climate* on April 19, 2017 (BAAQMD, 2017). This plan provides a regional strategy to attain state and federal air quality standards by reducing ozone, PM, and toxic air contaminants (TACs).

Air quality plans identify potential control measures and strategies, including rules and regulations that could be implemented to reduce air pollutant emissions from industrial facilities, commercial processes, on- and off-road motor vehicles, and other sources. BAAQMD implements these strategies through rules and regulations, grant and incentive programs, public education and outreach, and partnerships with other agencies and stakeholders.

Projects that are consistent with the assumptions used in development of the air quality plan are considered to not conflict with or obstruct the attainment of air quality levels identified in the plan. Assumptions for emission estimates are based on population, employment, and land use projections taken from local and regional planning documents. As discussed in more detail in Section 4.10, “Land Use and Land Use Planning,” the proposed project or variant would be consistent with the City’s General Plan and Centerville Community Plan land use designation of Town Center, and is zoned, Town Center-Pedestrian with Transit Oriented Development Overlay District TC-P (TOD), which allows for a mix of commercial and residential uses along Fremont Boulevard. Because the proposed project or variant would consist of a mixed-use development that provides pedestrian connections and features high-density housing within a TOD district, the proposed project or variant would be consistent with the development assumptions for land uses and vehicle trips associated with the General Plan land use designation of the site. Thus, the intensity of operational emissions associated with the proposed project or variant has been accounted for in the air quality plan.

In addition, the proposed project or variant would be consistent with Transportation Control Measures (TCM)–D2 and D3, Pedestrian Access and Facilities Improvements and Local Land Use Strategies, respectively. TCM-D2 calls for improvement of pedestrian facilities that encourage walking by funding projects that improve pedestrian access to transit, employment, and major activity centers. TCM-D3 calls for promotion and support for land use patterns, policies and infrastructure investments that support high density mixed-use, residential and employment development in order to facilitate walking, bicycling, and transit use. The proposed project or variant provide pedestrian connections to further improve the connectivity and walkability in the heart of the Town Center as well as high-density housing within walking distance of the Centerville Train Depot and several AC Transit bus lines.

Consistency with the air quality plan is also determined through evaluation of project-related air quality impacts and demonstration that project-related emissions would not increase the frequency or severity of existing violations, or contribute to a new violation of the national ambient air quality standards. The BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines include thresholds of significance that are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on BAAQMD’s ability to reach attainment (BAAQMD, 2017).

Emissions that are above these thresholds have not been accommodated in the air quality plans and would not be consistent with the air quality plans. As discussed in Item 3b below, construction and operational criteria pollutant emissions for the proposed project or variant would not exceed BAAQMD significance thresholds. Therefore, the proposed project or variant would not conflict with or obstruct implementation of the BAAQMD 2017 Clean Air Plan. The impact would be **less than significant** and will not be further addressed in the EIR.

3b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Construction of the proposed project or variant would result in the temporary generation of ozone precursors [reactive organic gases (ROG) and nitrogen oxides (NO_X)], PM_{10}, and $PM_{2.5}$ emissions from soil excavation and material transport. ROG and NO_X emissions are primarily associated with mobile equipment exhaust. Fugitive dust emissions are primarily associated with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles on- and off-site.

Construction activities for the proposed project would involve the demolition of the existing buildings (except for the former fire station) and the construction of 72 townhomes, 64 apartments, and approximately 25,000 SF of retail uses, along with a community clubhouse, pool and children's playground, and a community garden. The air quality analysis for the proposed project (Appendix A-1) assumed construction would begin in March 2018 and last approximately 14 months, involve demolition of approximately 55,000 square feet of buildings, and result in approximately 20,100 cubic yards of soil off-haul. Although project construction is anticipated to begin in February 2019, the analysis for the proposed project is conservative as exhaust emissions from construction equipment are expected to decrease over time as stricter standards take effect, and as advancements in engine technology, retrofits, and turnover in equipment fleet are anticipated to result in lower levels of emissions over time.

Construction activities for the variant would involve the demolition of all existing buildings and the construction of 72 townhomes, 93 apartments, and approximately 26,000 SF of retail uses, along with a community clubhouse, pool and children's playground, and a community garden. The air quality analysis for the proposed variant (Appendix A-2) assumed construction would begin in February 2019 and last approximately 18 months, include demolition of approximately 58,300 square feet of buildings (including the fire station), and result in approximately 29,000 cubic yards of soil off-haul.

Construction-related emissions associated with typical construction activities were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. CalEEMod allows use of project-specific construction information, such as types, number, and horsepower of construction equipment, and number and length of off-site motor vehicle trips. The total criteria pollutant construction emissions for the proposed project and variant are presented in Table 4.3-1. Additional modeling details and assumptions are provided in Appendix A.

Table 4.3-1 Modeled Construction Emissions

Emission Sources	Project Construction Emissions[c]				Variant Construction Emissions[d]			
	ROG	NO_X	PM_{10} Exhaust	$PM_{2.5}$ Exhaust	ROG	NO_X	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total Construction Emissions (tons)	1.61	4.47	0.22	0.20	1.99	6.84	0.27	0.25
Average Daily Emissions (lbs/day) [a]	10.8	29.9	1.5	1.3	9.2	31.5	1.2	1.2
Threshold of Significance [b]	54	54	82	54	54	54	82	54
Exceeds Threshold	No	No	No	No	No	No	No	No

[a] *Average Daily Emissions are calculated based on a schedule of 299 construction workdays for the proposed project and 434 construction work days for the variant.*

[b] *Thresholds from Table 2-1 of the BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2017)*

[c] *Source: Modeled by Illingworth & Rodkin, Inc. in 2018 (Appendix A-1).*

[d] *Source: Modeled by AECOM in 2018 (Appendix A-2).*

lbs/day = pounds per day
NO_X = oxides of nitrogen
PM_{10} = particulate matter with aerodynamic diameter less than 10 microns
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns
ROG = reactive organic gases

As shown in Table 4.3-1, construction-generated emissions of ROG, NO_X, $PM_{2.5}$ exhaust, and PM_{10} exhaust would not exceed applicable emission thresholds of significance for either the proposed project or variant. BAAQMD does not have quantitative emission thresholds for fugitive dust. Instead, BAAQMD recommends that all projects, regardless of the amount of average daily emissions, implement applicable best management practices (BMPs), including those listed as Basic Construction Measures in the BAAQMD CEQA Guidelines (BAAQMD, 2017).

As discussed in Section 2.8 above, the proposed project or variant would comply with the City of Fremont's standard development requirements for resource protection (FMC Chapter 18.218), including the following requirements related to construction-related emissions, which are based on BAAQMD's Basic Construction Measures, and would reduce construction-related fugitive dust and exhaust emissions:

> ***Construction-Related Emissions.*** *The following construction measures, as periodically amended by BAAQMD, are required for all proposed development projects to reduce construction-related fugitive dust and exhaust emissions:*
>
> *(A) All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times daily.*
>
> *(B) All haul trucks transporting soil, sand, or other loose material off site shall be covered.*
>
> *(C) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
>
> *(D) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.*
>
> *(E) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading, unless seeding or soil binders are used.*

(F) Idling times shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

(G) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

(H) A publicly visible sign shall be posted with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number also shall be visible to ensure compliance with applicable regulations.

Because the above requirements apply to the proposed project or variant, per FMC Section 18.218.050(a)(1), the proposed project or variant would be consistent with BAAQMD guidance and would not result in the generation of fugitive dust emissions that could result in a significant impact. Thus, construction of the proposed project or variant would not violate or contribute substantially to an existing or projected air quality violation. The impact would be **less than significant** and will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Operational emissions following construction of the proposed project or variant would be generated by area, energy, and mobile sources. Area sources would include consumer products, periodic architectural coatings, and landscape equipment for residential and commercial land uses. Energy sources would include natural gas combustion for space and water heating in residences and retail spaces. Mobile sources would involve vehicle trips associated with residential and commercial activities (e.g., work, shopping, and other trips). The analysis assumed the proposed project and variant would result in approximately 2,017 and 2,093 average daily trips, respectively[3]. Operational emissions were calculated using CalEEMod Version 2016.3.2. Consistent with the definition of baseline conditions pursuant to CEQA Guidelines (Section 15125[e]), the air quality analysis modeled emissions from the existing land uses in order to evaluate the net change in operational emissions associated with the proposed project or variant.

Table 4.3-2 presents the average daily and annual operational emissions from the proposed project and variant. Refer to Appendix A for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs.

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[3] Based on traffic generation as calculated in the Traffic Impact Assessment in Appendix C of this Initial Study.

Table 4.3-2 Operational Emissions for Proposed Project and Variant

Emission Sources	Maximum Project Emissions[b]				Maximum Variant Emissions[c]			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Total Operational Emissions (tons/year)	1.39	3.86	1.50	0.44	1.61	4.44	1.86	0.53
Existing Uses (tons/year)	0.88	3.80	1.28	0.37	0.88	3.80	1.28	0.37
Net Emissions (tons/year)	**0.51**	**0.06**	**0.22**	**0.07**	**0.73**	**0.64**	**0.58**	**0.16**
Threshold of Significance (tons/year)[a]	10	10	15	10	10	10	15	10
Exceeds Threshold	No	No	No	No	No	No	No	No
Net Emissions (lbs/day)	**2.8**	**0.3**	**1.2**	**0.4**	**4.0**	**3.5**	**3.2**	**0.9**
Threshold of Significance (lbs/day) [a]	54	54	82	54	54	54	82	54
Exceeds Threshold	No	No	No	No	No	No	No	No

[a] *Thresholds from Table 2-1 of the BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2017)*

[b] *Source: Modeled by Illingworth & Rodkin, Inc. in 2018 (Appendix A-1).*

[c] *Source: Modeled by AECOM in 2018 (Appendix A-2).*

lbs/day = pounds per day

NO_X = oxides of nitrogen

PM_{10} = particulate matter with aerodynamic diameter less than 10 microns

$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns

ROG = reactive organic gases

As summarized in Table 4.3-2, the long-term operational emissions attributable to the proposed project or variant would generate emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ that would not exceed the thresholds of significance. Because long-term operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would not exceed the thresholds of significance, the proposed project or variant would not violate or contribute substantially to an existing or projected air quality violation. Consequently, operational air emission impacts would be **less than significant** and will not be further addressed in the EIR.

3c) 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?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and this regional impact is cumulative rather than attributable to any one source. Per CEQA Guidelines Section 15064(h)(4), the existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the incremental effects of the proposed project or variant are cumulatively considerable.

The SFBAAB is currently designated as a nonattainment area for state and national ozone standards and national particulate matter ambient air quality standards. Past, present and future development projects contribute to the region‘s adverse air quality impacts on a cumulative basis. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project’s individual emissions would be cumulatively considerable. If a project does not exceed the BAAQMD-identified significance thresholds, its emissions would not result in a cumulative significant impact.

Based on the project-level analysis described above in Impact 3b, the construction and operational emissions of the proposed project or variant would not exceed the thresholds of significance. Therefore, emissions associated with the proposed project or variant, in combination with other past, present, and reasonably foreseeable development, would result in a **less-than-significant** cumulative impact. This impact will not be addressed further in the EIR.

3d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

The primary community risk impacts associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. Diesel exhaust is among a list of some 200 toxic air contaminants (TACs) that comprise a set of airborne pollutants that pose potential hazards to human health. A TAC can be emitted directly, from a variety of sources like industrial plants and motor vehicles, and can also be formed in the atmosphere through reactions among different pollutants. A health risk assessment of the project construction activities was conducted that evaluated potential health effects of sensitive receptors at nearby residences from construction emissions of diesel PM and $PM_{2.5}$ (see Appendix A-1). Due to anticipated similarity of construction activities between the proposed project and variant, the health risk assessment prepared for the proposed project is assumed to be also applicable to the variant and a separate health risk assessment for the variant was not conducted.

The closest sensitive receptors to the project site are residences north of the project site on Jason Way, and nearby residences to the east, north, and south of the project site. There are also several preschools and a private school in the project vicinity: Holy Spirit School and Preschool on Parish Avenue, immediately southeast of the project site; Childs Hideaway Preschool southeast of the site on Fremont Boulevard; and Genius Kids Preschool northeast of the project site on Peralta Boulevard. Children at these locations are three years of age and older. Emissions and dispersion modeling was conducted to predict the off-site concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments that determine the health risks associated with exposure of residential receptors to TAC emissions should be based on a 30-year exposure period (OEHHA, 2015). The U.S. Environmental Protection Agency (U.S. EPA) ISCST3 dispersion model was used to estimate diesel PM and PM concentrations at existing sensitive receptors in the vicinity of the project construction area. Emission sources for the construction site were grouped into two categories, exhaust emissions of diesel PM and fugitive $PM_{2.5}$ dust emissions. The ISCST3 modeling utilized four area sources to represent the on-site construction emissions: two area sources for diesel PM exhaust emissions and two area sources for fugitive $PM_{2.5}$ dust emissions. Construction emissions were modeled as occurring for approximately 8 hours per day, when the majority of the construction activity involving equipment usage would occur.

As shown in Table 4.3-3, results of the health risk assessment due to construction of the proposed project estimated that the maximum increased residential cancer risk would be 109.8 in one million for an infant exposure and 1.9 in one million for an adult exposure. The maximum increased residential cancer risk for a pre-school child exposure would be 16.8 in one million. As discussed above, risks for the variant are anticipated to be the same as for the proposed project.

Table 4.3-3 Unmitigated Construction-Related Health Risks

Exposure Population	Cancer Risk (per million)	Annual $PM_{2.5}$ (μg/m^3)	Acute or Chronic Hazard Index
Residential	1.9	0.8	0.13
Infant	109.8	0.8	0.13
Pre-School	16.8	0.8	0.13
Threshold of Significance [a, b]	10	0.3	1.0
Exceeds Threshold	Yes	Yes	No

Source: Modeled by Illingworth & Rodkin, Inc. in 2018.

[a] *City of Fremont General Plan Implementation Measure 7-7.3A (2011a).*

[b] *BAAQMD (2011).*

μg/m^3= micrograms per cubic meter

As shown in Table 4.3-3, the proposed project and variant would exceed the established thresholds of significance with respect to health risks caused by construction activities; therefore, the impact would be potentially significant. Thus, implementation of Mitigation Measure AQ-1 would be required to reduce this impact to a level of less than significant.

> ***Mitigation Measure AQ-1: Selection of equipment during construction to minimize diesel PM and $PM_{2.5}$ emissions.***
>
> *The construction contractor shall use off-road construction diesel engines that meet, at a minimum, the Tier 4 interim California Emissions Standards, unless such an engine is not available for a particular item of equipment. Tier 3 engines will be allowed on a case-by-case basis when the contractor has documented that no Tier 4 Interim equipment or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete construction. Documentation shall consist of signed written statements from at least two construction equipment rental firms.*

Table 4.3-4 shows the risk level for the maximally exposed individual (MEI) from construction of the proposed project or variant with implementation of Mitigation Measure AQ-1.

Table 4.3-4 Mitigated Construction Health Risks

Exposure Population	Cancer Risk (per million)	Annual $PM_{2.5}$ (μg/m^3)	Acute or Chronic Hazard Index
Residential	0.1	0.08	0.01
Infant	6.3	0.08	0.01
Pre-School	1.0	0.08	0.01
Threshold of Significance [a, b]	10	0.3	1.0
Exceeds Threshold	No	No	No

Source: Modeled by Illingworth & Rodkin, Inc. in 2018.

Notes:

[a] *City of Fremont General Plan Implementation Measure 7-7.3A (2011a).*

[b] *BAAQMD (2011).*

μg/m^3= micrograms per cubic meter

With implementation of Mitigation Measure AQ-1, construction emissions for the proposed project or variant would not exceed the established thresholds of significance, and therefore would not expose sensitive receptors to substantial pollutant concentrations. The construction-related impact would be **less than significant with mitigation** and will not be further addressed in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Carbon Monoxide

The primary mobile-source pollutant of localized concern is CO. Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is limited since it disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels for local sensitive land uses such as residential units, hospitals, schools, and childcare facilities. As a result, air districts typically recommend analysis of CO emissions at a local rather than a regional level.

Air pollutant monitoring data indicate that CO levels have been below state and federal standards in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. The highest measured level over any 8-hour averaging period during the last 3 years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. In addition, the BAAQMD CEQA Guidelines suggest that projects would not result in a CO impact if the project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

As discussed in Section 4.16, “Traffic and Transportation,” intersections affected by the proposed project or variant would have traffic volumes less than 10,000 vehicles per hour and, thus, would result in a **less-than-significant** impact to localized CO concentrations.

TAC Emissions

The proposed project or variant would introduce new sensitive receptors (residences) in the proximity of nearby TAC sources, such as Peralta Boulevard (State Route 84 [SR-84]), local roadways, and railroad traffic. The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs. However, the California Supreme Court determined in 2015 that CEQA does not require an analysis of how the existing environment might affect a project’s future users or residents (California Building Industry Association v. Bay Area Air Quality Management District 62 Cal. 4th 369). Though not necessarily a CEQA issue, an analysis of existing TAC sources on future project receptors (residences) is provided for informational purposes, and to comply with the Clean Air Plan goal of reducing population TAC exposure and protecting public health in the Bay Area.

Operation of the proposed project or variant would involve residential and commercial land uses that would not be a substantial source of TAC and/or $PM_{2.5}$ emissions. Further, there are no stationary sources within 1,000 feet of the project area (BAAQMD Stationary Source Screening Analysis Tool, Alameda, 2012). However, BAAQMD considers roadways with traffic volumes of over 10,000 vehicles per day to have a potentially significant impact on a proposed project. Thus, health risk and hazard impacts from sources of TACs within 1,000 feet of the project site include SR-84/Peralta Boulevard, local surface streets, and nearby railroad traffic from the Centerville/Niles Cutoff rail line. SR-84/Peralta Boulevard and local roadways are located approximately 10 feet north of the project site. The railroad is located approximately 300 to 400 feet from the project site.

The analysis prepared by Illingworth & Rodkin, Inc. used BAAQMD’s Highway Screening Analysis Tool and the Roadway Screening Analysis Calculator for Alameda County to assess the health risk and hazard impacts from traffic on the future on-site sensitive receptors, and is provided in Appendix A-1. The analysis is applicable to both the proposed project and variant. Health risk and hazard impacts from the rail line were obtained from the Fremont General Plan Update (City of Fremont, 2011b). The cumulative cancer risk levels, $PM_{2.5}$ concentrations, and hazard impacts are shown in Table 4.3-5.

Table 4.3-5 Combined Community TAC Sources

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ (μg/m^3)	Acute or Chronic Hazard Index
Peralta Boulevard (SR-84)	21.2	0.17	0.02
Fremont Boulevard	15.7	0.46	<0.03
Centerville/Niles Cutoff Rail Line	11.5	0.02	-
Combined Sources	48.4	0.65	<0.05
City of Fremont General Plan Combined Source Threshold [a,b]	100.0	0.8	10.0
Exceeds Threshold	No	No	No

Source: Modeled by Illingworth & Rodkin, Inc. in 2018.

Notes:

[a] *City of Fremont General Plan Implementation Measure 7-7.3B (2011a).*

[b] *BAAQMD (2011).*

μg/m^3= micrograms per cubic meter

As shown in Table 4.3-5, the cumulative cancer risk on proposed project or variant residents from nearby TAC sources would be approximately 48.4 per million which is below both BAAQMD and the City of Fremont General Plan recommended cumulative significance threshold of a cancer risk of 100 in a million. The cumulative $PM_{2.5}$ concentration is estimated to be 0.65 μg/m^3, which is also below the BAAQMD's cumulative significance threshold of 0.8 μg/m^3. The cumulative hazard index is estimated to be less than 0.05, which is less than BAAQMD's cumulative significance threshold of 10.0. The maximum impact for each source would not occur in the same location on the project site; thus, this analysis presents a conservative scenario.

Based on this assessment of exposure to nearby TAC sources, operational emissions would not expose future sensitive receptors of the proposed project or variant to substantial pollutant concentrations. This operational impact would be **less than significant** and will not be further addressed in the EIR.

3e) Would the project create objectionable odors affecting a substantial number of people? Less than Significant Impact.

Construction – Proposed Project or Variant

Construction activities associated with the proposed project or variant could result in short-term odor emissions from diesel exhaust associated with construction equipment. The proposed project or variant would use typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, construction of the proposed project or variant would not create objectionable odors affecting a substantial number of people. The impact would be **less than significant** and will not be further addressed in the EIR.

Operation – Proposed Project or Variant

Typical facilities that generate odors include wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities. The project site would not be located in close proximity to any of these types of odor-generating facilities. The land uses associated with the proposed project or variant would be residential and commercial, which are not typically a generator of odor emissions. Therefore, the proposed project or variant would not create objectionable odors affecting a substantial number of people. The impact would be **less than significant** and will not be further addressed in the EIR.

References:

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4.4 Biological Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
4.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, ore regulations, or by the California Department of Fish and Game of U.S. Fish and Wildlife Service?	☐	☐	☒	☐
4.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?	☐	☐	☐	☒
4.c. Have 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?	☐	☐	☐	☒
4.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 impeded the use of native wildlife nursery sites?	☐	☐	☐	☒
4.e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
4.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?	☐	☐	☐	☒

Setting:

The project site is within the Centerville town center, a highly urbanized area in the City containing the main thoroughfares of Fremont Boulevard and Peralta Boulevard, stores, restaurants and businesses, apartments and the Centerville/Niles Cutoff rail corridor. The project site is approximately 0.75 mile southwest of Alameda Creek and the Quarry Lakes Regional Recreation Area, 3 miles southwest of the open space in the east bay hills, and 3.5 miles northeast of salt ponds/marshes of San Francisco Bay. The project site consists of several stores, restaurants and businesses along Fremont Boulevard and Peralta Boulevard, a parking lot, an abandoned lot with weeds and grasses, and small landscaped areas.

The project site contains 54 landscaped trees including redwood (*Sequoia sempervirens*), crape myrtle (*Lagerstroemia indica*), Mayten tree (*Maytenus boaria*), white birch (*Betula pendula*), glossy privet (*Ligustrum lucidum*), interior live oak (*Quercus wislizenii*), zelkova tree (*Zelkova serrata*), sweet gum tree (*Liquidamber styracifula*) and Chinese pistachio (*Pistacia chinensis*). The majority of the trees are along the sidewalks of Fremont Boulevard, Parish Avenue, and Jason Way, with several others within landscaped areas of the parking lot and on the unoccupied residential lot near the center of the site.

A review of the California Natural Diversity Database (CNDDB) was conducted to identify special-status plant and animal species and their habitats that have previously been recorded in the greater project vicinity (CDFW, 2018). The CNDDB search covered the Newark United States Geological Survey (USGS) 7.5 minute quadrangle and surrounding eight quadrangles, and identified 37 special-status plant species, 18 bird species, two fish species, two invertebrate species, nine mammal species, four reptile species, and four amphibian species.

A biological reconnaissance survey was conducted by an AECOM biologist on February 8, 2018, to examine the project site for special-status plant and animal species and their habitats, and to document the existing plants and animals at the site. No special-status plants were observed at the project site, and the site did not have habitats conducive for special-status plants. Because the project site was almost entirely paved or covered with buildings and landscaping, it is considered very unlikely for special-status plant species to be present. With the exception of nesting areas and roosting areas for birds and bats, habitats supporting special-status plants or animals were not detected at the project site. In addition, no jurisdictional wetlands or waters of the U.S. were observed at the project site.

Discussion:

4a) Would the project 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 Wildlife or U.S. Fish and Wildlife Service?

Construction – Proposed Project or Variant: **Less-Than-Significant Impact**

Construction of the proposed project or variant could adversely affect, either directly or through habitat modification, special-status bird or bat species that nest or roost at the project site or within the nearby vicinity. In addition, migratory bird nests that are protected by the federal Migratory Bird and Treaty Act and Fish and Game Code Section 3503 could also be adversely affected directly by construction activities. Implementation of the City of Fremont's standard development requirements relating to biological resources (FMC Section 18.218.050(b)) would avoid adverse effects of construction on nesting birds or roosting bats by requiring preconstruction surveys during the appropriate seasons and, when nests or roosts are detected, by requiring application of appropriate protective buffer zones and monitoring. These protective measures would prevent bird and bat mortality and the loss of active nests and roosts. No other plant or wildlife species identified as a candidate, sensitive, or special-status species are expected to be adversely affected by the project. Further discussion of the potential for special-status species to occur on the project site, and potential impacts of the project, is provided below.

Nesting Birds

Nesting habitat for birds and raptors is present at the project site due to the presence of a variety of types of trees and structures on which birds could build a nest. The urbanized setting and continual presence of human disturbance would likely favor the presence of bird species commonly found in cities around the San Francisco Bay Area such as mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), and western scrub jay (*Aphelocoma californica*). These bird species are accustomed to searching for food sources and navigating the disturbances that are present in the urban environment. No special-status bird species were observed at or near the project site during the reconnaissance survey. Although there is a CNDDB occurrence of a California black rail from 1949 at Alameda Creek potentially within 2 miles, the habitat for the black rail, which consists of saltmarsh and freshwater marshland, is not present in the project area or surrounding environment. No bird nests were observed at the project site during the reconnaissance survey; however, there were potential nesting places for birds throughout the project site.

If an active nest were to be directly affected by construction activities, the nest, eggs, chicks or adults could be harmed and/or the nest could become abandoned. These impacts would constitute potentially significant impacts of the proposed project or variant. As discussed in Section 2.8 above, the project or variant must comply with the City's standard development requirements for resource protection (FMC Chapter 18.218), including the following requirements relating to nesting birds, which would prevent bird nests from being adversely affected by the project:

> ***Nesting Birds.*** *New development projects with the potential to impact nesting birds through tree or shrub removal shall implement the following measures prior to removal of any trees/shrubs, grading, or ground disturbing activities:*

(A) Avoidance. Proposed project construction activities shall avoid the bird nesting season (February 1st through August 31st) when possible.

(B) Preconstruction Surveys. If construction activities are scheduled during the nesting season, a qualified biologist shall conduct a preconstruction survey to identify any potential nesting activity. The biologist shall determine the number and time frame (prior to construction) of surveys to be conducted.

(C) Protective Buffer Zone(s). If the survey indicates the presence of nesting birds, protective buffer zones shall be established around the nests. The size of the buffer zone shall be recommended by the biologist in consultation with the CDFW depending on the species of nesting bird and level of potential disturbance.

(D) Initiation of Construction Activities. The buffer zones shall remain in place until the young have fledged and are foraging independently. A qualified biologist shall monitor the nests closely until it is determined the nests are no longer active, at which time construction activities may commence within the buffer area.

Because the above requirements would apply to the proposed project and variant, per FMC Section 18.218.050(b)(2), the impacts of construction on nesting birds would be **less than significant**. This impact will not be discussed further in the EIR.

Bats

The CNNDB search identified three special-status bat species that have potential to occur in the project vicinity, the pallid bat (*Antrozous pallidus*), the western mastiff bat (*Eumops perotis californicus*), and the Townsend's big eared bat (*Corynorhinus townsendii*), all of which are California species of special concern. No bats or signs of bat roosting were observed during the reconnaissance survey; however, bats could roost in abandoned buildings, under the eaves, or in tree hollows at the project site. Generally, many species of bats are sensitive to human-related noises and disturbances and will typically find roosting locations in rural areas or on the outskirts of urbanization where there is a reduced level of disturbance or interaction with people. However, despite bats' normal sensitivity to disturbance, with the presence of roosting habitat at the project site, there is a potential for bats to occur, particularly in those buildings that are not inhabited.

If bats roost at the site, there is potential for construction activities to disturb active bat roosts, harm individual bats, or adversely affect maternal roosts and pups. These impacts would be potentially significant due to the potential for causing mortality. However, as discussed in Section 2.8 above, the proposed project or variant would be required to implement the City's standard development requirements for resource protection, including the following requirements related to bats, which would prevent bat roosts from being adversely affected during construction:

> ***Roosting Bats.*** *New development with potential to impact special-status or roosting bat species through demolition of existing structures or removal of trees on-site shall conduct the following measures prior to demolition:*
>
> *(A) Preconstruction Surveys. A qualified biologist shall conduct a preconstruction survey during seasonal periods of bat activity (mid-February through mid-October) to determine suitability of structure(s) or trees as bat roost habitat.*
>
> *(B) Protective Buffer Zone(s). If active bat roosts are found on-site, a suitable buffer from construction shall be established per the biologist. The biologist shall determine the species of bats present and the type of roost.*
>
> *(C) Mitigation and Exclusion. If the bats are identified as common species, and the roost is not being used as a maternity roost or hibernation site, the bats may be evicted using methods developed by a qualified biologist. If special-status bat species are found present, or if the roost is determined to be a maternity roost or hibernation site for any species, then the*

> *qualified biologist shall develop a bat mitigation and exclusion plan to compensate for lost roost. The site shall not be disturbed until CDFW approves the mitigation plan.*

Because the above requirements apply to the proposed project or variant, per FMC Section 18.218.050(b)(2), the impacts of project construction on bat species would be **less than significant**.

While potential bat roosting areas for special-status bat species are present at the project site, and would be removed as a result of project construction, these areas are not high-quality habitat for bats. The project site does not have caves or mines, which are the preferred roosting habitat for Townsend's big eared bats or have tall cliffs or rock crevices which western mastiff bats prefer for roosting (Western Bat Working Group, 2005). The site also does not contain any preferred foraging areas near riparian areas, and is surrounded by adjacent residences and businesses which make the habitat at the site less than ideal due to their sensitivity to disturbances. Therefore, due to the limited quantity and quality of habitat being affected by this project in comparison to the available habitat in nearby open habitats, the potential loss of bat habitat due to site demolition and grading activities would be **less than significant**. This impact will not be discussed further in the EIR.

Fish, Invertebrates, Terrestrial Mammals

Suitable habitat at the project site does not exist for any of the special-status invertebrates or fish or other (non-bat) mammal species identified in the CNDDB search. As a result, they would not be expected to occur at the project site, and there would be **no impacts** on special-status fish, invertebrates, or terrestrial mammals from construction of the proposed project or variant. This impact will not be discussed further in the EIR.

Reptiles and Amphibians

There were eight different species of reptile and amphibian special-status species identified in the CNDDB search; and the closest occurrence of any these species was a western pond turtle occurrence approximately 2 miles away in the Quarry Lakes Regional Recreation Area. The nearest CNDDB occurrence of California red-legged frog is approximately 2.5 miles away and for California tiger salamander is at least 4 miles away. All other occurrences of special-status reptile and amphibian species are over 5 miles away.

The western pond turtle, the California red-legged frog, and the California tiger salamander all require aquatic habitat for at least part of their life history. The project site contains no aquatic habitat nor is there any connectivity from the project site to aquatic habitat. In addition, there were no areas of the site that provide suitable upland habitat for special-status amphibian and reptiles. None of the special-status reptile or amphibian species identified by the CNDDB search had suitable habitat present at the project site.

During the reconnaissance survey, no special-status reptiles and amphibians or their habitats were found at the project site. There would be **no impacts** on special-status reptiles and amphibians from construction of the proposed project or variant. This impact will not be discussed further in the EIR.

Plants

There were 37 special-status plant species identified in the CNDDB search, many of which occur in specific habitat areas, such as serpentine grasslands, chaparral, coastal scrub, vernal pools, none of which occur at the project site. Project site maps and photos were reviewed to determine potential habitats that might be present at the project site, and the reconnaissance survey assessed the potential for occurrence of special-status plant species that occur in such habitats. The project site consisted of almost entirely paved or landscaped areas and did not have habitats conducive for special-status plants. Barren lots or backyards in the project area contained weedy and grass vegetation that was almost entirely non-native. During the reconnaissance survey, no special-status plants were found at the project site. It is unlikely for special status plant species to occur at the project site due to their absence during the survey and the absence of their habitat. Therefore, there would be **no impacts** on special-status plants from construction of the proposed project or variant. This impact will not be discussed further in the EIR.

Operation – Proposed Project or Variant: **No Impact**

Once constructed, the project site under either the proposed project or variant would contain a mix of townhomes and mixed use retail/apartment buildings, as well as associated community use, parking, access, and landscaping areas, including more than 100 new landscape trees.

Nesting Birds

Similar to existing conditions, trees within the post-construction project site would provide potential nesting habitat, particularly for bird species that are accustomed to searching for food sources and navigating the disturbances that are present in the urban environment. Ongoing use of the site for residential and retail purposes would not be expected to result in the destruction of or other adverse effects to nests or nesting birds; therefore, operation of the proposed project or variant would have **no impacts** on nesting birds and this impact will not be discussed further in the EIR.

Bats

Similar to existing conditions, the post-construction project site would provide potential bat habitat (e.g., building eaves or tree hollows); however, this would not be high-quality habitat due to the lack of nearby preferred foraging areas and the frequent and significant human-related disturbances already present in the vicinity. Ongoing use of the site for residential and retail purposes would not be expected to result in the disturbance of active roosts or other adverse effects on bats; therefore, operation of the proposed project or variant would have **no impacts** on bats and this impact will not be discussed further in the EIR.

Other Special-Status Plants and Wildlife Species

As discussed above under construction impacts, the project site does not contain other special-status plants or wildlife species, or habitat for such species, and the proposed project or variant would not provide new habitat that would be expected to support special-status species. Ongoing use of the site for residential and retail purposes would therefore have **no impacts** on special-status species and this impact will not be discussed further in the EIR.

4b-4c) Would the project 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 Wildlife or U.S. Fish and Wildlife Service? Would the project 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?

Construction and Operation – Proposed Project or Variant: **No Impact**

The project site was surveyed for sensitive natural communities, riparian areas, and potential jurisdictional wetlands during the reconnaissance survey on February 8, 2018. None of these sensitive biological communities and habitats were identified during the survey and, therefore, none are expected to be affected by the project. Consequently, construction and operation of the project would have **no impact** on sensitive natural communities, riparian areas, or federally protected wetlands. These impacts will not be discussed further in the EIR.

4d) Would the project 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?

Construction and Operation – Proposed Project or Variant: **No Impact**

Because the project is in an area surrounded by urban development, no aquatic or terrestrial migratory corridors or nursery sites exist on the property or adjacent properties for wildlife movement. The project would not impede wildlife that currently exists in the developed areas surrounding the project site from moving to other surrounding areas. Construction and operation of the proposed project would, therefore, have **no impact** on the movements of migratory or resident wildlife or fish species. This impact will not be discussed further in the EIR.

4e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

The arborist report and tree inventory prepared for the project site identified 54 existing trees, 48 of which are designated as Protected Trees pursuant to the City of Fremont's Tree Preservation Ordinance (FMC Chapter 18.215) (Callander Associates, 2018). The street trees along Fremont Boulevard and Peralta Boulevard would be retained, along with two large trees (black acacia and English walnut) along the existing alley that would become part of the Jason Way extension under the proposed project or variant. A total of 35 existing trees would be removed as part of the project due to poor health and/or conflicts with the proposed improvements, 29 of which would require a permit for removal due to their qualification as protected trees under the Tree Preservation Ordinance. The proposed project and variant would include provision of approximately 145 replacement trees throughout the project site. The removal of protected trees is subject to requirements involving the planting of replacement trees or the payment of in-lieu fees to mitigate the removal of trees that cannot be replaced on-site due to land area constraints, in accordance with the mitigation requirements of the City's Tree Preservation Ordinance. Because the applicant must comply with requirements of the Tree Preservation Ordinance and permit conditions to allow the removal of trees and provide required replacement trees, there would be no conflicts with any local policies or ordinances protecting biological resources. Construction impacts would be **less than significant** and this impact will not be discussed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Following construction, ongoing operation of the proposed project or variant would not be expected to result in further tree removal, but should tree removal be needed in the future, a permit from the City would be required for any tree protected under the Tree Protection Ordinance. As a result, project operation would not conflict with local policies or ordinances protecting biological resources, and impacts would be **less than significant.** This impact will not be discussed further in the EIR.

4f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction and Operation – Proposed Project or Variant: **No Impact**

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans covering the project area. Thus, construction or operation of the proposed project or variant would have **no impact** on or conflict with habitat conservation plans in the area. This impact will not be discussed further in the EIR.

References:

California Department of Fish and Wildlife (CDFW), 2018. California Natural Diversity Database data request for U.S. Geological Survey Newark 7.5 minute topographic quadrangle and eight surrounding quads. Accessed January 29, 2018.

Callander Associates, 2018. Arborist's Report for the Future Development of the Fremont Boulevard Mixed Use Project, Fremont, CA. Revised March 1.

Western Bat Working Group, 2005. Species Accounts for the Pallid bat, Townsend's big eared bat, and Western mastiff bat. Accessed at http://www.wbwg.org/western-bat-species.

4.5 Cultural Resources

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

Setting:

The project site is in a developed urban neighborhood at the eastern corner of Fremont and Peralta boulevards and contains several commercial buildings, a residence, and a former fire station, all surrounding a large surface parking lot. The project site is mostly paved so that its original ground surface is obscured and precludes direct observation of native soils that may reveal or suggest potential on-site archaeological resources. It is located on a broad alluvial plain between Mission Hills and the San Francisco Bay. The nearest extant watercourse, 2,000 feet to the north, is the channelized flow of Alameda Creek (U.S. Geological Survey, 1915, 1947, 1973). A second watercourse, a branch of Alameda Creek named Sanjen de los Alisos, originally ran less than 500 feet to the north but it appears to have been culverted. The landform within the project site is mapped as a Holocene-age natural levee deposit (Qhl) deposited by Sanjen de los Alisos (Helley and Graymer, 1997). These natural levee deposits are composed of loose, moderately to well-sorted sandy or clayey silt grading to silty clay. They border stream channels and slope away to flatter floodplains and basins. The soils that have developed on these levee deposits are classified as Yolo silt loam. Yolo series soils are very thick and likely date to less than 3,000 years old. The official soil series description includes buried Ab horizons (paleosols) (National Cooperative Soil Survey, 2018).

The following brief context statement is derived from a cultural resources review prepared for the Centerville Redevelopment Plan Environmental Impact Report (Basin Research Associates, Inc., 1997) unless otherwise cited.

There are no known indigenous settlements within or adjacent to the project area, although the project site's general setting near seasonal and perennial watercourses, the marshlands of the Bay, and the nearby hills would have been a favorable location. CA-ALA-21, a prehistoric village/mound site, is the nearest recorded archaeological site, approximately 0.25 mile to the southwest. This site was noted on J.D. Whitney's 1873 "Map of the Region Adjacent to the Bay of San Francisco" and recorded in 1950 based on the map (William Self Associates, 1997). Ethnographic literature indicates that the project site is near the territorial border of the Alson and Tuibun tribes, who occupied the Fremont Plain of southwest Alameda County. Although precise territorial boundaries are not known, the Alson may have controlled the area along the Bay shoreline from near today's Highway 84 south to Scott Creek, while the Tuibun were located just to the north (Milliken, 1995). The Alson and Tuibun tribes spoke a dialect of Ohlone, one of the five mutually unintelligible language families that existed in the San Francisco Bay Area that also included Bay Miwok, Plains Miwok, Patwin, and Wappo (Milliken, 1995).

Alameda Creek was visited numerous times during Spanish-era expeditions to the area and Mission San Jose, founded in 1797, was sited approximately 5 miles to the east. The project site was part of the mission's grazing lands, but no known Mission-period improvements were made to the project site or immediate vicinity.

The intersection of Fremont and Peralta marks the center of the early American period crossroads town originally known as Hardscrabble (1850), then Centreville (by 1878), and finally Centerville (1893) (Thompson & West, 1878). During the second half of the nineteenth century, Centerville was along the main north-south route connecting San Jose and Oakland and was at the mid-point between Alvarado, Vallejo Mills/Niles, Newark, and Mission San Jose, and between the Southern Pacific and Central Pacific rail lines. The current Fremont Boulevard (known as Main Street in Centerville) and Peralta Boulevard (previously Niles Road) follow these early road alignments, with only minor modification.

Although Centerville did not originally have a railroad station, it was linked to other nearby settlements by stage and later horse car. It remained a successful and stable agricultural community in the second half of the nineteenth century; by 1878, it had a population of 300 and a number of churches, stores, and saloons. The land along Fremont and Peralta boulevards was generally divided into small farms of 10 to 60 acres, although the center of town had a much higher density. The 1887 Sanborn map depicts dwellings and shops (e.g., a cobbler, barber, harness shop, tin shop, bowling alley, and general merchandise shop) fronting both Main Street (Fremont Boulevard) and Niles Road (Peralta Boulevard) within or adjacent to the project site. The rear yards of these buildings included smaller outbuildings, likely barns, storage sheds, and possibly privies. The 1896 Sanborn map depicts a similar mix of dwellings and shops, as does the 1926 Sanborn map.

Centerville continued to be an agricultural center following the turn of the twentieth century, and shipping and canning industries expanded in the region in the 1920s. None of the nineteenth century buildings along Fremont Boulevard survive; all were demolished and replaced in the early to mid-twentieth century. The dwellings and outbuildings in the center of the project site were demolished and the area paved over with the parking lot. The economy in Centerville declined by the 1950s when agriculture ceased to be viable and the business district along Main Street deteriorated after the Nimitz Freeway was built in 1957. Centerville, along with Irvington, Niles/Vallejo Mills, Mission San Jose, and Warm Springs were incorporated into the City of Fremont in 1956.

Records Search

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System on February 15, 2018 (File No. 17-2043). Site records and previous studies of the project site and a 0.25-mile radius were reviewed. The National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the City of Fremont Register, and the Office of Historic Preservation Historic Properties Directory (HPD) data files were also reviewed.

Studies within the Project Site

Three studies have been previously completed within the project site.

- S-15220 (Garaventa et al., 1990): This cultural resources study was prepared as part of a California Department of Transportation (Caltrans) assessment for Route 84 Realignment Alternatives in Fremont, Hayward, and Union City and included parcels fronting Peralta Boulevard within the project site. The study included a literature review, records search, and "windshield architectural survey." The study found a generally high archaeological sensitivity in the vicinity of the project site.
- S-15220a (Garaventa et al., 1995): This Historic Property Survey Report / Finding of No Effect was prepared for Caltrans following recommendations in the 1990 study. The study included an archaeological and architectural survey. No archaeological resources were identified in the report's study area. Seventy-six buildings were recorded, one of which is immediately adjacent to the project site. As discussed below, this resource at 3754 Peralta Boulevard was found ineligible for the NRHP.
- S-21145 (Basin Research Associates, Inc., 1997): This cultural resources review was prepared for the Centerville Redevelopment Plan EIR. This study provided a context statement for

> Centerville, identified previously documented resources within the study area, and identified areas of archaeological and architectural sensitivity. The project site is within the "North Fremont Boulevard Commercial Subarea." Basin Research Associates, Inc. found that "[t]his subarea has the largest number and highest density of historic properties especially in its core area. Archaeological sensitivity is low in the west area [outside the project site] and generally high to extreme for the parcels fronting along Fremont Boulevard near the central and eastern areas [which includes the project site]." The study noted that "it is the considered opinion of [the consultant] that improvement projects within the proposed redevelopment area have the potential to both indirectly and directly impact known and unknown archaeological resources and historic buildings and structures. Such disturbance could result in significant impacts to the integrity of archaeological deposits and the loss of information important to prehistory and history."

Studies and Resources within 0.25-mile of the Project Site

One previously recorded architectural resource, 3754 Peralta Boulevard (P-01-008553), is immediately adjacent to the northern boundary of the project site. The farm complex at this address includes a house, barn, and tankhouse. The house was estimated to have a construction date c. 1910, though the barn and tankhouse were potentially older, with the c. 1910 house replacing an earlier residence. The house was noted as a "fine, intact example of a Craftsman bungalow," but it was not identified as an outstanding example and the barn and tankhouse were found to lack integrity (Hill, 1993a). The complex was found ineligible for the NRHP; it was not evaluated for its CRHR or local listing eligibility (Status Code 6Y in the HPD).

Seven additional studies were previously completed within a 0.25-mile radius and one additional architectural resource (P-01-008552) was identified within this study area. This resource, 3781 Peralta Boulevard, is a Colonial Revival residence across Peralta Boulevard from the project site. Although the building has a high level of integrity, it was found ineligible for the NRHP (Hill, 1993b). It was not evaluated for its CRHR or local listing eligibility (Status Code 6Y in the HPD).

City of Fremont Register

The City of Fremont Register lists three resources that are approximately within the project site:

- Fremont Boulevard/Centerville (early settlement)
- Town Hall Site
- Old Town Complex

These resources have not been formally evaluated for listing on the CRHR or NRHP and the location of the Town Hall Site has not been definitively identified, though it may be at 37412 Fremont Boulevard on the parcel that was subsequently developed with the fire station. The Fremont Boulevard/Center site is described in the Fremont Register as "Hardscrabble, Centreville," which is further described in the setting section above (page 43) as follows: "the intersection of Fremont and Peralta marks the center of the early American period crossroads town originally known as Hardscrabble (1850)." The boundary of the Old Town Complex is described generally in the Fremont Register as both sides of Fremont Boulevard extending from the Firehouse to Walton (which is now the entrance and parking area to the railroad station north of the project site and Peralta Boulevard). These resources are included in Appendix D of the City of Fremont's General Plan (December 2011).

Additional Studies

One additional study, *37412 Fremont Boulevard Historic Resource Impact Assessment* (Page & Turnbull, 2017), includes the project site but is not on file at the NWIC. This study identified the mid-century fire station at 37412 Fremont Boulevard (within the project site), as a CRHR-eligible resource. The fire station was also recorded and evaluated in 2007, where it was described as retaining a "high degree of architectural integrity" and was found eligible for the CRHR under Criterion 3 (architecture) as a notable local example of mid-century Modernism in the International Style (Hill and Minor, 2007). The remaining buildings on the project site were found not eligible. A full discussion of the built environment resources will be included in the Focused EIR.

Sacred Lands File Search

On March 5, 2018, AECOM requested a Sacred Lands File (SLF) search and Native American contact list for the project site from the Native American Heritage Commission (NAHC). On March 27, 2018 (in a letter dated March 21, 2018), the NAHC responded that the SLF search was "negative… [h]owever, the absence of site specific information in the SLF does not preclude the presence of cultural resources in any project area." Native American consultation pursuant to Assembly Bill (AB) 52 is being completed by the City of Fremont, as discussed in Section 4.17.

Field Survey

A pedestrian survey of the project site was conducted by an AECOM archaeologist on February 23, 2018. The project site was approximately 98 percent paved. The survey also included the small fenced-in lot at the intersection of Jason Way and Rose Court. This unpaved portion of the project site was covered with several inches of decomposing plant material and was densely vegetated. The dense vegetation (non-native grasses, etc.) within the project site limited ground surface visibility. Vegetation was scraped away to better view the ground surface and rodent burrow back dirt piles were closely inspected for indicators of archaeological deposits. All visible soils appeared to be imported mulch and garden soil. Due to the lack of ground surface visibility, no archaeological resources were identified during the survey.

Discussion:

5a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.57?

Construction and Operation – Proposed Project: **Potentially Significant Impact**

The proposed project would include alterations to the mid-century fire station that was previously found to possess sufficient significance and integrity to be considered a historical resource for the purposes of CEQA (Page & Turnbull, 2017). Impacts to this historical resource resulting from construction and operation of the proposed project would be **potentially significant**. These impacts and potential mitigations will be further analyzed in the Focused EIR.

Construction and Operation – Variant: **Potentially Significant Impact**

The variant would include demolition of the mid-century fire station. Impacts to this historical resources resulting from construction and operation of the variant would be **potentially significant**. These impacts and potential mitigations will be further analyzed in the Focused EIR.

5b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Construction – Proposed Project: **Less than Significant with Mitigation**

Construction of the proposed project would include excavation for one level of below-grade parking beneath the proposed mixed use buildings (Building A) that would extend approximately 443 feet along the Fremont Boulevard frontage. The proposed basement would extend a minimum of 74 feet northeast from the existing sidewalk and would be excavated to a depth of 15 feet (SiliconSage Builders, 2018). This work would largely be contained beneath the footprints of the extant buildings, but may extend beneath their foundations (e.g., beneath the prior depth of disturbance). The amount of fill placed on the project site prior to the construction of the extant buildings, if any, is unknown.

Other ground-disturbing activities on preliminary project plans include grading for building foundations, installation of subdrains in newly-established streets, installation of storm drains and bioretention features, and tree planting. The depth of ground disturbance for these proposed activities would be about four feet (SiliconSage Builders, 2018).

As discussed under "Setting" above, the project site is sensitive for both prehistoric and historic-period archaeological resources.

Analyses in previous archaeological studies in the Bay Area have revealed that buried sites do not occur randomly across the landscape, but are correlated with certain environmental and geomorphic factors, including proximity to water, landform slope (flatter being more sensitive), and the relative age of the landform (generally, younger being more sensitive). Soils in the project site are mapped as weakly-developed Yolo silt loam on a Holocene-age levee deposit, both indicators of a moderate to high sensitivity for buried prehistoric archaeological resources (Meyer and Rosenthal, 2007; Rosenthal and Meyer, 2004). Due to a lack of specific subsurface information, however, this potential is largely undefined and is simply predicated on the environmental setting of the project site.

Based on the 1997 Basin Research Associates, Inc. study conducted for the Centerville Redevelopment Plan EIR and supplemental historic-period map research, the intersection of Fremont and Peralta boulevards was the epicenter of the Centerville settlement and has a high sensitivity for buried historic-period Euro-American archaeological resources associated with buildings identifiable on nineteenth century maps. The project site has been previously identified by the City of Fremont as a sensitive landscape: the general "early settlement" area of Centerville at the intersection of Fremont and Peralta boulevards, the Old Town Complex along both sides of Fremont Boulevard from the fire station to the train station, and the specific location of the demolished town hall site (within the Centerville settlement) are all Fremont Register-listed properties that have been identified approximately within the project site. These properties are listed on the Fremont Register as points of historical interest without any extant built environment components, nor any known archaeological components. As such, neither has been evaluated for the CRHR. It is possible that historic-period archaeological resources dating to the early American period in California (i.e., the 1850s), if present below surface within the project area, would be contributing elements to the locally-listed Centerville settlement.

No archaeological resources have been previously identified within the 0.25-mile records search radius, or were identified during the pedestrian survey; however, the ground surface is largely obscured. Despite the lack of known resources, there is the potential for previously unknown archaeological resources to be present within the project site based on geomorphic factors and the history of the area.

The largest proposed construction impacts would occur along Fremont Boulevard in areas that have been developed since the 1850s and were identified by Basin Research Associates, Inc. to have "extreme" archaeological sensitivity. However, most of the construction impacts would occur beneath existing buildings, somewhat diminishing the potential of encountering intact archaeological resources. Shallower impacts would occur across the project site for building, utility, and stormwater construction. The amount of fill beneath the extant buildings and parking lot, if any, is unknown. Work in this area, especially in the center of the parcel where Sanborn maps indicate the presence of dwellings and outbuildings, has the potential to encounter historic-period resources beneath the pavement and fill, if present.

Based on the overall moderate to high sensitivity of the project site, there is the potential that archaeological remains that qualify as historical resources or unique archaeological resources under CEQA may be encountered. As a result, construction activities could adversely affect these previously-unidentified resources.

As stated in Section 2.8 above, the proposed project would comply with the City of Fremont's standard development requirements (codified in the Fremont Municipal Code Chapter 18.218.050), which include the following requirements relating to accidental discovery of cultural resources:

> ***Accidental Discovery of Cultural Resources.*** *The following requirements shall be met to address the potential for accidental discovery of cultural resources during ground disturbing excavation:*
>
> *(A) The project proponent shall include a note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources.*

(B) The project proponent shall retain a professional archaeologist to provide a preconstruction briefing to supervisory personnel of any excavation contractor to alert them to the possibility of exposing buried cultural resources, including significant prehistoric archaeological resources. The briefing shall discuss any cultural resources, including archaeological objects, that could be exposed, the need to stop excavation at the discovery, and the procedures to follow regarding discovery protection and notification of the project proponent and archaeological team.

(C) In the event that any human remains or historical, archaeological or paleontological resources are discovered during ground disturbing excavation, the provisions of CEQA Guidelines Sections 15064[.5](e) and (f) requiring cessation of work, notification, and immediate evaluation shall be followed. (Ord. 27-2016 § 37, 12-6-16.)

Implementation of the above standard development requirements would reduce the likelihood of potential impacts to previously unidentified archaeological resources; however, given the overall moderate to high archaeological sensitivity of the project site, it is uncertain if these requirements alone would reduce potential impacts to a less-than-significant level. Mitigation Measure CUL-1 is proposed to provide additional protection to potential resources, by requiring an archaeological monitoring plan to be developed and implemented during construction, which will provide additional information on the areas of the project site containing heightened archaeological potential and presence of an archaeological monitor during construction to improve the likelihood that any unidentified archaeological resources are recognized and treated appropriately, should they be discovered during construction.

Mitigation Measure CUL-1: Archaeological Monitoring.

The applicant or its consultant shall retain a qualified archaeologist to prepare an Archaeological Monitoring Plan (AMP), and to implement the AMP during construction. The AMP shall include a refined archaeological sensitivity analysis to identify areas of heightened archaeological potential; construction worker training and archaeological monitoring protocols; archaeological deposits evaluation and significance thresholds; and provisions for mitigation planning (e.g., data recovery protocol), curation, and tribal coordination. Upon completion of the archaeological monitoring, a report shall be prepared documenting the methods, findings, and recommendations. The report shall be submitted to the City, the applicant, and the NWIC. The applicant and its contractors shall implement all recommendations of the AMP.

With adherence to the City's standard development requirements, and implementation of Mitigation Measure CUL-1, the construction-related impacts of the proposed project on archaeological resources would be **less than significant with mitigation incorporated**, and will not be further addressed in the EIR.

Construction – Variant: **Less than Significant with Mitigation**

Construction of the variant would include similar ground-disturbing activities as the proposed project, except that the proposed below-grade parking garage would be larger, extending the entire length of the Fremont Boulevard frontage (approximately 692 feet). As such, the variant would have similar or slightly greater potential impacts on previously unidentified archaeological resources as the proposed project.

Similar to the proposed project, adherence to the City's standard development requirements (FMC 18.218.050) would reduce the likelihood of potential impacts on archaeological resources, but may not reduce such impacts to a less-than-significant level, given the overall moderate to high archaeological sensitivity of the project site. Mitigation Measure CUL-1 would require an archaeological monitoring plan to be developed prior to construction and presence of an archaeological monitor during construction activities,

With adherence to the City's standard development requirements, and implementation of Mitigation Measure CUL-1, the construction-related impacts of the variant on archaeological resources would be **less than significant with mitigation incorporated**, and will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **No Impact**

Operation of the proposed project or variant, once constructed, would not require disturbance of additional areas outside of the construction footprint. As such, operation of the proposed project or variant would have **no impact** on archaeological resources and these impacts will not be further addressed in the EIR.

5c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

<u>Construction – Proposed Project or Variant:</u> **No Impact**

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the extensive volume of sedimentary rock deposits preserved worldwide and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life. Paleontological resource localities are those sites where the fossilized remains of extinct animals and/or plants have been preserved. Rock formations that are considered of paleontological sensitivity are those units that have yielded significant vertebrate or invertebrate fossil remains. These include, but are not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent.

The project site is underlain by Holocene natural levee deposits (Qhl) (Helley and Graymer, 1997). Holocene deposits are generally considered too young to contain significant fossils. A records search at the University of California, Berkeley Museum of Paleontology’s catalog did not identify any previously recorded fossil localities in the vicinity of the project site or any Holocene-age vertebrate or invertebrate fossils in Alameda County.

It is expected that construction impacts would occur entirely in Holocene-age soils and unidentified paleontological deposits are unlikely to be present within the project site. In addition, the proposed project and variant would be required to implement the City’s standard development conditions (FMC 18.218.050), which include protocols to be followed if unidentified paleontological resources are discovered during construction. As such, construction of the proposed project or variant would have **no impact** on paleontological resources and this impact will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **No Impact**

Operation of the proposed project or variant, once constructed, would not require disturbance of additional areas outside of the construction footprint. As discussed above, the project site is underlain by Holocene-age soils and unidentified paleontological deposits are unlikely to be present within the project site. As such, operation of the proposed project or variant would have **no impact** on paleontological resources, and this impact will not be further addressed in the EIR.

5d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

<u>Construction – Proposed Project or Variant:</u> **Less-than-Significant Impact**

Archival research conducted at the NWIC indicated that the project site does not contain any previously recorded Native American sites or historic-period archaeological sites. No evidence of human remains was encountered during field surveys of the project site. However, the potential cannot be completely discounted that human remains may be buried in the project site. In the event that human remains are found, the applicant will be required to comply with Public Resource Code Section 5097.98. As discussed above, the proposed project and variant also would be required to implement the City’s standard development conditions (FMC 18.218.050), which include protocols to be followed if human remains are discovered during construction.

With implementation of state law and the City of Fremont's standard development requirements, construction-related impacts of the proposed project or variant relating to disturbance of human remains would be **less than significant** by ensuring appropriate treatment of human remains.. Compliance with Mitigation Measure CUL-1 will further avoid and mitigate any impacts, and this impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **No Impact**

Operation of the proposed project or variant, once constructed, would not require disturbance of additional areas outside of the construction footprint of the project. As such, operation of the proposed project or variant would have **no impact** in relation to disturbance of human remains, and these impacts will not be further addressed in the EIR.

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4.6 Geology, Soils, and Seismicity

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
6.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?	☐	☐	☒	☐
6.b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
6.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?	☐	☐	☒	☐
6.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?	☐	☐	☐	☒
6.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?	☐	☐	☐	☒

Setting:

The project site is in a seismically-active region of the Coast Ranges geomorphic province, characterized by northwest trending valleys and mountain ranges running sub-parallel to the San Andreas Fault Zone. In addition to the Hayward Fault, approximately 2.5 miles to the east of the project site, other large, regional active faults include the Calaveras Fault further to the east, and the San Andreas Fault to the west of San Francisco Bay. There are also several Quaternary faults, such as the Mission and Chabot Faults, which could be a source of seismic ground shaking (CGS, 2015). According to the USGS, the Hayward Fault and the Calaveras Faults pose the highest threat of seismic activity in the San Francisco Bay Area, with the Hayward Fault having a 14.3 percent likelihood of a magnitude 6.7 or larger quake in the next 30 years (USGS, 2015).

The project site is not within an area identified as susceptible to significant risk of liquefaction (CGS, 2004). The project site sits on Quaternary interfluvial freshwater basin deposits overlying Quaternary fluvial and alluvial fan deposits (Silicon Valley Soil Engineering, 2016). The project site and surrounding areas are identified as having the soil type “Yolo silt loam,” a well-drained silty alluvium derived from sedimentary rock with low potential for subsidence (NRCS, 2018). A nearby soil assessment conducted in 2014 (approximately 750 feet northeast of the project site) revealed native soils as sandy silts and clayey gravel to a depth of 55 feet below ground surface (bgs) (Impact Environmental Services, 2014). It is reasonable to assume that the project site has similar native soil composition.

The project site is generally flat and is not designated as an active landslide and is not within close proximity to a historically active or active landslide (CGS, 2011).

Discussion:

6a.i) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault?

Construction and Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

The Alquist-Priolo Earthquake Fault Zoning Act restricts construction activity in known active and well defined fault zones likely to experience surface fault rupture. The project site is not within an Alquist-Priolo Earthquake Fault Zone (California Division of Mines and Geology, 1982).

The nearest fault to the project site is the Hayward Fault, approximately 2.5 miles to the east. The Hayward Fault runs approximately 74 miles northward along the base of the East Bay Hills to San Pablo Bay and is part of a chain of active faults in the region including the San Andreas Fault to the west and the Calaveras Fault to the east (California Department of Conservation, 2008). According to the USGS, the Hayward Fault and the Calaveras Faults pose the highest threat of seismic activity in the San Francisco Bay Area (USGS, 2015).

Because the project site is not within a designated Alquist-Priolo Earthquake Zone, and is not on or immediately adjacent to an active fault, construction or operation of the proposed project (or variant) would have a **less-than-significant** impact in relation to fault rupture hazards. This impact will not be addressed further in the EIR.

6a.ii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Construction and Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

In the event of an earthquake on the Hayward, Calaveras, or San Andreas faults, or others in the project vicinity, the project site would experience a range of ground shaking effects, and depending on a variety of factors such as distance to the epicenter, magnitude of the event, and behavior of underlying materials, ground shaking could be substantial. Earthquake strength and epicenters are unpredictable and may result in damage to surrounding roadways, utilities, and building foundations.

The City General Plan includes policies and implementation measures to reduce impacts related to strong seismic ground shaking. City General Plan Policy 10-1.1 regulates the location of new development and redevelopment in a manner that avoids geologic hazards to life and property and Implementation Measure 10-1.1.D requires all development impacts associated with geologic hazards are mitigated to an acceptable level as defined by the State of California. City General Plan Policy 10-2.1 regulates the location of new development and redevelopment in a manner to minimize potential damage and hazards related to expected seismic activity. Implementation 10-2.1.A requires all proposed development complies with the provisions of the Seismic Hazards Mapping Act and all other seismic safety criteria established by the City of Fremont and Implementation Measure 10-2.1.B requires all development impacts associated with seismic hazards are mitigated to an acceptable level as defined by the State of California. The State of California defines an “acceptable level” of risk as that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project (Title 14 CCR Section 3721[a]).

The project and variant would be required to comply with the seismic standards of the most recent version of the California Building Code, which includes measures to ensure that structures can withstand the maximum expected ground shaking without catastrophic failure. The proposed project includes plans to rehabilitate the abandoned historic fire station for adaptive reuse, which would include seismic upgrading of the fire station to make sure the building is compliant with applicable building codes. While complete avoidance of any damage may not be feasible during a seismic event, adherence to industry-standard seismic design measures in accordance with current building codes would mean that potential impacts from strong seismic ground shaking would be less than significant. The proposed project or the variant would not alter geologic or soil conditions at the project site in a manner that would exacerbate the potential or magnitude for seismic ground shaking, which is a function of the location of the epicenter, the size of the event, and the underlying geological formations, none of which would be affected by the proposed project or variant. For this reason, construction and operational impacts of the proposed project and the variant related to seismic ground shaking would be **less than significant** and will not be addressed further in the EIR.

6a.iii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Construction and Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

As noted above under "Setting," the project site is not within an area identified as susceptible to significant risk of liquefaction. The proposed project and the variant would be required to follow the seismic standards of the most recent version of the California Building Code for construction of new structures, which includes measures to ensure that potential settlement and resultant damage from liquefaction or other seismic-related ground failure is minimized. The proposed project would also include rehabilitation of the former historic firehouse for adaptive reuse, which would involve seismic upgrading of the building to meet current building codes. While complete avoidance of any damage may not be feasible, incorporation of industry-standard seismic design measures in accordance with current building codes would reduce potential impacts from seismic-related ground failure to less-than-significant levels. Construction and operation of the proposed project or variant would not alter geologic or soil conditions at the project site in a manner that would exacerbate the potential for seismic liquefaction, which depends on the intensity of ground shaking, presence of loose, granular sediments, and groundwater saturation levels (USGS, 2006). For this reason, the construction and operational impacts of the proposed project and variant related to liquefaction would **be less than significant** and will not be addressed further in the EIR.

6a.iv) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Construction and Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

Because the site does not contain steep slopes and is not on or near a known landslide, construction or operation of the proposed project or variant would have a **less-than-significant** impact related to landslide hazards, and this impact will not be addressed further in the EIR.

6b) Would the project result in substantial soil erosion or the loss of topsoil?

Construction– Proposed Project or Variant: **Less-Than-Significant Impact**

Construction of the proposed project and variant would involve the demolition of existing buildings,[4] as well as demolition of existing parking lots and removal of trees to accommodate the new development. The site would then be graded to form building pads, street and sidewalk grades followed by construction activities to build the new residential and mixed use buildings, clubhouse, pool, and recreational open space. These activities have the potential to cause erosion and loss of topsoil. As discussed in Section 4.9, "Hydrology and Water Quality," disturbances to the property under both the proposed project and variant would be greater than an acre, requiring coverage under the Statewide National Pollutant Discharge Elimination System (NPDES) General Construction Activities Stormwater Permit (General Permit) through the California State Water Resources Control Board (SWRCB). To obtain coverage under the General Permit, submission of a Storm Water Pollution Prevention Plan (SWPPP) would be required, which requires implementation of Best Management Practices including the following and/or similar measures to minimize erosion and topsoil loss:

- *Minimize Active Construction Area.* The number of access routes, size of staging areas, and the size of the active construction sites would be limited to the minimum necessary to achieve project

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[4] Under the proposed project, eleven of the twelve existing buildings would be demolished (only the fire station building would be retained); under the variant, all twelve existing buildings would be demolished.

objectives and the staging, storage, equipment laydown, access routes, and parking areas would be established on paved or previously disturbed areas to the extent feasible.

- *Implement Erosion Control.* Standard construction site erosion control measures would be used where sediment from exposed slopes could erode and enter drainage facilities. Areas of disturbed soils that slope toward drainages would be stabilized when not actively in use to reduce erosion potential.

With implementation of Best Management Practices required by the SWPPP under the NPDES General Permit, the potential construction impacts of erosion and topsoil loss would be **less than significant** under both the proposed project and the variant, and will not be addressed further in the EIR.

<u>Operation – Proposed Project or Variant</u>

The proposed project and variant include development of residential townhomes, mixed use buildings, open space areas (e.g., community clubhouse, children's play area), parking spaces, internal roadways, and pedestrian paseos. The majority of the project site would be hardscaped, and non-hardscaped areas would be grassed or landscaped. Erosion or loss of topsoil would not be anticipated to continue beyond the construction period. There would be **no impact** related to erosion and topsoil loss from operation of the proposed project or variant, and this topic will not be addressed further in the EIR.

6c) 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?

<u>Construction and Operation – Proposed Project or Variant:</u> **Less-Than-Significant Impact**

Because a majority of the project site has undergone previous soil-disturbing activities and development, it is reasonable to assume there may be areas of deep and loose fill. If not designed appropriately, construction on relatively loose materials or over materials of differing properties could be subject to subsidence or differential settlement. However, the proposed project and variant would be required to comply with site preparation standards in accordance with the most recent California Building Code requirements, which include site-specific design-level evaluation of underlying materials and their engineering characteristics. As such, the proposed project or variant would be required to remove unsuitable materials and either recompact or replace with engineered fill. With compliance and implementation of industry standard engineering design measures in accordance with building code standards, the potential impacts associated with unstable soils would be reduced, and hazards associated with unstable soils would not be intensified by the proposed project or variant. Due to required compliance with applicable state building codes for both the proposed project and the variant, the impacts of construction or operation related to unstable soils would be **less than significant** and will not be addressed further in the EIR.

6d) Be located on expansive soil, creating substantial risks to life or property?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

The predominant soil type in the vicinity of the project site, Yolo silt loam, has a low to moderate linear extensibility, which is a measure of the soil's potential for shrink/swell expansion (NRCS, 2018). As such, the project site is not on expansive soil, and construction or operation of the proposed project or variant would not create substantial risks to life or property, nor exacerbate potential impacts, related to expansive soils. There would be no impact and this topic will not be addressed further in the EIR.

6e) 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?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

Neither the proposed project nor variant propose septic tanks or alternative wastewater disposal. Wastewater collected from the proposed development would be conveyed to existing sanitary sewer lines adjacent to the site. As a result, there would be **no impact** from construction or operation of the proposed project or variant on the suitability of soils to accommodate septic tanks or alternative wastewater treatment systems. This impact will not be addressed further in the EIR.

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4.7 Greenhouse Gas Emissions

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

Setting:

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHG), play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. Infrared radiation is absorbed by GHGs; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth.

GHGs are present in the atmosphere naturally, are released by natural sources and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change that are relevant to the proposed project:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)

Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4 is the main component of natural gas and is associated with agricultural practices and landfills. N_2O is a colorless GHG that results from industrial processes, vehicle emissions, and agricultural practices.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 28, and N_2O, which has a GWP of 265 (Intergovernmental Panel on Climate Change [IPCC], 2013). For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 28 tons of CO_2. GHGs with lower emission rates than CO_2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (i.e., high GWP). The concept of CO_2-equivalents (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

Discussion:

7a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Off-road equipment, materials transport, and worker commutes during construction of the proposed project or variant would generate GHG emissions. Total project construction GHG emissions were estimated using the methodology discussed earlier under Section 4.3, “Air Quality.” The total estimated construction-related emissions for the proposed project would be approximately 705 metric tons (MT) CO_2e, or 1,275 MT CO_2e for the variant. Additional modeling assumptions and details are provided in Appendix A-1 and A-2.

BAAQMD has not adopted thresholds for evaluating GHG emissions from construction activities. However, BAAQMD recommends that the lead agency quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals (BAAQMD, 2017).

Direct comparison of construction GHG emissions with long-term thresholds would not be appropriate because these emissions cease upon completion of construction. Other districts (e.g., South Coast Air Quality Management District, 2008; San Luis Obispo County Air Pollution Control District, 2012) recommend that GHG emissions from construction activities be amortized over a project’s operational lifetime (typically assumed to be 30 years) for comparison with long-term GHG emissions significance thresholds. For comparison to the BAAQMD threshold, construction emissions were amortized over the lifetime of the project and added to the annual operational emissions (see Table 4.7-1). The amortized construction emissions for the proposed project or variant were estimated at 24 or 43 MT CO_2e per year, respectively.[5]

Operation of the proposed project or variant would generate GHG emissions associated with building operation, energy use, and mobile sources from vehicle trips by residents and visitors. Operational emissions for the proposed project and variant were estimated using the methodology discussed earlier under Section 4.1, “Air Quality.” In addition, GHG emissions from energy usage take account of Pacific Gas & Electric’s specific CO_2 intensity improvements per the Renewable Portfolio Standard (Pacific Gas & Electric, 2015). For operational-related GHG emissions of a land use development, such as the proposed project or variant, BAAQMD recommends a threshold of significance[6] of less than 1,100 MT CO_2e MT per year or 4.6 MT CO_2e per service population (defined as number of residents plus employees) per year. Operational GHG emissions include area emissions, energy demand, vehicle trips, waste, and water usage. Consistent with the definition of baseline conditions pursuant to CEQA Guidelines (Section 15125(e)), this analysis evaluates the net change in operational emissions from the existing land uses to the proposed project or variant. Estimated operational GHG emissions for the proposed project and variant are shown in Table 4.7-1. Additional modeling assumptions and details are provided in Appendix A.

As shown in Table 4.7-1, total net annual GHG emissions for the proposed project or variant would not exceed the BAAQMD threshold of 1,100 MT CO_2e per year. Therefore, the proposed project or variant would not generate GHG emissions that may have a significant impact on the environment. The impact would be **less than significant** and will not be further addressed in the EIR.

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[5] For the project, 705 MT CO_2e over 30 years equals approximately 24 MT CO_2e per year. For the variant, 1,275 MT CO_2e over 30 years equals approximately 43 MT CO_2e per year.

[6] The bright-line threshold of 1,100 MT CO_2e per year is a numeric emissions level below which a project’s contribution to global climate change would be less than “cumulatively considerable” (BAAQMD, 2017). Therefore, if a project’s emissions are below the bright-line threshold, the project’s contribution to global climate change would be less than cumulatively considerable. For a project to be considered to result in a significant impact on the environment due to GHG emissions, estimated project emissions must exceed both the total annual threshold and the service population threshold. For example, if a project’s emissions are above the bright-line threshold, emissions would still be less than cumulatively significant if the project would result in an efficiency of 4.6 MT CO_2e per service population or better.

Table 4.7-1 GHG Emissions for the Proposed Project and Variant

Emissions Source	Existing Uses ($MT\ CO_2e$)	Proposed Project[b] ($MT\ CO_2e$)	Variant[c] ($MT\ CO_2e$)
Amortized Construction Emissions	-	24	43
Area Sources	<1	7	9
Energy Consumption	178	455	431
Mobile Sources	1,655	1,843	2,258
Waste	28	55	52
Water Usage	13	26	30
Total Annual Emissions	1,874	**2,410**	**2,823**
Net Annual GHG Emissions ($MT\ CO_2e$) [a]		**536**	**949**
Threshold of Significance ($MT\ CO_2e$)		1,100	1,100
Exceed Threshold		No	No

Notes:

[a] *Net GHG emissions include the existing uses subtracted from the total project GHG emissions, which includes annual operational emissions and amortized construction emissions.*

[b] *Source: Modeled by Illingworth & Rodkin, Inc. in 2018 (Appendix A-1).*

[c] *Source: Modeled by AECOM in 2018 (Appendix A-2).*

Abbreviations and Acronyms:

MT = metric tons

CO_2e = carbon dioxide equivalents

7b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

In 2006, California passed the *California Global Warming Solutions Act of 2006* (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. It requires that statewide GHG emissions be reduced to 1990 levels by 2020.

In December 2008, ARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which contains the main strategies California will implement to achieve the GHG reductions from business-as-usual (BAU) emissions required by AB 32 (ARB, 2008). BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. As directed by AB 32, ARB has also approved a statewide GHG emissions limit. On December 6, 2007, ARB staff resolved an amount of 427 million metric tons (MMT) CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. ARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT CO_2e. Thus, an estimated reduction of 80 MMT CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required ARB and other state agencies to develop and adopt regulations and other initiatives reducing GHG emissions by 2012.

Senate Bill (SB) 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. In response to SB 32 and the companion legislation of AB 197, ARB approved the Final Proposed 2017 Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target in November 2017 (ARB, 2017). The 2017 Scoping Plan draws from the previous plans to present strategies to reaching California's 2030 GHG reduction target. None of these statewide plans or policies constitutes a regulation to adopt or implement a regional or local plan for reduction or mitigation of GHG emissions. In addition, it is assumed that any requirements formulated under the mandate of AB 32 and SB 32 would be implemented consistent with statewide policies and laws.

The Fremont City Council adopted an ordinance, effective January 1, 2011, which mandates that new residential buildings comply with the Green Building Code, or, alternately, achieve at least fifty points from the GreenPoint Checklist (City of Fremont, 2012). In 2012, the City of Fremont adopted the *Fremont Climate Action Plan* (CAP) to address the major sources of GHG emissions to meet the emission reduction goal of 25 percent below Fremont's 2005 conditions by 2020 (City of Fremont, 2012). As explained in the CAP, this emission target is more ambitious than the State's goal of reducing GHG emissions to 1990 levels by 2020 (equivalent to a 12 percent reduction below 2005 levels). To meet this ambitious local goal, the City adopted community-wide measures to reduce emissions in the following sectors: land use and mobility, energy, solid waste, water, and municipal services and operations. As such, the measures in the CAP were established to meet the local goals established by the City of Fremont, and also serve to aid in reducing emissions statewide.

Since adoption of the CAP, the City of Fremont has also adopted an ordinance, the Fremont Green Building Standards Code (FMC Chapter 15.48), related to implementation of the 2016 California Green Building Standards Code (CALGreen). The 2016 CALGreen requirements include mandatory measures for all new building construction, and the CALGreen Residential and Non-Residential Mandatory Measures checklists must be included on a plan sheet for all projects subject to these measures (City of Fremont, 2017). The CAP does not include any additional measures that are directly applicable to the proposed project or variant.

Based on the proposed project's or variant's required adherence to the City's Green Building Ordinance, the proposed project or variant would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, the impact would be **less than significant** and will not be further addressed in the EIR.

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South Coast Air Quality Management District, 2008. Interim CEQA GHG Threshold for Stationary Sources, Rules, and Plans. Available online at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2. Accessed April 2018.

4.8 Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
8.a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
8.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?	☐	☒	☐	☐
8.c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
8d. 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?	☐	☐	☐	☒
8.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 for people residing or working in the project area?	☐	☐	☐	☒
8.f. For a project within the vicinity of a private airstrip, would the project result in safety hazard for people residing or working in the project area?	☐	☐	☐	☒
8.g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
8.h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Setting:

A Phase I Environmental Site Assessment (ESA) was prepared for the majority of the project site in 2016, which identified potential recognized environmental conditions that suggest the presence of hazardous materials or waste. The ESA detected indications relating to the possible (unconfirmed) presence of a Chevron service station on the southern portion of the site (Silicon Valley Engineering, 2016a). Subsequent soil sampling identified elevated concentrations of the heavy metals arsenic, chromium, and lead, and further testing was recommended to better define the area of concern and to determine if soils removed from the project site would be considered a California or federal hazardous waste for disposal purposes (Silicon Valley Engineering, 2016b).

A subsequent peer review of the Phase I ESA and soil sampling results found several data gaps, omissions, and inconsistencies within these reports. The peer review recommended additional environmental investigation (including additional soil sampling) for the project site, in particular in the vicinity of the suspected former service station at 37480 Fremont Boulevard, and within the northern portion of the project site that was not studied by the previous investigations, and which is less than 200 feet from the former Panesar Beacon facility, an active Leaking Underground Storage Tank (LUST) site (AECOM, 2018; IES, 2015).

Several of the existing structures on the project site were constructed prior to the mid-1970s, when use of asbestos-containing materials (ACM), lead-based paint (LBP), and Polychlorinated Biphenyl (PCB)-containing fluorescent light ballasts (FLB) was common. It is unknown, but considered likely based on their construction time frame, that some of the existing structures on the project site contain such hazardous building materials. ACM and LBP can cause human health impacts if disturbance during demolition or construction activities causes asbestos fibers or lead particles to become airborne and subsequently inhaled (EPA, 2018a; 2018b).

Several transformers were identified on the project site (Silicon Valley Engineering, 2016a), for which the manufacture dates are unknown, and therefore, in accordance with EPA guidance, must be assumed to contain PCBs (EPA, 2018c). PCBs can be released to the environment (soil, water, or air) if PCB-containing waste is not handled and disposed of properly, where it can accumulate in plants and animals, and be ingested by humans (EPA, 2018d).

Discussion:

8a-8b) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Would the project 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?

<u>Construction – Proposed Project or Variant:</u> **Less than Significant with Mitigation**

Hazardous materials at the project site during construction could include hazardous building materials in existing structures; contaminated soils or groundwater; and hazardous substances used during construction. Potential impacts relating to the routine transport, use, disposal, or accident/upset of each of these types of hazardous material during construction would be similar for both the proposed project and variant, and are discussed in more detail in turn, below.

Hazardous Building Materials:

Construction of the proposed project or variant would require demolition of existing structures on the site, except for the existing fire station building, which would be rehabilitated for future re-use under the proposed project. Fire station rehabilitation would include the removal or demolition of some building features, as well as renovation and reconstruction activities. Construction of the variant would require demolition of all existing structures on the site. Demolition and/or renovation of structures would potentially expose construction workers and the public to hazardous conditions through the disturbance or improper handling and/or disposal of hazardous building materials such as ACM, LBP, or PCBs.

Appropriate identification, removal and disposal (according to applicable regulations) of potentially hazardous building materials would reduce exposure risks from hazardous building materials at the project site. Both the federal Occupational Safety and Health Administration (OSHA) and California Division of Occupational Safety and Health (Cal-OSHA) regulate worker exposure during construction activities that disturb LBP. The Interim Final Rule found in 29 Code of Federal Regulations (CFR) 1926.62 covers construction work which may expose employees to lead during such activities as demolition, removal, surface preparation for repainting, renovation, cleanup, and routine maintenance. OSHA-specified compliance includes respiratory protection, protective clothing, housekeeping, special high-efficiency filtered vacuums, hygiene facilities, medical surveillance, and training. No minimum level of lead is specified to activate the provisions of this regulation.

ACMs are regulated both as a hazardous air pollutant under the Clean Air Act and as a potential worker safety hazard under the authority of Cal-OSHA. Any ACMs, if present, would need appropriate abatement of identified asbestos prior to demolition or rehabilitation. Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The BAAQMD is vested by the California legislature with authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement. BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing) is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses national emissions standards for asbestos and requires that BAAQMD be notified 10 days in advance of any proposed demolition or abatement work on structures with asbestos-containing materials. All asbestos-containing material found on the site must be removed before the start of demolition or renovation activity in accordance with the rule. Methods of removal identified in Rule 2 could include wetting of asbestos-containing material during cutting, stripping, demolition, renovation, removal; using a high efficiency particulate air(HEPA) exhaust, ventilation, and collection system designed and operated to capture the emissions from asbestos-containing material; or removing asbestos-containing material in units or sections so long as the exposed asbestos-containing material is adequately wetted or encapsulated to prevent emissions of particulate asbestos material. Rule 2 specifies that asbestos-containing material is to be isolated by physical barriers from the outside air to the extent feasible during removal and a Cal-OSHA certified contractor must present during removal of all asbestos-containing material. Rule 2 further identifies disposal methods, which could include treatment of asbestos-containing waste material with water, processing of asbestos-containing waste material into nonfriable forms, and conversion of asbestos-containing waste material into non-asbestos (asbestos-free) material. Compliance with Rule 2 ensures construction workers and the public are not exposed to ACMs that could result in negative health effects, such as lung disease.

PCB-containing FLBs would be of concern if they are leaking or they will be removed and disposed of as hazardous waste. According to EPA Toxic Substances Control Act (TSCA) regulations, the material must be incinerated. The entire lighting fixture does not need special handling and disposal as long as the ballast (electrical box) is not leaking. The non-leaking ballasts can be removed and recycled or disposed of properly. Identification and remediation of PCB-containing transformers would be the responsibility of the utility owner, presumed in this case to be Pacific Gas and Electric.

Mitigation Measure HAZ-1 requires that a survey for hazardous building materials be undertaken at the site, and that any hazardous building materials (if present) be properly removed and disposed of by a certified Cal-OSHA contractor prior to demolition activities.

> ***Mitigation Measure HAZ-1: Hazardous Building Materials Survey and Abatement.***
>
> *Prior to building permit issuance for demolition or renovation activities of any structures, the applicant shall retain a Cal-OSHA certified contractor to determine the presence or absence of building materials or equipment that contains hazardous materials, including asbestos, lead-based paint, and PCB-containing equipment. If such substances are found to be present, the contractor shall prepare and submit a workplan to the City to demonstrate how these hazardous materials would be properly removed and disposed of in accordance with federal and state law, including BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), as a condition of the demolition or building permit. Following completion of removal activities, the applicant shall submit documentation to the City verifying that all hazardous materials were properly removed and disposed.*

Implementation of Mitigation Measure HAZ-1 and compliance with applicable local, State, and federal regulations would result in hazardous building materials being appropriately handled, transported, and disposed of, and adequate precautions being undertaken to prevent potential exposure to workers or the public. Each of these regulations is specifically designed to protect the public health through improved procedures for the handling of hazardous materials, better technology in the equipment used to transport these materials, and a more coordinated quicker response to emergencies. These actions would reduce construction impacts related to hazardous building materials to **less than significant** with mitigation for both the proposed project and variant. This impact will not be addressed further in the EIR.

Soil and Groundwater Contamination:

Construction of the proposed project or variant would require site grading activities, which would potentially expose construction workers and the public to hazardous conditions through disturbance, transportation, or disposal of contaminated soils and/or groundwater. Grading activities could also result in accidental release of contaminants from the soil to groundwater or air.

Construction of the proposed project or variant would involve site grading activities and handling of site soils, which in some parts of the project site are known to contain arsenic and nickel at concentrations (up to 13 mg/kg and 94 mg/kg, respectively) that exceed the relevant regional background or environmental screening levels for direct construction worker exposure (Silicon Valley Engineering, 2016b). Additionally, lead and chromium are known to be present in soils at concentrations (up to 55 mg/kg and 73 mg/kg, respectively) that require further analysis to determine if handling and disposal as a California or federal hazardous waste would be required if soils are removed from the project site during construction (Silicon Valley Engineering, 2016b). Groundwater at the nearby Panesar Beacon LUST site, approximately 200 feet north of the project site, is contaminated with xylenes, diesel and gasoline, and groundwater flow direction appears to be to the south, towards the project site (IES, 2017).

Due to the lack of sampling locations in the vicinity of the suspected former service station and in the northern portion of the project site near the Panesar Beacon LUST site, there could be additional contaminants (such as petroleum hydrocarbons or volatile organic compounds), or higher concentrations of contaminants, than the existing environmental reports for the site suggest (AECOM, 2018). As a result, ground-disturbing activities during construction, such as site grading and utility trenching would potentially expose construction workers and the public to hazardous conditions, through disturbance, transportation, or disposal of contaminated soils or groundwater. Grading activities could also result in accidental mobilization of contaminants from the soil to groundwater or air. Depending on the concentration of any contaminants, if present, excess soils generated during construction may exceed California or federal hazardous waste criteria, which could result in exposure for construction workers and the public if not handled, transported, or disposed of appropriately. Impacts relating to potentially contaminated soils and/or groundwater would be potentially significant.

Implementation of Mitigation Measure HAZ-2 would reduce these potential impacts by requiring further investigation of the project site to adequately delineate the presence and extent of contamination, and setting out protocols to be implemented in areas containing contaminated soils or groundwater if present. Implementation of Mitigation Measure HAZ-2 would further reduce the potential impacts by requiring implementation of appropriate health and safety procedures, and protocols for unanticipated discovery of contamination during construction.

Mitigation Measure HAZ-2: Environmental Site Investigation and Mitigation Plan.

Prior to the issuance of a grading permit and before any substantial ground disturbance, the applicant shall hire a qualified environmental professional to conduct additional environmental site investigation and prepare a site mitigation plan for the project site. The site mitigation plan, and any remedial actions required as part of it, shall be implemented by the applicant and its contractors to the satisfaction of the relevant oversight agencies (City of Fremont Fire Department, Alameda County Water District (ACWD) and/or designated Alameda County or State Department oversight agency, or other appropriate agency having jurisdiction) to ensure sufficient minimization of risk to human health and the environment is completed.

At a minimum, the site mitigation plan shall:

- *Establish appropriate site-specific cleanup targets, which are protective of human health and the environment, based on the proposed future land uses(s). At a minimum, these targets shall be equal to, or more protective than the San Francisco Bay Regional Water Quality Control Board's (RWQCB) Environmental Screening Levels (ESLs) for Residential Use, or in the case of contaminants which have naturally occurring background levels that exceed the residential ESLs, the target shall be equal to, or more protective than, the regional background level for that contaminant.*
- *Delineate the extent of soil and/or groundwater contamination at levels exceeding the plan's clean up targets. Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The site mitigation plan should include figures and drawings showing areas and depths of soil excavation or treatment, soil waste classifications, and any mitigating*

measures. Within such areas, the plan shall establish procedures for safe handling and transportation of the excavated materials, consistent with State, federal, and local regulations, including:

  - *Removal of soil and materials shall be performed by a licensed engineering contractor with a Class A license and hazardous-substance removal certification. A California-licensed engineer shall provide field oversight on behalf of the applicant to document the origin and destination of all removed materials. If necessary, removed materials shall be temporarily stockpiled and covered with plastic sheeting pending relocation, segregation, or off-haul.*
  - *If excess materials are off-hauled, waste profiling of the material shall be completed and documented. Materials classified as nonhazardous waste shall be transported under a bill of lading. Materials classified as hazardous waste shall be transported under a hazardous waste manifest. All materials shall be disposed of at an appropriately licensed landfill or facility.*
  - *Trucking operations shall comply with Caltrans and any other applicable regulations, and all trucks shall be licensed and permitted to carry the appropriate waste classification. The tracking of dirt by trucks leaving the project site shall be minimized by cleaning the wheels upon exit and cleaning the loading zone and exit area as needed.*
  - *Description of post-excavation confirmation sampling requirements. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated soil, followed by a cap of clean soil or hard surface materials; operation and maintenance protocols for any disturbance of contaminated soils; and recording of deed restrictions, such as activity and use limitations, with the Alameda County Recorder's Office to assure that the remedy is maintained.*

- *Delineate areas of the site where contaminants exceed the RWCQB's ESLs for direct exposure by construction workers. Establish procedures for limiting access to such areas to properly trained personnel. Establish minimum requirements for site-specific health and safety plans, to protect the general public and workers in the construction area (note: these requirements and the environmental sampling results shall be provided by the applicant to all contractors, who shall be responsible for developing their own construction worker health and safety plans and training requirements).*
- *Include contingency measures to address unanticipated conditions or contaminants encountered during construction and development activities. The contingency measures shall establish and describe procedures for responding in the event that unanticipated subsurface hazards or hazardous material releases are discovered during construction, including appropriately notifying nearby property owners, schools, and residents and following appropriate site control procedures. Control procedures would include but not be limited to further investigation and, if necessary, remediation of such hazards or releases, including off-site removal and disposal, containment, or treatment. If unanticipated subsurface hazards or hazardous material releases are discovered during construction, the contingency measures addressing unknown contaminants shall be followed. The contingency measures shall be amended as necessary if new information becomes available that could affect implementation of the measures.*

Implementation of Mitigation Measure HAZ-2 would reduce potential impacts related to subsurface soil or groundwater contamination during construction of both the proposed project and variant to **less than significant with mitigation**. This impact will not be addressed further in the EIR.

Use of Hazardous Materials:
Construction of both the proposed project and variant would require use of typical construction equipment (e.g., gasoline- or diesel-powered machinery) and construction materials containing hazardous materials (solvents, adhesives, paints, etc.); therefore, there is potential for accidental spills or releases of hazardous materials during construction.

Limited quantities of certain hazardous materials such as fuels, oils, solvents, and glues would be used during construction, which if spilled could enter surface water, result in soil or groundwater contamination, or expose workers to hazardous materials. Given the size of the proposed project or variant, there is low likelihood that significant quantities of hazardous materials would be stored at the site during construction. Because the project site is greater than one acre, coverage under the State Water Resource Control Board's Construction General Permit would be obtained. As part of the Construction General Permit, the contractor would be required to prepare and implement a SWPPP which would include best management practices, including the following and/or similar measure to minimize the risk of accidental spills of hazardous materials during construction:

> *Hazardous Spill Prevention. Vehicles and equipment would be maintained in proper working condition to minimize potential fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Service/maintenance vehicles would carry materials to absorb leaks or spills. Servicing, refueling, and staging of construction equipment would take place only at designated areas where a spill would not flow to drainages. Equipment washing, if needed, would occur only in designated locations where water would not flow into drainage channels. Hazardous spills would be cleaned up immediately and contaminated soil would be properly disposed of at a licensed facility.*

By implementing the SWPPP and associated BMPs, construction-related hazardous substances, such as oil and greases, would be managed through appropriate material handling and good housekeeping practices. These actions would apply to construction of both the project and the variant. With implementation of the SWPPP, the construction-related impacts pertaining to use of hazardous materials would be **less than significant**. This impact will not be addressed further in the EIR.

<u>Operation – Proposed Project:</u> **Less than Significant with Mitigation**

Hazardous Building Materials:
Operation of the proposed project would potentially expose future users of the fire station building to asbestos fibers or lead-based paint dust, if any such materials remained in the building following its rehabilitation. Such an impact could be potentially significant, particularly during any future renovation activities that might further disturb existing materials. However, as discussed above in relation to construction impacts, Mitigation Measure HAZ-1 would require any such hazardous building materials to be properly removed from all structures on the project site (including the fire station, which would remain on site under the proposed project) in accordance with federal and State law. Implementation of Mitigation Measure HAZ-1 would therefore reduce potential exposure to such hazardous building materials from operation of the proposed project to **less than significant with mitigation**. This impact will not be addressed further in the EIR.

Soil and Groundwater Contamination:
As discussed above under construction impacts, while soil sampling undertaken to date has not detected contaminants in concentrations that exceed residential or commercial land use ESLs, further environmental investigation is required to determine if such concentrations exist on the site. If soil contamination exceeding residential or commercial land use ESLs does exist and is not adequately addressed during construction, then operation of the proposed project could expose future residents, employees, or visitors to contaminated soils, groundwater, or soil gas, particularly during ground-disturbing activities such as landscape maintenance, utility installation, or gardening (via direct contact or generation of fugitive dust), or potentially through vapor intrusion into proposed buildings. Such impacts could be potentially significant.

Implementation of Mitigation Measure HAZ-2, above, would require additional environmental site investigation and preparation of a site mitigation plan for the project site. The site mitigation plan would not only include measures to protect construction workers during site preparation and construction work, but would also include measures to remove potential contaminant exposure pathways that could adversely affect future residents, employees, visitors, and other users of the project site. In particular, the following requirements from Mitigation Measure HAZ-2 are applicable to protection of future users:

- *Establish appropriate site-specific cleanup targets, which are protective of human health and the environment, based on the proposed future land uses(s). At a minimum, these targets shall be equal to, or more protective than the San Francisco Bay Regional Water Quality Control Board's (RWQCB) Environmental Screening Levels (ESLs) for Residential Use, or in the case of contaminants which have naturally occurring background levels that exceed the residential ESLs, the target shall be equal to, or more protective than, the regional background level for that contaminant.*
- *Delineate the extent of soil and/or groundwater contamination at levels exceeding the plans clean up targets. Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The site mitigation plan should include figures and drawings showing areas and depths of soil excavation or treatment, soil waste classifications, and any mitigating measures.*
- *Describe post-excavation confirmation sampling requirements. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated soil, followed by a cap of clean soil or hard surface materials; vapor barriers beneath buildings to prevent vapor intrusion; operation and maintenance protocols for any disturbance of contaminated soils; and recording of deed restrictions, such as activity and use limitations, with the Alameda County Recorder's Office to assure that the remedy is maintained.*

Implementation of Mitigation Measure HAZ-2 would mean that the majority of contaminated soils exceeding residential ESLs (or applicable cleanup targets) would be removed from the project site, and that if any residual contamination remained at the project site following construction, controls would be in place to prevent future users from contacting contaminated soils or being exposed to emissions. With implementation of Mitigation Measure HAZ-2, the impacts of the proposed project would be reduced to **less than significant with mitigation**.

Hazardous Materials:

It is not anticipated that significant quantities of hazardous materials would be routinely transported, used, stored, or disposed of during operation of the proposed project. Households would be expected to use typical quantities of common commercially available household hazardous materials such as cleaning and maintenance supplies. Cleaning and maintenance products are required to be labeled with appropriate cautions and instructions for handling, storage and disposal, and do not represent a significant threat to human health and the environment.

The majority of commercial uses allowable under the project site's Town Center – Pedestrian zoning[7] would not require the use, handling, or storage of quantities of hazardous materials in excess of regulatory thresholds.[8] If the quantity of hazardous materials used, handled, or stored on-site would exceed the regulatory thresholds, there is an established comprehensive regulatory framework independent of the CEQA process that would be followed, including preparation and submittal of a

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[7] Allowable uses in the Town Center-Pedestrian zone are described in Table 18.45.060-1 of the Fremont Municipal Code.

[8] The thresholds are 55 gallons for a hazardous liquid; 500 pounds of a hazardous solid; 200 cubic feet for any compressed gas; or threshold planning quantities of an extremely hazardous substance, per Chapter 6.95 California Health and Safety Code.

Hazardous Materials Business Plan to the City of Fremont Fire Department, which is the Certified Unified Program Agency with jurisdiction over the project site.

The types and amounts of hazardous materials used at the project site under the proposed project would not pose any greater risk of upset or accident than the existing uses at the site or at other similar development elsewhere in the City. The proposed project would not involve industrial manufacturing or processing activities or research and development activities that would use large amounts of hazardous materials or acutely hazardous materials, which typically pose a health risk if accidentally released. Compliance with existing regulations will assure proper transportation, use, storage, and disposal of hazardous materials, and the operational impacts of the proposed project would be **less than significant**. These impacts will not be further addressed in the EIR.

Operation – Variant: **Less than Significant with Mitigation**

Hazardous Building Materials:
Operation of the variant would not expose future users to hazardous building materials, because all existing buildings would be removed from the project site prior to construction under the variant. There would be **no impact** from operation of the variant.

Soil and Groundwater Contamination:
Similar to the proposed project, soil contamination exceeding residential or commercial land use ESLs may exist at the project site, and if present and not adequately addressed during construction, then operation of the variant could expose future residents, employees, or visitors to contaminated soils, groundwater, or soil gas, particularly during ground-disturbing activities such as landscape maintenance, utility installation, or gardening (via direct contact or generation of fugitive dust), or potentially through vapor intrusion into proposed buildings. Such impacts could be potentially significant.

The analysis of the proposed project would also be applicable to the variant, and for the same reasons discussed therein, implementation of Mitigation Measure HAZ-2 would mean that the majority of contaminated soils exceeding residential ESLs (or applicable cleanup targets) would be removed from the project site, and that if any residual contamination remained at the project site following construction, controls would be in place to prevent future users from contacting contaminated soils or being exposed to emissions. With implementation of Mitigation Measure HAZ-2, the impacts of the proposed project would be reduced to **less than significant with mitigation**.

Hazardous Materials:
The variant would contain similar residential and retail uses as the proposed project, so that it is not anticipated that significant quantities of hazardous materials would be routinely transported, used, stored, or disposed of during operation of the variant. The analysis of the proposed project would also be applicable to the variant, and for the same reasons discussed therein, the operational impacts of the variant would be **less than significant**. These impacts will not be further addressed in the EIR.

8c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

The closest public school to the project site is approximately 800 feet away (Centerville Junior High School at 37720 Fremont Boulevard), and several preschools and a private school are also located in the vicinity. The Holy Spirit School is immediately southeast of Parish Avenue, approximately 30 feet from the project site boundary, with the associated preschool slightly further to the southeast; Childs Hideaway Preschool on Fremont Boulevard is approximately 125 feet southeast from the project site boundary; and Genius Kids Preschool on Peralta Boulevard is approximately 500 feet northeast from the project site boundary.

As stated above under Impacts 8a-8b), construction of the proposed project or variant would involve handling of hazardous materials, substances, or waste; therefore, such activities would occur within a one-quarter mile of a school. Such activities, if not appropriately managed, could result in hazardous emissions that would potentially impact nearby schools. However, as discussed in relation to those impacts, adherence to local, State, and federal regulations regarding the handling, storage, transportation, and disposal of hazardous materials, and implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce potential impacts from construction to construction workers and the public, including nearby school students. The construction impact would be **less than significant with mitigation** incorporated, and this impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

Once constructed, operation of the proposed project or variant would not involve the handling of substantial amounts of hazardous materials. As discussed under Impacts 8a-8b), such materials are anticipated to be limited to typical household or commercial cleaning and maintenance products. The types and amounts of hazardous materials used at the site under the proposed project or variant would not pose any greater risk of upset or accident than at other similar development elsewhere in the City. Adherence to local, State, and federal regulations would be sufficient to avoid potential impacts on nearby schools. The impact would be **less than significant**, and this impact will not be addressed further in the EIR.

8d) 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?

Construction and Operation – Proposed Project or Variant: **No Impact**

The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5, commonly known as the Cortese list (CalEPA, 2018a; 2018b; DTSC, 2018; SWRCB, 2018a; 2018b).

The nearest Cortese list site, the former Panesar Beacon facility at 3740 Peralta Boulevard, is approximately 200 feet north of the project site. This LUST site has been subject to remediation activities dating back to 2002, including removal of over 16.8 tons of contaminated soil (Silicon Valley Engineering, 2016a). The site is still classified as "active," due to the detection of benzene and total petroleum hydrocarbons (TPH) as diesel (TPH-d) and as gasoline (TPH-g) in groundwater during recent (April 2017) monitoring (IES, 2017). The extent to which the soil east and south of the site (i.e., towards the project site) is contaminated is unclear. The most recent groundwater monitoring for the site found levels of contamination in the groundwater wells closest to the project site that were less than the RWQCB's Tier 1 ESL for groundwater of 100 mg/L (IES, 2017). Further discussion of potential contamination at the project site, including mitigation measures requiring further environmental investigation in the northern portion of the site close to the Panesar Beacon facility, is provided under Impacts 8a-8b), above.

Because the project site is not included on the Cortese list, construction and operation of the proposed project or variant would have **no impact** related to listed hazardous materials sites, and this impact will not be further addressed in the EIR.

8e- 8f) 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 for people residing or working in the project area? For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Construction and Operation – Proposed Project or Variant: **No Impact**

The project site is not within close proximity of an airport or airfield. Hayward Executive Airport, approximately 8.8 miles northwest, is the closest airport to the project site. Moffett Federal Airfield (9.3 miles west-southwest) and San Jose International Airport (13 miles south-southwest) are further from the project site. Due to the distance of the airports and airfield, no associated airport land use plans are relevant to the project site, and the proposed project or variant would not result in a safety hazard for people residing or working in the project area. Therefore, construction or operation of the proposed project or variant would have **no impact** with respect to airport hazards and these impacts will not be further addressed in the EIR.

8g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction – Proposed Project or Variant: **Less-Than-Significant Impact**

Construction of the proposed project or variant would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Several northern California counties and municipalities, with support of Homeland Security, have created a Regional Emergency Coordination Plan for the San Francisco Bay Area, an all-hazards framework for collaboration among responsible entities and coordination during emergencies (Governor's Office of Emergency Services et al, 2008). The plan establishes procedures for regional coordination, collaboration, decision-making, and resource sharing among emergency response agencies in the Bay Area, including within the City of Fremont and Alameda County. The Regional Emergency Coordination Plan and its subsidiary plans do not identify specific evacuation routes, but rather define responsibilities among the multitude of interested and affected agencies and organizations and identify general response strategies.

As discussed in Section 4.16, "Transportation and Traffic," construction activities at the project site could result in temporary lane closures, increased construction truck traffic, and other roadway effects that could impede emergency response or evacuations. However, these effects would be temporary and would dissipate once trucks have cleared the public right-of-way. Construction activities would not fundamentally alter emergency response and evacuation routes in the vicinity of the project site, which would generally remain unchanged from existing conditions. While these construction impacts would be less than significant with respect to emergency and evacuation plans, implementation of Mitigation Measure TRA-1, which requires development of a construction traffic management plan and is described below in Section 4.16, would further reduce these already **less-than-significant** impacts. This impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

As stated in the "Construction" analysis above, there are no identified evacuation routes within proximity of the project site. Prior to approval of the proposed project or variant, the project design would be reviewed by the Fremont Fire Department and Fremont Police Department so that the proposed project or variant would provide adequate access to the project site in the event of emergencies. Both emergency response departments will review ingress and egress and incorporate additional design features (setbacks, clearances, turning radii, etc.) to aid in emergency access. The *City of Fremont Standard Details for Improvements in Public Right of Way* (2014) provides guidelines for adequate access to the project site and individual residences for emergency response purposes. Compliance to these standards will be confirmed by the City of Fremont Department of Public Works prior to project approval. Therefore, the potential impact related to emergency and evacuation plans would be **less than significant** for both the proposed project and the variant. This impact will not be further addressed in the EIR.

8h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Construction or Operation – Proposed Project or Variant: **Less-Than-Significant Impact**

The project site is categorized by the state as being a "Local Response Area Urban Unzoned" on the California-Defined Fire Hazard Severity Zones Map (City of Fremont, 2007). The classification of "Urban Unzoned," specifies that the area is not within an area that would be subject to special development controls in order to minimize wildland fires. The project site is in a built up urban area that is served by the Fremont Fire Department. Design and construction of the proposed project or variant would be required to comply with applicable fire code and fire suppression requirements (including for the rehabilitated fire station building under the proposed project), which would minimize the potential adverse effects from fire. Therefore, the proposed project or the variant would not expose people or structures to significant risks associated with wildland fires. The impact would be **less than significant** and will not be further addressed in the EIR.

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4.9 Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
9.a. Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
9.b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
9.c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
9.d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a steam or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
9.e. 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?	☐	☐	☒	☐
9.f. Otherwise substantially degrade water quality?	☐	☒	☐	☐
9.g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
9.h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
9.i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
9.j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Setting:

The project site is within the Plummer Creek watershed, which drains a small urbanized area (approximately 2.6 square miles) in the cities of Fremont and Newark. The majority of the project site is impervious, with commercial buildings and surface parking lots covering most of the area. The soil is primarily made of silt and the site is flat, with a slight grade to the southeast. Stormwater drains from the site through overland flow, concentrates in the curb-and-gutter system on Peralta Boulevard and Fremont Boulevard, and discharges to the subsurface stormdrain on Parish Avenue. From there, stormwater is conveyed to stormdrains on Fremont Boulevard and Central Avenue south of the project site and then through a series of culverts, engineered channels, and flood control channels before discharging to South San Francisco Bay via Plummer Creek approximately 7 miles downstream of the site.

The project site is not within a designated floodplain area, although mapped floodplains are nearby. Special flood hazard areas are present approximately 1.6 miles downstream of the site at the Alameda County Flood Control Channel southwest of Hwy 880 (Zone 5, Line F-1). The project site is within the Calaveras/Turner/Del Valle dam inundation zone (City of Fremont, 2015).

The project site overlies the Santa Clara Valley Niles Cone groundwater subbasin. Niles Cone has a series of relatively flat lying aquifers separated by extensive clay layers. The Newark Aquifer, the shallowest aquifer in Niles Cone, is between 40 and 140 feet below ground surface. Its thickness ranges from less than 20 feet at the western edge of the basin to more than 140 feet at the Hayward Fault (Alameda County Water District, 2017). Depth to groundwater at the site is between 35 to 50 feet below ground surface (State Water Resources Control Board [SWRCB], 2018).

Regulatory Framework:

The SWRCB administers the statewide NPDES program. Stormwater discharges associated with construction activities are regulated under the Construction General Permit (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended). This permit applies to projects that have one or more acres of soil disturbance. The permit requires that the project proponents develop and implement a construction site SWPPP that specifies BMP, erosion and sedimentation controls, run-on and runoff controls, and dewatering procedures for nuisance-water removal. Permit registration documents and a site-specific SWPPP are filed with the SWRCB for coverage under the Construction General Permit. Compliance with the Construction General Permit is overseen and enforced by the San Francisco Bay RWQCB.

The San Francisco Bay RWQCB also regulates stormwater discharges from municipalities and local agencies in the Bay Area under a single municipal regional stormwater permit (Order No. R2-2015-0049). NPDES permit provision C.3 requires source control, site design, and stormwater treatment measures to address stormwater pollutants and to prevent increases in flow rates from new development and redevelopment projects. Projects subject to C.3 provisions are required to evaluate opportunities for incorporating low impact development (LID) strategies such as self-treating/self-retaining landscape areas, stormwater re-use, and on-site infiltration. If these methods are not compatible due to specific site constraints, the permit allows for the use of landscape-based stormwater treatment measures as alternative means of providing stormwater management. Treatment measures must be hydraulically sized to treat the runoff and are required to be regularly maintained. The Alameda County Clean Water Program C.3 Stormwater Technical Guidance Manual (Clean Water Program, 2016) provides specifications for specific types of treatment measures, including bioretention areas.

The City of Fremont has design standards that address drainage, including provisions from the Fremont Municipal Code Chapter 18.210, Stormwater Management and Discharge Control, with guidance from the Alameda County Hydrology and Hydraulics Manual (Alameda County Flood Control and Water Conservation District [ACFCWD], 2016).

Discussion:

9a), 9f) Would the project violate any water quality standards or waste discharge requirements? Would the project otherwise substantially degrade water quality?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

Construction activities associated with the proposed project or variant would include sawing, cutting, and grinding for pavement removal; importing materials such as concrete, rebar, mortar, and pavement; excavating for foundations; trenching for utilities; and removal and disposal of materials. Total disturbed acreage at the construction site is estimated to be 4.6 acres and ground disturbance could occur up to 15 feet deep.

Construction activities such as clearing and grubbing, excavation, grading, and backfilling could result in disturbed soils being temporarily exposed to the erosive forces of wind, rain, and stormwater runoff and may cause the release of sediment to downstream stormdrains and drainage areas. Stormwater runoff could also be contaminated with chemicals typically used during construction (e.g., fuels, oils, and solvents) through the daily use, transportation, and storage of these materials, if not properly controlled, which could provide new sources of polluted runoff to downstream drainage areas. Construction activities also have the potential to impact groundwater quality if groundwater is directly exposed to construction contaminants, such as after hazardous material spills.

Because disturbed areas within the project site would be greater than one acre, the proposed project or variant would need to obtain coverage under the SWRCB's Construction General Permit. As part of the Construction General Permit, the contractor would prepare and implement a SWPPP and BMPs to minimize wind- and water-related soil and sediment discharges at the construction site, minimize potential contamination of stormwater and non-stormwater discharges, and prevent hazardous material spills. The SWPPP would be developed in compliance with the permit (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended) and would include the following and/or similar measures:

> *Minimize Active Construction Area.* The number of access routes, size of staging areas, and the size of the active construction sites would be limited to the minimum necessary to achieve project objectives and the staging, storage, equipment laydown, access routes, and parking areas would be established on paved or previously disturbed areas to the extent feasible.
>
> *Implement Erosion Control.* Standard construction site erosion control measures would be used where sediment from exposed slopes could erode and enter drainage facilities. Areas of disturbed soils that slope toward drainages would be stabilized when not actively in use to reduce erosion potential.
>
> *Implement Trash Control.* Food-related trash items such as wrappers, cans, bottles, and food scraps would be disposed of in closed containers (trash cans) and would be removed from the construction site on a regular basis.
>
> *Hazardous Spill Prevention.* Vehicles and equipment would be maintained in proper working condition to minimize potential fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Service/maintenance vehicles would carry materials to absorb leaks or spills. Servicing, refueling, and staging of construction equipment would take place only at designated areas where a spill would not flow to drainages. Equipment washing, if needed, would occur only in designated locations where water would not flow into drainage channels. Hazardous spills would be cleaned up immediately and contaminated soil would be properly disposed of at a licensed facility.

By implementing the SWPPP and associated BMPs, standard construction BMPs such as stormdrain inlet protection and linear sediment controls would substantially reduce potential sediment transport from the construction site. Construction-related contaminants, such as oil and greases, would be managed through appropriate material handling and good housekeeping practices. These BMPs would be maintained by the contractor in good and effective condition as required by the permit. These actions apply to construction of both the proposed project and the variant.

As discussed above in Section 4.8, "Hazards and Hazardous Materials," elevated concentrations of the heavy metals arsenic, chromium, and lead have been detected at the project site, but the area of contamination has not been well defined. The investigation did not encounter samples that exceeded human health screening levels for shallow soil exposure or exposure to construction workers for pesticides, hydrocarbons, PCBs, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and asbestos. However, the investigation did not include any soil samples from the northern portion of the project site (less than 100 feet hydraulically downgradient from a nearby Leaking Underground Storage Tank site), and only one sample near the suspected site of a former gasoline station on the project site. No groundwater sampling has been undertaken at the project site. Although groundwater elevations are currently below the expected excavation levels for the proposed project or variant (i.e., groundwater is expected to be 35 to 50 feet below ground surface, compared to maximum excavation depth of 15 feet), unanticipated contamination could be exposed during project excavations. If contaminated soils or groundwater are not handled and disposed of properly during construction, impacts to surface or groundwater quality could be potentially significant.

Mitigation Measure HAZ-2 requires additional environmental investigation to further delineate the extent and concentration of existing soil and groundwater contamination at the project site, as well as preparation and implementation of a site mitigation plan which includes procedures and protocols for minimizing worker exposure to contaminated materials, requires the contractor to inspect exposed soils and groundwater for signs of unanticipated contamination, and specifies procedures for handling, excavating, characterizing and managing contaminated soils and dewatering effluent. Mitigation Measure HAZ-2 also requires confirmation that contaminated soils do not remain at the site following excavation, or that appropriate mitigations to protect human health and the environment are undertaken if they do. As a result of this mitigation measure, the handling and disposing of contaminated soils, groundwater, and dewatering effluent would be in accordance with federal and state hazardous waste disposal laws and state and local stormwater and sanitary sewer requirements. These actions would apply to both the proposed project and the variant.

In summary, with implementation of BMPs to reduce potential erosion impacts during construction in accordance with the aforementioned regulations, and implementation of Mitigation Measure HAZ-2, construction of the proposed project or variant would not substantially degrade water quality, and impacts related to the potential violation of water quality standards and substantial degradation of water quality would be **less than significant with mitigation** incorporated. This impact will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

By introducing new buildings and impervious surfaces in the watershed, the proposed mixed use development and site improvements could increase the volume of stormwater runoff at the site and affect downgradient areas. Hydromodification, which refers to the change in timing, peak discharge, and volume of runoff caused by land development, can contribute to faster flow rates and greater runoff volumes, potentially increasing erosion in downstream areas. Water quality can also be affected by common pollutants that are discharged from urban watersheds (e.g., sediment, trash, oil/grease, etc.).

Because the proposed project or variant would create or replace more than 10,000 square feet of impervious surfaces at the site, the project is required to comply with San Francisco Bay RWQCB's Municipal Regional Permit, with guidance from the Alameda County Clean Water Program C.3 Stormwater Technical Guidance Manual (Clean Water Program, 2016). Provision C.3 of the NPDES permit governs storm drain systems and regulates post-construction stormwater runoff. This provision requires new development and redevelopment projects to incorporate LID treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and to manage runoff flows. For projects that alter more than 50 percent of the existing impervious surfaces, stormwater treatment systems must account for stormwater runoff from the entire redevelopment project (including existing, new, and replaced impervious surfaces). In addition, certain land development projects characterized as smart growth, high density, or transit-oriented development can qualify as "special projects," where a portion of the project area can be treated using non-LID measures. The proposed project and variant were found to qualify for special project category "C" (i.e., transit-oriented development) due to unit density and proximity to Alameda County Transit bus routes and Capital Corridor commuter trains. According to the "special project worksheet" developed during project design, up to 70 percent of the site could be treated with non-LID treatment measures.

The storm drainage system for the proposed project and variant would be almost identical, and have been designed to mimic existing drainage patterns and treat stormwater runoff from the site prior to discharge to regional stormdrain systems through a variety of treatment measures including inlet filters, pervious pavement, and bioretention basins. Rooftop drainage from the residential/commercial building(s) would be treated using inlet filters such as those manufactured by Contech Engineered Solutions (a non-LID treatment measure) and discharged to the subsurface stormdrain on Parish Avenue. Rooftop drainage from the townhouses would drain towards pervious pavement in front of the townhouses or towards small bioretention basins near the rear of the units (both LID treatment measures). Water directed towards the pervious pavement would infiltrate, while water treated in the bioretention basins would discharge to the 24-inch stormdrain on Parish Avenue or the 15-inch stormdrain on Peralta Boulevard. Approximately 2.2 acres (48 percent) of the project site would be considered self-treating or self-retaining because stormwater is redirected to or falls directly on pervious pavement; 1.2 acres (26 percent) would be treated with inlet filters prior to discharge; and the remaining 1.2 acres (26 percent) would be treated by bioretention basins. These actions apply to both the proposed project and the variant.

Bioretention basins are landscape-based soil and plant filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes. A bioretention basin distributes stormwater runoff evenly along a ponding area, allowing water velocities to slow and particulates (and particulate–bound contaminants) to settle. Stormwater then percolates through the soil to an underlying rock layer, and to the underdrain. This LID treatment measure provides an opportunity for soil bacteria to degrade trapped contaminants.

In summary, the applicant (and its contractors) would implement post-construction stormwater management in accordance with the aforementioned regulations under both the proposed project and variant. On-site infiltration and landscaped-based stormwater treatment systems have been emphasized in the project design. Stormwater infiltration would be increased locally, stormwater runoff volume would be minimized, and stormwater would be treated prior to discharge from the site. As a result, the proposed project or variant would represent an improvement over existing drainage and stormwater runoff conditions at the site. Therefore, operation of the proposed project or variant would not substantially degrade water quality and or result in the potential violation of water quality standards. As a result, water quality impacts from operation of the proposed project or variant would be **less than significant**. This impact will not be further addressed in the EIR.

9b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Water demands during construction would be met by existing service connections to Alameda County Water District or be imported by truck and stored at the site in temporary tanks. Construction of the proposed project or variant would not require new wells and would be associated with little to no increases in pumping at regional municipal wells. Construction of the proposed project or variant is not expected to involve groundwater extraction at the project site, because the proposed maximum depth of excavation would be 15 feet, and existing groundwater levels are anticipated to be approximately 35 to 50 feet below ground surface. If dewatering activities were required during construction, such dewatering would be temporary and localized, and would not result in a substantially lowering of the groundwater table. Construction-related impacts would therefore be **less than significant**, and this impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Operation of the proposed project or variant would not involve groundwater extraction, and would not result in a decrease in local infiltration rates. As described above under Impacts 9a) and 9f), both the proposed project and variant would include LID treatment measures (pervious pavement and bioretention basins) which would increase the amount of local infiltration and minimize stormwater runoff. These drainage design features would be implemented in accordance with C.3 provisions and Alameda County Clean Water Program guidelines. Therefore, operation of the proposed project or variant would not lower the groundwater table locally as a result of groundwater extraction or substantively reduce groundwater recharge at the site. These actions apply to both the project and the variant.

As discussed in Section 4.18, “Utilities and Services,” water demand from operation of the proposed project or variant would be minimal compared to the size of the Niles Cone Groundwater Basin, from which approximately 50 percent of the Alameda County Water District’s (ACWD’s) water supply is obtained (Niles Cone Subbasin 2.09.01). ACWD has demonstrated that the Niles Cone Subbasin operates within its sustainable yield over a 10-year period and, therefore, the California Department of Water Resources has determined that ACWD is exempt from preparing a Groundwater Sustainability Plan for management of the Niles Cone Subbasin under the Sustainable Groundwater Management Act (Alameda County Water District, 2017). The estimated water demand for the proposed project or variant would be less than 0.12 percent of ACWD’s average daily production. Therefore, a reduction in groundwater recharge, if any, would be minimal to the groundwater basin as a whole.

In summary, the proposed infiltration and bioretention areas would increase the amount of on-site infiltration compared to existing conditions, and, groundwater extraction to meet water demands of the proposed project or variant would be minimal, therefore the potential impact of the proposed project or variant on groundwater levels would be **less than significant**. This impact will not be further addressed in the EIR.

9c-9d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site? Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

There are no streams or rivers on the project site; therefore, construction of the proposed project or variant would not alter such water features. Construction activities would temporarily alter existing drainage patterns at the project site, due to demolition of existing structures and excavation/grading activities. These alterations would be temporary in nature, would likely involve additional on-site infiltration and/or detention, and, similar to existing conditions, surface drainage from the site would otherwise flow over land towards Peralta and Fremont boulevards. Construction activities would also replace impervious surfaces at the project site with more pervious materials, and therefore these activities are not expected to substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Construction-related impacts of the proposed project and variant would be **less than significant** and will not be addressed further in the EIR.

Short-term impacts of project construction under the proposed project or variant as they relate to erosion and siltation are discussed previously under “Construction” in the analysis of Impacts 9a) and 9f) above.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

No streams or rivers exist on the project site; however, with the presence of new structures and other impervious surfaces, the proposed project or variant would change local drainage patterns, creating the potential to increase the rate or amount of surface runoff in a manner that could result in substantial erosion or siltation or flooding on- or off-site.

The development plan for the proposed project or variant are similar, and would alter the existing drainage patterns by increasing stormwater on-site infiltration and by discharging stormwater directly to the 24-inch stormdrain on Parish Avenue and the 15-inch stormdrain on Peralta Boulevard via underdrains rather than overland flow.

Drainage control features at the site would be implemented in accordance with Municipal Regional Permit and Alameda County Clean Water Program requirements. Additional landscaping features, pervious pavement, and bioretention basins would encourage on-site infiltration and reduce the amount of stormwater runoff from the site. The bioretention areas would also drain over an extended period of time (possibly a couple of days), instead of immediately releasing water from the site in direct response to precipitation. This would reduce the magnitude of, and change the timing of, peak runoff from the site. Although the project would continue to contribute flows to the existing Alameda County Flood Control Channel southwest of Hwy 880, the total volume of stormwater would be reduced and the peak flow would be delayed. These actions would apply to both the project and the variant, and would represent an improvement over existing drainage conditions at the project site.

In summary, although changes in drainage patterns would occur due to the proposed layout of the buildings and location of roof drains under either the proposed project or variant, implementation of drainage control features would not substantially alter drainage patterns such that erosion, siltation, or flooding on- or off-site would occur. Impacts would be **less than significant** and this impact will not be further addressed in the EIR.

9e) 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?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

During construction, stormwater runoff would likely be managed through temporary drainage controls such as sandbag barriers or gravel bag berms to redirect run-on away from the project site. Similar to existing conditions, this off-site drainage would concentrate in the curb-and-gutter system on Peralta Boulevard and Fremont Boulevard and discharge to the subsurface stormdrain on Parish Avenue. Construction activities would not contribute additional runoff to on- or off-site areas. Water used during construction, e.g., for dust control, would not be applied in amounts that would generate runoff from the construction site; and water applications would be suspended during storm events. Construction activities that replace impervious surfaces at the project site with more pervious materials would increase on-site infiltration and/or detention. Because the proposed project and variant would not increase runoff during storm events, changes due to construction activities would not contribute additional water that exceeds the capacity of the existing drainage system. Impacts would be **less than significant,** and this impact will not be further addressed in the EIR.

Short-term impacts of construction under the proposed project or variant as they relate to pollutants entering stormwater runoff are discussed above under “Construction” in the analysis of Impacts 9a) and 9f) above.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

As discussed above under Impacts 9a) through 9d), potential impacts associated with the capacity of drainage infrastructure would be reduced through adherence to drainage control requirements. As such, stormwater runoff would be managed through permanent stormwater controls such as pervious pavement, bioretention areas, and landscape areas. These actions apply to both the proposed project and the variant, and would result in an improvement over existing conditions.

Implementation of the drainage controls required by Municipal Regional Permit and Alameda County Clean Water Program would avoid or minimize potential effects related to the contribution of substantial amounts of additional runoff, or pollution, to the municipal storm drain system. Thus, operational impacts of the proposed project or variant would be **less than significant,** and this impact will not be further addressed in the EIR.

9g-9h) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Construction and Operation – Proposed Project or Variant: **No Impact**

According to Federal Emergency Management Agency (FEMA) flood insurance rate maps, the project site is not in a special flood hazard area (FEMA, 2009). Therefore, construction or operation of the proposed project or variant would not place housing in a FEMA designated-flood hazard area, nor would project structures impede or redirect flood flows. There would be **no impact** from the proposed project or variant with respect to these flood hazard areas, and these impacts will not be further addressed in the EIR.

9i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Construction and Operation – Proposed Project or Variant: **Less-than-Significant Impact**

The project site is within the Calaveras/Turner/Del Valle dam inundation zone (City of Fremont, 2015). In the unlikely event of dam failure, inundation depths at the project site are anticipated to be a few feet or less, as flows would spread out and attenuate after passing through Niles Canyon and reaching the valley floor. The EIR prepared for the City’s General Plan Update (City of Fremont, 2011) states:

> *It is anticipated that inundation by dam failure is unlikely and a relatively low risk due to the structural engineering of the dams in the vicinity of Fremont and compliance with federal and state laws enacted to enhance dam safety… The proposed Policies of the Draft General Plan Update* [since finalized]*, together with other existing flood prevention strategies and policies, would reduce potential inundation hazards from dam and levee failure to existing and future development to a level considered less than significant.*

The proposed project or variant would be consistent with the type and density of development envisioned for the site by the General Plan; therefore, construction or operation of the proposed project or variant would not exacerbate the existing inundation hazard related to potential dam failure. Impacts from the proposed project or variant would therefore be **less than significant**. This impact will not be further addressed in the EIR.

9j) Would the project result in inundation by seiche, tsunami, or mudflow?

Construction and Operation – Proposed Project or Variant: **No Impact**

Seiche waves or tsunami are not considered a hazard to the project site because it is more than 2,000 feet away from any large enclosed bodies of water, and is not within a tsunami inundation zone (California Emergency Management Agency, 2009). The project site is relatively flat, and it is not anticipated that nearby drainages would contribute large volumes of water resulting in mudflows. Construction or operation of the proposed project or variant would not exacerbate the risk of such inundation hazards at the project site. There would be **no impact** with respect to these hazards, and this impact will not be further addressed in the EIR.

References:

Alameda County Flood Control & Water Conservation District (ACFCWD), 2016. Alameda County Hydrology & Hydraulics Manual.

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California Emergency Management Agency, 2009. Tsunami Inundation Map for Emergency Planning, State of California ~ County of Alameda, Newark Quadrangle, Redwood Point Quadrangle. July 31, 2009.

City of Fremont (City), 2011. Fremont DRAFT General Plan Update Draft EIR.

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Clean Water Program, 2016. C.3 Stormwater Technical Guidance. A handbook for developers, builders, and project applicants, Version 5.1. May 2, 2016.

Federal Emergency Management Agency (FEMA), 2009. Map number 06001C0442G. Flood Insurance Rate Map, Panel 442 of 725. Alameda County, California and Incorporated Areas. Effective date: August 3, 2009.

State Water Resources Control Board (SWRCB), 2018. GeoTracker search results for 3740 Peralta Boulevard, Fremont, CA. Available: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600151640&mytab=esidata#esidata, accessed on February 5.

4.10 Land Use and Land Use Planning

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
10.a. Physically divide an established community?	☐	☐	☐	☒
10.b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
10.c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Setting:

The project site consists of 13 existing parcels containing predominantly commercial buildings and associated surface parking, an abandoned single-family residence, and a decommissioned fire station. Areas to the north and west of Peralta Boulevard and south of Fremont Boulevard in the vicinity of the project site are predominantly commercial, while areas to the north of Jason Way are predominantly residential. Land to the southeast of Parish Avenue is occupied by the Holy Spirit Church and Holy Spirit School and associated uses.

The project site is zoned by the City of Fremont as Town Center-Pedestrian (TC-P) (City of Fremont, 2017a). The TC-P defines areas that were initially developed before Fremont's incorporation. These areas are characterized by small parcels, a mix of older and newer structures, and mixed-use development. The TC-P zoning district is intended to provide areas for mixed retail, service, office, and residential uses in a pedestrian-oriented setting (FMC Section 18.45, "Commercial and Mixed Use Districts"). Permitted uses within the TC-P zoning district include commercial and office uses and residential uses that are a component of mixed-use projects.

The project site is also zoned within a Transit-Oriented Development (TOD) overlay district (City of Fremont, 2017a). The purpose of the TOD overlay district is to create a compact and high intensity mix of residential, office, retail, service, and public uses to promote areas of the city that have a high potential for pedestrian activity, generally within one-half mile of existing and planned transit stations. Increased development potential and higher allowances for building intensity are permitted in the TOD overlay to promote economic potential, pedestrian activity, and transit access; improve urban form and design; and reduce vehicle miles traveled (FMC Section 18.152, "Transit-Oriented Development Overlay District,"). The TOD overlay district requires a minimum residential density of 30 dwelling units per acre (City of Fremont, 2017b).

As shown in Figure 4.10-1, the project site is designated as Commercial-Town Center in the City's General Plan (City of Fremont, 2011). This designation corresponds to the original business districts of Niles, Irvington, Centerville, and Mission San Jose, and a cluster of established neighborhood shopping centers in the Warm Springs District. This designation provides for pedestrian-oriented development with an attractive and distinct identity, along with amenities such as small parks, public art, and plazas that create a Main Street ambiance. Typical uses in the Commercial-Town Center designation include local services, retail, eating and drinking establishments, civic facilities, and mixed-use development. Mixed use developments within a Commercial-Town Center are subject to a maximum FAR of 1.5, unless they are also within a TOD overlay district, in which case they are permitted to have a Floor Area Ratio (FAR) between 0.5 and 2.5. A minimum residential density of 30 residential dwelling units per acre also applies within a TOD overlay.

The project site is identified in the Community Plans Element of the General Plan as being within the Centerville Community Plan Area, which covers approximately 6.2 square miles of Fremont, roughly bound by Mowry Avenue, Interstate 880, Decoto Road, the Alameda Creek/Quarry Lakes area. Policies within the Community Plan integrate recommendations of the Centerville Framework Plan (City of Fremont, 2010) and other previous studies and planning documents.

Regulatory Setting:

Plan Bay Area 2040

The Plan Bay Area 2040 (Plan Bay Area) was adopted by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) on May 26, 2017. It provides a strategy for accommodating projected household and employment growth in the nine-county Bay Area by 2040 as well as a transportation investment strategy for the region. The Plan Bay Area describes where and how the region can accommodate 666,000 new projected households and 668,000 new jobs between 2015 and 2040; details a regional transportation investment strategy; and complies with Senate Bill 375, the state’s Sustainable Communities Strategy law, which integrates land use and transportation planning and mandates both a reduction in greenhouse gas emissions from passenger vehicles and the provision of adequate housing for the region’s 24-year projected population growth.

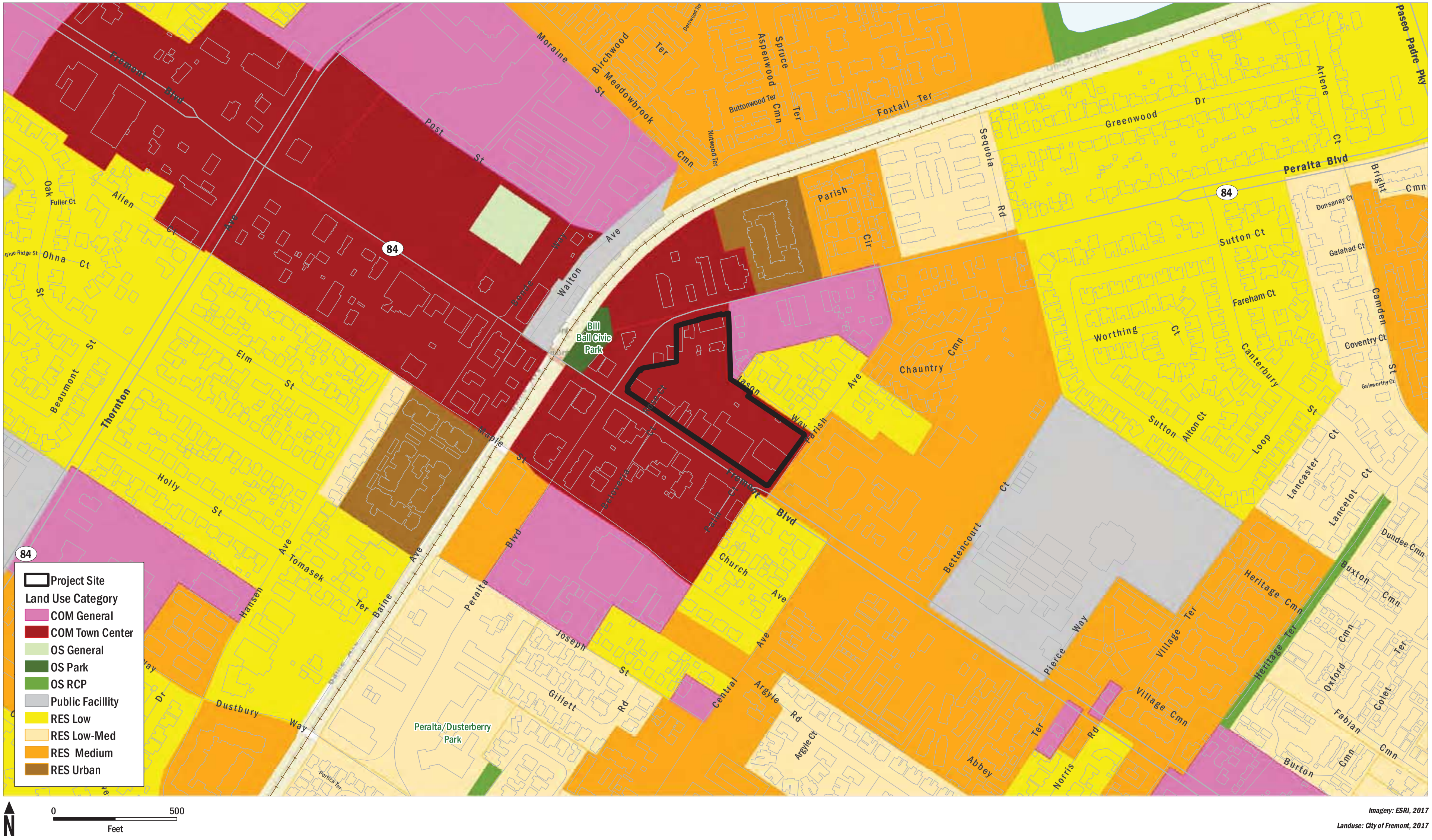
Plan Bay Area largely reflects the foundation and regional growth pattern and its core strategy is “focused growth” in existing communities along the existing transportation network. It builds upon existing community characteristics, efficiently leverages existing infrastructure, and mitigates impacts on areas with less development. Key to implementing the focused growth strategy are Priority Development Areas (PDAs) that have been identified as appropriate for additional, compact development (MTC & ABAG, 2017). Plan Bay Area provides policies to increase development potential in PDAs and influence the overall regional growth pattern, including policies that assign higher densities than currently allowable by cities to PDAs.

In addition, Plan Bay Area directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, safety programs, and PDA planning. These programs directly support Plan Bay Area 2040 goals by assisting PDAs, emphasizing connections to high-quality transit, and reducing greenhouse gas emissions and vehicle miles traveled (MTC & ABAG, 2017).

City of Fremont General Plan

The *City of Fremont General Plan* (General Plan) was adopted by the City Council on December 13, 2011. The City’s General Plan functions as a high-level statement of the community’s vision as well as an on-the-ground tool used by the City to make development decisions over a 25-year period. The General Plan aims to establish a flourishing downtown, increase jobs to match an increasing resident workforce, provide a variety of housing types, and provide pedestrian-oriented commercial districts. The General Plan also addresses the overarching vision of Fremont as a “green” city through goals and policies to meet climate change objectives, reduce solid waste, and enhance the pedestrian and cycling network. Ten Guiding Principles are embodied within the City’s General Plan that collectively provide a framework for the goals and policies laid out in the Plan.

Table 4.10-1 outlines the goals and policies from the Land Use Element (Chapter 2) of the General Plan that are applicable to the proposed project.



Imagery: ESRI, 2017

Landuse: City of Fremont, 2017

FIGURE 4.10-1

City of Fremont General Plan Land Use Designations

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Table 4.10-1 Applicable Goals and Policies from the Land Use Element of the General Plan

Goal 2-1: City Form and Structure. A city transformed from an auto-oriented suburb into a distinctive community known for its walkable neighborhoods, dynamic city center, transit-oriented development at focused locations, attractive shopping and entertainment areas, thriving work places, and harmonious blending of the natural and built environments.

Policy 2-1.6: Town Centers. Recognize Fremont's five original towns—Centerville, Irvington, Mission San Jose, Niles, and Warm Springs—as important and unique places that contribute to Fremont's identity. Plans for these districts should address the preservation of historic resources; appropriate areas for new commercial, residential, and mixed-use infill development; parking and transportation strategies which foster a pedestrian-oriented shopping environment; and provisions to ensure that future development helps enhance and define each area's character.

In Centerville, Irvington, Mission San Jose, and Niles, development should build on the strengths of the existing historic towns, retaining their basic form and encouraging infill. In Warm Springs, where the historic town no longer exists, the challenge is to re-create it—building a more pedestrian-friendly center that serves as a focal point for the southern part of Fremont.

Policy 2-1.8: Mixed-Use Emphasis. Encourage mixed-use development combining residential and commercial uses in transit-oriented development areas and also in selected commercial areas as indicated on the General Plan Land Use Map. Mixed use is encouraged in these areas to increase vitality and activity, provide housing opportunities, and advance sustainable development principles.

In the context of the General Plan, "mixed use" refers to housing with commercial uses, rather than office/ retail, industrial/office, or other combinations of uses. There are two principal forms of mixed use. "Vertical" mixed-use refers to multi-story projects where residential uses are located above ground floor commercial space. "Horizontal" mixed-use usually refers to projects where commercial and residential uses occupy the same site, but in different buildings.

Policy 2-1.10: Pedestrian Scale. Create a more pedestrian-oriented environment in Fremont's City Center, its five Town Centers, and the other Transit-Oriented Development areas shown on the General Plan Land Use Map. These areas should be characterized by:

- Convenient and continuous sidewalks, crosswalks, and walkways;
- Easy access to transit;
- Comfortable outdoor spaces for pedestrian use; and
- Parking that is located in structures or in shared lots to the rear of buildings rather than between buildings and the streets they face.

Goal 2-2: Directing Change. Growth and development that is orderly and efficient, leverages public investment, ensures the continued availability of infrastructure and public services, reduces adverse impacts on adjacent properties, and protects the natural environment.

Policy 2-2.4: Use of the General Plan Land Use Map. Ensure that future land use decisions are fully consistent with the General Plan Land Use Map. Each General Plan land use category shall have at least one corresponding zoning district. More than one zoning district per General Plan category may be established for categories which accommodate a wide range of densities or development types. Residential zoning districts should generally be differentiated by the number of units allowed per net acre (or square feet of lot area per dwelling unit).

Policy 2-2.5: Zoning and Subdivision Regulations. Use zoning and subdivision regulations to direct the city's growth, ensure sufficient opportunities for new development, improve Fremont's quality of life, create complete neighborhoods, reduce nuisances, achieve compatibility between adjacent properties and uses, address land use conflicts, and protect the health and safety of residents, visitors, and workers.

Source: City of Fremont, 2011. City of Fremont General Plan.

Discussion:

10a) Would the project physically divide an established community?

Construction and Operation – Proposed Project or Variant: **No Impact**

The proposed project and variant would develop townhomes, apartments, and retail uses, and for the proposed project only, would rehabilitate the existing fire station for adaptive re-use. These proposed uses are compatible with the existing development in the community of Centerville and would not introduce a use or physical feature that would create a barrier, divide, or separate adjacent uses. The proposed development is of a height and scale consistent with the proposed vision for the site under the General Plan, and includes streetscape improvements that would unify and connect adjacent areas. In particular, both the proposed project and variant would include publically accessible pedestrian connections both north-south and east-west through the project site, which would maintain community connectivity to Fremont and Peralta Boulevards from adjacent neighborhoods.

The proposed project or variant would not close any publicly accessible roadway that exists today. Rather, the proposed project and variant would result in a new connection between the existing Jason Way and Peralta Boulevard along the northern boundary of the site. All the existing residences in the vicinity of the project site can be accessed by Jason Way, Parish Avenue, and by roadways within those neighborhoods, which would not be affected by the proposed project or variant.

Therefore, **no impact** associated with physical division of an established community would occur due to construction or operation of the proposed project or variant, and this impact will not be further addressed in the EIR.

10b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect?

Construction and Operation – Proposed Project or Variant: **No Impact**

Zoning

The proposed project and variant would establish a transit-oriented, mixed-use development that combines residential and commercial uses, consistent with the current zoning of the site as Town Center-Pedestrian with TOD overlay district. proposed project would include 136 residential units, resulting in a residential density of 30dwelling units per acre[9]; the variant would include 165 residential units, resulting in 38 dwelling units per acre[10]. Both the proposed project and variant would therefore meet or exceed the minimum residential density of 30 dwelling units per acre required for the site's zoning district. Conformance with other requirements of the City's Zoning Ordinance would be addressed in the City's staff report, outside of the CEQA process.

Land Use Designation

The proposed project and variant would establish a transit-oriented, mixed-use development that combines residential and commercial uses, consistent with the General Plan's Commercial-Town Center land use designation. The General Plan requires a minimum residential density of 30 residential dwelling units per acre for properties designated Town Center and located within a TOD overlay zoning district; as noted above, both the proposed project and variant would meet or exceed this minimum density. Both the proposed project and variant would also meet the FAR requirements of the General Plan. The FAR for the proposed project would be 1.17, and for the variant would be 1.416, both of which are within the required 0.5 to 2.5 range for sites designated as Commercial-Town Center that are also within a TOD overlay district.

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[9] Based on 136 dwelling units (72 townhomes and 64 apartments), and a net project site area of 4.5457 acres (excludes public street dedications and revised fire station site, ownership of which would be retained by the City of Fremont), the residential density of the project would be 29.92 DU/acre, which rounds to 30 DU/acre.

[10] Based on 165 dwelling units (72 townhomes and 93 apartments), and a net project site area of 4.608 acres (excludes public street dedications, but includes fire station site which would be annexed into overall project site under the variant), the residential density of the variant would be 35.81 DU/acre, which rounds to 36 DU/acre.

City General Plan Policies

Both the proposed project and variant would provide transit-oriented, mixed-use development that combines residential and commercial uses consistent with the project site's land use designation and zoning and would, therefore, support Policies 2-1.8 and 2-2.4 of the General Plan, which promote consistency of land use decisions with the General Plan Land Use Map. As discussed above, the proposed project and variant are consistent with the City's TC-P zoning district and TOD overlay district, and are therefore consistent with Policy 2.2-5.

In addition, both the proposed project and variant would support Policies 2-1.8, and 2-1.10 of the General Plan, which promote the development of the Centerville Community Plan Area as a walkable, transit-oriented mixed-use district. The proposed project would redevelop an aging, underutilized commercial site with a new mixed-use project, consistent with the visions of the Centerville Community Plan and Centerville Framework Plan and develop housing at higher densities within a Transit-Oriented Development Overlay District. As discussed in Section 4.16, "Traffic and Transportation," the proposed project would improve pedestrian safety through the provision of new street improvements and various traffic-calming measures and reduce vehicle miles traveled by locating housing near regional transit and by providing a pedestrian-oriented environment.

As discussed in Section 4.1, "Aesthetics," the proposed project would improve urban form and design that would meet provisions in the Place Type Manual of the General Plan and provide development that is compatible in scale and design with existing development located along Fremont Boulevard.

Plan Bay Area 2040

Both the proposed project and variant would be consistent with the Plan Bay Area, which calls for focused growth in Priority Development Areas (PDAs) along the existing transportation network. The proposed project and variant would provide transit-oriented, mixed-use development that combines residential and commercial uses in the Centerville PDA. Further, the proposed project would develop higher density housing within a Transit-Oriented Development Overlay District which would contribute towards meeting the City's Regional Housing Needs Allocation[11] and encourage transit ridership by locating new housing within walking distance of the Centerville Train Depot and several AC Transit bus lines.

Conclusion

For the reasons described above, the proposed project and variant would be consistent with General Plan policies, the General Plan land use designation, and the City's zoning for the project site, as well as the Plan Bay Area. Therefore, **no impact** associated with conflicts with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect would occur as a result of construction or operation of the proposed project, and this impact will not be further addressed in the EIR.

10c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans covering the project area. Therefore, the proposed project or variant would have **no impact** on or conflict with habitat conservation plans in the area, and this impact will not be further addressed in the EIR.

References:

City of Fremont, 2010. *Centerville Framework Plan*. Fremont, CA.

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[11] The State of California requires every city to accommodate its fair share of regional growth through a process called the Regional Housing Needs Allocation (RHNA), administered by ABAG. Further discussion of the RHNA process and the City's allocation is contained in the Housing Element of the General Plan (City of Fremont, 2014).

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Metropolitan Transportation Commission and Association of Bay Area Governments (MTC & ABAG). 2017. Plan Bay Area 2040. Available: http://2040.planbayarea.org/. Accessed April 30, 2018.

4.11 Mineral Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
11.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?	☐	☐	☐	☒
11.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?	☐	☐	☐	☒

Discussion:

11a-11b) Would the project 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? Would the project 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?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

The project site is not within close proximity to or on a known and regionally valuable mineral resource (USGS, 2018); therefore, there would be no loss of a known or locally important mineral resource. Accordingly, the proposed project or the variant would cause **no impact** to mineral resources, and these impacts will not be addressed further in the EIR.

References:

United States Geological Survey (USGS), 2018, Mineral Resources On-Line Spatial Data, Available at https://mrdata.usgs.gov/general/map.html, Accessed February 2, 2018.

4.12 Noise

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
12.a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
12.b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
12.c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
12.d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
12.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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
12.f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting:

Fundamentals of Noise

Decibels (dB) are the standard unit of measurement of the sound pressure generated by noise sources and are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale for earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; and, a halving of the noise energy would result in a 3 dB decrease. The human ear is not equally sensitive to all frequencies within the audible sound spectrum. To accommodate this phenomenon, the A-weighted scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. Noise levels using A-weighted measurements are written as A-weighted decibels (dBA). All noise levels presented below are A-weighted unless described otherwise.

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of frequencies from distant sources that create a relatively steady background noise in which no particular source is identifiable. Average noise levels over a period of minutes or hours are usually expressed as equivalent noise levels (L_{eq}), which means the total sound energy of noise that varies in level with time is logarithmically averaged to result in a comparable constant sound level for the defined period. For instance, and as used in this Initial Study, hourly L_{eq} is a typical community noise metric. The maximum noise level (L_{max}) is the highest root mean squared (RMS) sound level occurring during a specific period. The Community Noise Equivalent Level (CNEL) is similar to the 24-hour L_{eq}, but adds a 5 dB “penalty” to hourly L_{eq} for the evening noise-sensitive hours from 7 p.m. to 10 p.m. and a 10 dB penalty applied to hourly L_{eq} during nighttime noise-sensitive hours from 10 p.m. to 7 a.m. The day-night average noise level (L_{dn} or DNL) is similar to the CNEL but with no adjustment (penalty) during evening hours; that is, daytime is defined as 7 a.m. to 10 p.m.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dB (increase or decrease) and that a change of 5 dB is readily perceptible (California Department of Transportation [Caltrans] 2013). A noise level that increases by 10 dB is perceived as being twice as loud as what was previously heard, and a noise level that decreases by 10 dB is perceived as being half as loud.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration including Peak Particle Velocity (PPV) and RMS velocity. PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. Groundborne vibration related to human annoyance is generally related to RMS velocity levels expressed in VdB. PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Low-level vibrations transmitted through a building's structure frequently cause irritating secondary vibration, such as slight rattling of windows, doors, or stacked dishes. The rattling sound draws attention to the vibration and can thus give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows. Ground vibration levels in buildings can be reduced due to coupling losses at the interface between the ground and the foundation, and amplified by resonances in the floor.

Existing Noise Environment

To quantify the existing noise environment, three multi-day monitors continuously measured noise levels at the site between August 9 and 14, 2017, as described further in Appendix B-1, Noise Assessment (Charles M. Salter Associates, 2018). In addition, short-term "spot" measurements were conducted on June 20, 2017 at additional locations and compared with corresponding time periods of the multi-day monitors to determine how existing noise levels vary with location and elevation. Table 4.12-1 summarizes measured noise levels. A map showing monitoring locations is provided in Appendix B-1.

Table 4.12-1 Existing Noise Measurements near the Project Site

Location	Existing Noise Measurements	
	L_{dn} [1]	$L_{eq(h)}$ [2]
Multi-Day Monitoring Locations:		
L1: Peralta Boulevard	72 dB [3]	76 dB
L2: Fremont Boulevard	74 dB [3]	74 dB
L3: Parish Avenue	66 dB	70 dB
Spot Measurement Locations:		
S1: Corner of Fremont and Peralta boulevards	73 dB	n/a
S2: Fremont Boulevard	69 dB	n/a

Source: Charles M. Salter & Associates, 2018 (Appendix B-1).

NOTES:

[1] *Day-Night Sound Level.*

[2] *Obtained during the nighttime (10 p.m. to 7 a.m.). The Hourly Equivalent Sound Level ($L_{eq(h)}$) is used throughout the U.S. for environmental impact assessment, and describes a receiver's cumulative noise exposure from all events over a one-hour period. (FTA, Noise and Vibration Manual, 2006)*

[3] *Siren noise events excluded from the data during the 5:00 p.m. and 10:00 p.m. hours on August 10, 2017.*

The major noise sources affecting the project site are train horns from the Union Pacific Railroad Niles Subdivision utilized by the Altamont Corridor Express (ACE), Amtrak, and Capitol Corridor passenger services, approximately 300 to 400 feet north of the site, and vehicular traffic along Fremont Boulevard and Peralta Boulevard adjacent to the site. Noise monitoring data support this description of noise sources affecting the project, because higher noise levels were measured at locations L1 and L2 along Fremont and Peralta boulevards (which have heavier traffic) than at location L3 on Parish Avenue.

According to the Noise Assessment (Appendix B-1 to this Initial Study), approximately 84 scheduled passenger trains passed the project site during the measurement period. In addition, measurement data suggest that 3 to 4 unscheduled freight trains passed the project site each night. At the corner of Fremont Boulevard and Peralta Boulevard spot location (S1), observed noise levels from train horns ranged from 83 to 89 dB. During daytime and nighttime hours at the Peralta Boulevard location (L1), the typical maximum instantaneous noise level due to trains was 88 and 93 dB, respectively.

Sensitive Receptors

Sensitive receptors are facilities or land uses that include members of the population that are particularly sensitive to noise. Examples include schools, daycare centers, parks, elderly-care facilities, hospitals, and residential areas. The closest residential buildings to the project site are to the north of Jason Way, approximately 45 feet from the project site boundary or 150 feet from the center of the project site. The Holy Spirit Church, School and Preschool are to the southeast of Parish Avenue, approximately 45 feet from the project site boundary. Childs Hideaway Preschool on Fremont Boulevard is approximately 125 feet southeast from the project site boundary, and the Genius Kids Preschool on Peralta Boulevard is approximately 500 feet northeast from the project site boundary. Nearby parks and open space areas include Centerville Community Park approximately 0.70 mile to the east, and Alameda Creek Regional Trail approximately 0.55 mile to the north.

Regulatory Setting:

Applicable Noise Regulations

The City of Fremont General Plan Safety Element (adopted in 2011) includes policies related to the protection of existing residential neighborhoods from noise, and requires evaluation of mitigation measures for new projects if that project:

1. Would cause the L_{dn} to increase by 5 dBA or more but would remain below 60 dBA;
2. Would cause the L_{dn} to increase by 3 dBA or more and exceed 60 dBA; or
3. Has the potential to generate significant adverse community response due to unusual character of the noise.

In addition, for commercial noise sources generated by new projects, the General Plan states that exterior noise levels at any affected residential land use property line should not exceed 50 dB(A) hourly L_{eq} and 70 dBA L_{max} from 7 a.m. to 10 p.m. and not exceed 45 dBA hourly L_{eq} and 65 dBA L_{max} from 10 p.m. to 7 a.m.; (City of Fremont, 2011, Table 10-1).

The General Plan also includes acceptable exterior and interior noise standards for new development, to ensure that the existing noise environment is compatible with the proposed future land uses. The General Plan states that the goal for maximum acceptable noise levels in residential areas is an L_{dn} of 60 dBA, and should be applied in areas where outdoor use is a major consideration, e.g., backyards in single-family developments and outdoor recreation areas in multifamily developments. The outdoor standard is not normally applied to small decks associated with apartments and condominiums. Where an outdoor L_{dn} of 60 dBA or lower cannot be achieved after the application of feasible mitigations, an L_{dn} of 65 dBA may be permitted at the discretion of the City Council. The General Plan states that interior noise levels should not exceed 45 dBA L_{dn} in new housing. Typical instantaneous noise levels should not exceed 50 dBA in bedrooms during the nighttime or 55 dBA in any other rooms and bedrooms during the daytime (City of Fremont, 2011, Policy 10-8.1 and associated implementation measures, and Table 10-4).

The General Plan Safety Element states that the City controls construction noise through limitations on construction hours. Fremont Municipal Code (FMC) Chapter 18.160 limits weekday construction hours for activities within 500 feet of a noise-sensitive receptor to between 7:00 a.m. and 7:00 p.m. on weekdays, and between 9:00 a.m. and 6:00 p.m. on Saturdays and holidays; Sunday construction is not allowed.

Applicable Vibration Regulations

The City of Fremont does not have standards regarding vibration; therefore, the Federal Transit Administration (FTA) guidelines are used in this Initial Study to assess the significance of vibration produced by transportation sources and construction activity. To address human response (annoyance) to ground-borne vibration, FTA has established maximum acceptable vibration thresholds for different land uses. These guidelines recommend 65 vibration velocity decibels (VdB) for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, and laboratory facilities), 80 VdB for residential uses and buildings where people normally sleep, and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, places of worship, clinics, and offices). Also, according to FTA guidelines, a vibration-damage criterion of 0.20 inches per second (in/sec) PPV should be considered for non-engineered timber and masonry buildings. Furthermore, structures or buildings constructed of reinforced concrete, steel, or timber have a vibration-damage criterion of 0.50 in/sec PPV pursuant to the FTA guidelines (FTA, 2006).

Discussion:

12a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

Discussion of construction-related noise impacts is presented under Impact 12d) below.

Operation – Proposed Project or Variant: **Potentially Significant Impact**

As noted above under the regulatory setting, the General Plan contains standards pertaining to protection of existing neighborhoods from increased noise generated by new developments, as well as to exposure of new developments to excessive noise levels. Operational impacts of the proposed project or variant on existing development are presented below under Impact 12c). The exposure of the proposed project or variant to indoor and outdoor noise levels in excess of local standards and ordinances (such as instantaneous noise levels from train horns) could be **potentially significant**. These impacts and potential mitigations will be further analyzed in the EIR.

12b) Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

Ground-borne vibration from construction activities at the project site under the proposed project or variant could produce vibration at nearby sensitive receptors. Pile driving, blasting, and other special construction techniques which typically cause ground vibration and ground-borne noise are not proposed for demolition or construction of the proposed project or variant.

Typical reference vibration levels for a large bulldozer are 0.089 in/sec PPV and 87 VdB at 25 feet (Federal Transit Administration, 2006). With the nearest neighboring sensitive receptor building at least 45 feet away from the project site, construction activities would not expose the nearby residential buildings to significant building vibration (exceeding 0.2 in/sec PPV or 94 VdB). Additionally, construction activities would not exceed the human annoyance standard[12] (exceeding 80 VdB) at 45 feet. Hence, the

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[12] The level at which vibration causes annoyance to humans is variable and complex. A vibration velocity level of 65 VdB is typically regarded as the threshold of perceptibility for many humans. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible. For infrequent events (less than 30 vibration events per day) in residences

construction vibration impact would be considered **less than significant** and will not be addressed further in the EIR. Potential impacts of vibration on the integrity of the former fire station building that would be rehabilitated as part of the proposed project will be addressed in the EIR.

Operation – Proposed Project or Variant: **No Impact**

Long-term operation of the proposed project or variant would involve typically expected stationary equipment for residential, parking garage, and commercial retail purposes, with pool, clubhouse and tot-lot spaces that would not result in any major sources of vibration. Stationary noise sources, typified by HVAC and other electromechanical systems, would also not be expected to generate substantial levels of vibration or ground-borne noise. Such equipment, like an air handling unit or pump, is typically designed, manufactured, and operated with reciprocating or rotational moving parts that are well balanced and create negligible vibration—in fact, the monitored occurrence of excessive vibration on such mechanical equipment is usually a fault indicator that would prompt service and restoration of normal operating conditions and associated low vibration levels. Hence, there would be **no impact** with respect to vibration from operation of the proposed project or variant, and this impact will not be further addressed in the EIR.

12c) Would the project result in exposure of persons to a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction – Proposed Project or Variant: **No Impact**

Construction of the proposed project or variant would involve temporary and short-term construction activities, as described in Impact 12d) below, and would not introduce permanent construction noise sources. Therefore, this threshold is not applicable to construction of the proposed project or variant.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

Potential sources of permanent noise associated with operation of the proposed project or variant would include traffic noise from motor vehicle trips generated by the proposed development, and mechanical noise from equipment and machinery operating at the site. These project-generated operational noise sources are each addressed in turn below. The applicable standards within the General Plan require mitigation measures to be evaluated for projects that would increase ambient noise levels by more than 3 dBA if exceeding 60 dBA, or by more than 5 dBA if under 60 dBA.

Traffic Noise:

Traffic generated by occupants of the proposed residential units, and staff or visitors to the proposed retail uses would generate traffic noise. As stated in the City's General Plan (City of Fremont, 2011), traffic volumes generally must increase by 100 percent for their noise level to increase by 3 dBA. An increase in average noise levels of 3 dBA or less is not considered a significant change, while an increase of 5 dBA is considered readily perceptible to most people.

As discussed in Section 4.16, "Traffic and Transportation," the proposed project would generate 125 net new trips in the a.m. peak hour and 12 net new trips in the p.m. peak hour resulting in a minimal increase (i.e., up to 19 percent) in traffic on the surrounding roadway network. This corresponds with an increase in environmental noise of less than 1 dB. The variant would generate similar or slightly less peak hour traffic than the proposed project, and would also be anticipated to result in an increase of environmental noise of less than 1 dB.

The noise from traffic generated by the proposed project or variant would not result in an increase in noise of more than 3 dBA and would therefore not represent a substantial permanent increase in ambient noise levels above levels existing without the proposed project or variant.

Mechanical Noise:

Sources of mechanical noise associated with operation of the mixed use component of the proposed project or variant would include equipment such as trash compactors at retail loading areas, HVAC units

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and buildings where people normally sleep, an impact criteria of 80 VdB is typically used as the standard for human annoyance (FTA, 2006).

for retail spaces, and parking garage fans and gate motors. Mechanical noise sources from the townhomes would be limited to individual residential heat pump/AC units.

Retail HVAC units, parking garage fans, trash compactors, and other commercial equipment would primarily be located within or adjacent to the mixed use portion of the site that is approximately 200 feet from sensitive receptors outside the project site. Noise impacts from commercial equipment would be required to adhere to the City's Noise Level Standards for New Industrial and Commercial Noise Sources (received at residential properties) as follows (City of Fremont, 2011):

- Daytime (7 a.m. to 10 p.m.) = 50 dBA hourly L_{eq}, 70 dBA L_{max}; and
- Nighttime (10 p.m. to 7 a.m.) = 45 dBA hourly L_{eq}, 65 dBA L_{max}

Anticipated noise generated by retail HVAC units on existing sensitive receptors (i.e., at a distance of approximately 200 feet) would range from 28.1 dBA hourly L_{eq} to 30.6 dBA hourly L_{eq}, which is below both the City's standards for new commercial noise sources and below existing noise levels at the project site (refer Table 4.12-1). Similarly, anticipated noise generated by parking garage mechanical equipment would range from 40.7 dBA hourly L_{eq} to 42.6 dBA hourly L_{eq} on existing sensitive receptors (see Appendix B-2), which is also below the City's noise level standards and existing noise levels. Other commercial equipment is anticipated to generate similar less-than-significant noise impacts on existing sensitive receptors.

Residential AC units on the proposed townhouses could be approximately 55 feet from existing single-family residential properties to the north of Jason Way. Anticipated noise generated by typical residential AC units at a distance of 50 feet would be approximately 49.1 dBA L_{eq} (see Appendix B-2) which translates into less than 56 dBA L_{dn} assuming 24/7 operation, and is thus below the City's General Plan standard of 60 dBA L_{dn} for exterior noise levels at backyards of single family residences and below existing noise levels.

Based on the above assessment, noise impacts from mechanical equipment would comply with relevant noise level standards and would not represent a substantial increase in ambient noise levels.

Conclusion

Traffic-related and mechanical noise sources associated with operation of the proposed project or variant would comply with the City of Fremont General Plan noise standards and would not result in substantial permanent increase of ambient noise levels. Permanent noise impacts associated from sources generated by the proposed project or variant would, therefore, be **less than significant**. These impacts will not be further addressed in the EIR.

12d) Would the project result in exposure of persons to a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction– Proposed Project or Variant : **Less than Significant with Mitigation**

As noted in the regulatory section above, noise generated from temporary construction activities is controlled via limitations on construction hours. Construction for both the proposed project and variant would comply with FMC Chapter 18.160 limits on construction hours; therefore, construction activities would not result in the exposure of persons to or generation of noise levels in excess of applicable noise standards. However, construction-related noise levels would temporarily exceed existing ambient conditions and may affect nearby sensitive receptors.

Sources of construction noise would include construction equipment and machinery, vehicular traffic noise from workers commuting to and from the project site, and haul trips for construction-related materials or soil import/export, and are anticipated to be similar for both the proposed project and variant. While construction of the variant may include additional haul trips due to a larger volume of soil to be exported from the site than the proposed project, this difference would affect the duration of the noise, not the noise level generated by construction activities.

Construction phases for both the proposed project and variant would include demolition, site preparation/grading, and building construction/civil utilities. Noise levels for each construction phase were estimated (see Appendix B-2) based on the types and number of construction equipment anticipated to be used on the project site, and the distance to the nearest sensitive receptors. The analysis assumed all pieces of equipment associated within each phase might operate simultaneously, and at a fraction of full power as indicated by equipment type “acoustical usage factor” (AUF) appearing in the Federal Highway Administration (FHWA) Roadway Construction Noise Model User’s Guide (FHWA, 2006), and from a single acoustic point representing the geographic center of the construction zone or area.

Based on this analysis, the building construction/civil utilities phase would generate the most substantial noise levels, estimated at 82.2 L_{eq} at a distance of 150 feet, which as noted above is the distance from the center of the project site to the nearest residence. The demolition and site preparation/grading phases would use construction equipment similar to and potentially as intensely as the building construction/civil utilities phase. Construction noise during the demolition phase would be 79.9 L_{eq} at a distance of 150 feet, and during the site preparation/grading phase, construction noise would be 77.5 L_{eq} at a distance of 150 feet.

Construction noise would therefore be greater than existing noise levels at nearby sensitive receptor locations (approximately up to 12 dBA more), and would be perceived by healthy human hearing as more than a doubling of the sound loudness [City of Fremont, 2013]). This increase in ambient noise conditions would be a significant impact unless mitigated to a level where the increase over ambient noise would be less than 5 dBA for such temporary noise generated by construction activity.

Construction noise can be mitigated through both noise control methods, which aim to reduce the sound generated by the construction equipment or process, and sound path abatement measures—such as barriers—that reduce noise by inserting a physical structure between the noise source and the receiver. Application of proper exhaust mufflers on fuel-burning engines are examples of the former (makes the noise source quieter), while field-erected curtains typify the latter technique by interfering with the sound path without changing the noise level of the equipment. The EPA indicates that feasible noise controls can reduce noise levels at nearby receptors from trucks by up to 16 dBA, and jackhammers by up to 13 dBA (EPA, 1971). Table 4.12-2 provides examples of typical mitigation measures and/or alternative construction methods that can be used to reduce construction equipment noise.

Table 4.12-2 Typical Construction Equipment and Possible Mitigation Measures To Reduce Noise

Construction Equipment	Source(s) of noise	Possible mitigation measures (may need to be discussed with equipment manufacturer)	Possible alternative construction methods
Bulldozer Compactor Crane Dump truck Excavator Grader Loader Scraper Shovel	Engine	Install more efficient exhaust silencer. Apply acoustical damping and protected internal noise absorption layers to vibrating panels and covers. Enclosure panels should be kept closed. Operate without excessive engine revving.	
Compressor Generator	Engine Compressor or generator	Install more efficient exhaust silencer. Apply acoustical damping and protected noise absorption layers to internal of vibrating panels and covers. Enclosure panels should be kept closed Locate the compressor or generator within an acoustical enclosure or behind an absorptive, three-sided sound wall.	Use electric motors instead of diesel or gasoline engines to drive compressors. If there is no electrical supply, use a reduced noise compressor or generator. A remote electrical generator can be used to supply power to several pieces of equipment.

Mitigation Measure NOI-1 is proposed for both the proposed project and variant, to reduce noise impacts during construction by requiring use of noise-reduction devices on construction equipment, and selecting and/or locating construction noise sources to minimize impacts on surrounding sensitive receptors.

> ***Mitigation Measure NOI-1: Modification, Placement and Operation of Construction Equipment.***
>
> *To reduce noise impacts during construction, the applicant shall include the following measures in contractor specifications for the project, and such measures shall be implemented during construction:*
>
> - *Construction equipment shall be well maintained and operated in a manner to reduce or avoid high levels of noise emission. (By way of example, and to the extent practical, lower—rather than drop—loads into containers or onto platforms, thus reducing opportunity for noise-generating impacts of contacting surfaces.)*
> - *Construction activities, including the loading and unloading of materials and truck movements, shall be limited to the hours of 7:00 AM to 7:00 PM on weekdays and between the hours of 9:00 AM and 6:00 PM on Saturdays. No construction activities shall be permitted on Sundays or holidays.*
> - *Excavating, grading, and filling activities, including warming of equipment motors, shall be limited to between the hours of 7:00 AM to 7:00 PM on weekdays and between the hours of 9:00 AM and 6:00 PM on Saturdays. No excavation, grading or filling activities shall be permitted Sundays or holidays.*
> - *All internal combustion engine-driven equipment shall be equipped with mufflers, which are in good condition and appropriate for the equipment.*
> - *The contractor shall utilize "quiet" models of air compressors, electrical generators, pumps and other stationary noise sources where options for such off-the-shelf technology exist.*
> - *Loading, staging areas, stationary noise-generating equipment, etc. shall be located as far as feasible from sensitive receptors, and/or shielded with temporary noise barriers if necessary.*
> - *The contractor shall comply with Air Resource Board idling prohibitions of unnecessary idling of internal combustion engines.*
> - *Wherever possible, noise-generating construction equipment shall be shielded from nearby residences by on-site positioning of noise-attenuating barriers, such as structures or truck trailers. Temporary barriers, composed of field-erected curtains or panels, may also be used to occlude direct airborne sound paths between construction activity noise sources and, if designed and installed properly, could be expected to yield at least 7 to 12 dBA of noise reduction in the field.*
> - *Signs shall be posted at the construction site that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number for the project sponsor in the event of noise complaints. The applicant shall designate an on-site complaint and enforcement manager to track and respond to noise complaints.*

With implementation of Mitigation Measure NOI-1, which might rely solely on the erection of a temporary barrier to reduce noise (or a combination of the barrier with the effects of one or more listed measures), construction of the proposed project or variant would not result in substantial temporary or periodic increase of ambient noise levels that exceed an allowable 5 dBA increment over ambient noise conditions. Construction noise impacts associated with project development would, therefore, be **less than significant with mitigation**. These impacts will not be further addressed in the EIR.

Operation – Proposed Project or Variant: **No Impact**

Operation of the proposed project or variant would not introduce any substantial sources of temporary or periodic noise to the project area. Noise from vehicular traffic generated by residents and users of the project site, and mechanical noise from residential or retail equipment such as HVAC, are considered a permanent noise source, not temporary or periodic, and are discussed above under Impact 12c. Temporary noise sources associated with residential and retail uses at the project site, such as intermittent vehicle noises (tire squeals, garage doors, etc.), landscape maintenance noises or typical recreational/backyard noises (music, laughing, children playing, etc.), would be typical of similar developments within the City, and would not be considered substantial. As such, there would be **no impact** from operation of the proposed project or variant that would result in substantial temporary or periodic increases in ambient noise levels.

12e-12f) 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 expose people residing or working in the project area to excessive noise levels? For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Construction and Operation – Proposed Project or Variant: **No Impact**

There are no public or private airports within two miles of the project site, and the project site is not within an airport land use plan. Therefore, there would be **no impact** from the proposed project or variant in relation to airports and exposing people residing or working in the project area to excessive noise levels. This impact will not be further addressed in the EIR.

References:

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United States Environmental Protection Agency (EPA), 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, December 1971.

4.13 Population and Housing

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
13.a. Induce substantial 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)?	☐	☐	☐	☒
13.b. Displace substantial numbers of existing housing, necessitating the construction of replacement house elsewhere?	☐	☐	☐	☒
13.c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Setting:

Population

Since 2000, the City of Fremont’s rate of growth has been approximately 0.5 percent per year, or approximately five percent for the 10-year period (2000 to 2010) (City of Fremont, 2014). This growth rate was comparable to growth in Alameda County as a whole, but was less than that of individual cities such as Santa Rosa, Pleasanton, San Jose, Sunnyvale, and Milpitas (City of Fremont, 2014). As of January 1, 2017, the California Department of Finance (DOF) estimates the City of Fremont’s total population was 231,664 persons, which is an 8.2 percent increase from the City’s 2010 population of 214,089 persons (DOF, 2017).

The Association of Bay Area Governments (ABAG) has projected that the population of Fremont will grow to 256,200 by 2035 (City of Fremont, 2011). However, the City of Fremont has estimated that the local population will grow to 259,000 by 2035, and this estimate is considered by the City as the highest level of potential growth that could reasonably be expected to be accommodated under the General Plan (City of Fremont, 2011).

The Centerville Priority Development Area had a total population of 30,096 in 2010 (ABAG, 2013), and is expected to increase to 38,969 by 2040. This represents a 29 percent increase over the 30-year period (ABAG, 2013).

Housing

The City of Fremont has consistently had a higher household size than Alameda County as a whole (City of Fremont, 2014). The average household size in the city was 3.11 persons, compared to an average household size of 2.81 persons in Alameda County (DOF, 2017). As of January 1, 2017, the number of housing units in the city was 75,763, with approximately 72 percent of these housing units attached and detached single-family homes (DOF, 2017). ABAG estimates that by the year 2040, the number of households will increase to 89,090, or an approximate 18 percent increase (City of Fremont, 2014). Of these households, 12,986 are anticipated within the Centerville Priority Development Area (ABAG, 2013).

Employment

The project site currently contains approximately 51,000 SF of retail and restaurant uses, as well as a small mini-warehouse facility (approximately 1,000 SF). While the exact number of employees currently employed by these businesses is unknown, similarly sized commercial facilities would typically be expected to provide employment opportunities for approximately 130 persons.[13] The California

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[13] Using Keyser Marston Associates, Inc. estimate of 400 SF per employee and the existing 52,000 SF of commercial space, the existing site is estimated to provide employment opportunities for approximately 130 employees.

Employment Development Department indicated that in 2017 the estimated total workforce in the City of Fremont was approximately 120,900 people, with an unemployment rate of 2.8 percent (Employment Development Department, 2018).

Discussion:

13a) Would the project induce substantial 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)?

Construction – Proposed Project or Variant: **No Impact**

Construction of the project is estimated to require an average of 100 construction workers on a typical work day. Up to 400 construction workers per day may be required periodically. Construction would begin in February 2019 and would require a total of approximately 18 months to complete. The source of the construction labor force is unknown at this time, but workers would be expected to come from the local labor pool and not relocate to the City from other areas for the relatively short construction period. The U.S. Census Bureau estimates there are 3,856 persons employed in the construction industry in the City (U.S. Census Bureau, 2016). Based on the availability of nearby construction workers and the duration of the construction period, there would be **no impact** due to a substantial influx of construction personnel for the proposed project or variant. This impact will not be addressed further in the EIR.

Operation – Proposed Project: **No Impact**

Land use projects have the potential to induce population growth both directly, through the introduction of land uses that allow increased residential density or employment, and indirectly, through the extension of roads or other infrastructure that would also serve future development in the area. These are addressed in turn below.

Population and Housing:

The project would not directly induce substantial unplanned population growth in the City of Fremont through development of new unplanned homes. As discussed above in Section 4.10, "Land Use and Land Use Planning," the land use designation for the project site under the City General Plan is Commercial-Town Center and the project site is zoned with a Transit-Oriented Development overlay district. The General Plan specifies a minimum residential density of 30 residential dwelling units per acre in the Commercial-Town Center land use designation where a site is within a TOD overlay zoning district. The project's proposed residential density would be 30 dwelling units per acre[14]; therefore, residential density is consistent with that prescribed for the property as envisioned under the City's General Plan. The proposed project would increase the population in the City of Fremont by approximately 423 new residents.[15] The City determined that implementation of the General Plan would not induce unplanned population growth, since new residential development under the General Plan would accommodate the City's share of regional population growth between 2010 and 2035 (City of Fremont, 2011). Therefore, the estimated project-related increase in population and housing would not result in population and housing growth not anticipated in the General Plan.

Employment:

The proposed project would include 25,000 SF of retail space, plus the 3,300-SF fire station, for which future uses are currently unknown, but are most likely to be retail. Based on average employment rates for typical retail facilities, the project would be expected to provide employment opportunities for approximately 71 people,[16] which is less than estimated for the existing uses at the project site. The California Employment Development Department indicated that in 2017, the average number of

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[14] Based on 136 dwelling units (72 townhomes and 64 apartments), and a net project site area of 4.5457 acres (excludes public street dedications and revised fire station site, ownership of which would be retained by the City of Fremont), the residential density of the project would be 29.92 dwelling units per acre, which rounds to 30 dwelling units per acre.

[15] Based on the DOF's 2017 estimate of 3.11 persons per dwelling unit and 136 proposed dwelling units, the proposed project is estimated to accommodate 423 new residents at buildout.

[16] Using Keyser Marston Associates, Inc. estimate of 400 SF per employee and the proposed 28,300 SF of retail space, the proposed project is anticipated to provide employment opportunities for approximately 71 employees.

unemployed persons in the City of Fremont was 3,100 (Employment Development Department, 2018). The availability of a local labor force to be employed at the project-related retail uses suggests that workers would likely come primarily from the city and that new jobs generated by the proposed project would not result in substantial indirect population growth.

Extension of Roads and Infrastructure:

The proposed project would not induce substantial population growth indirectly (through the extension of roads or other infrastructure into undeveloped areas). The project site is an infill site surrounded by existing development. Proposed site access would be from Fremont Boulevard, Peralta Boulevard, Parish Avenue, and Jason Way through improvements to these roadways, including formal extension of Jason Way to connect with Peralta Boulevard. The proposed project would not require extensions of other existing roadways or construction of new roadways in the vicinity of the project site. Any new utility infrastructure required to serve the proposed project would be sized to accommodate project-related demands and would not be intended to serve any development on lands other than the project site.

Conclusion:

For these reasons, the proposed project would not directly (i.e., proposing unplanned homes and businesses) or indirectly (i.e., through extension of roads or other infrastructure) induce substantial growth in the City of Fremont. Therefore, the proposed project would have **no impact** related to population and housing, and this impact will not be further addressed in the EIR.

<u>Operation – Variant:</u> **No Impact**

Population and Housing:

Under the variant, the residential density would be 36 dwelling units per acre[17] ; therefore, the residential density would comply with the 30 dwelling unit per acre minimum density envisioned for the project site under the City's General Plan. The variant would increase the population in the City of Fremont by approximately 513 persons.[18]

Employment:

The variant would include 26,000 SF of retail uses that would provide employment opportunities to approximately 65 persons. [19] Similar to the proposed project, workers would likely come from the available local labor pool and new jobs generated by the variant would not result in substantial indirect population growth.

Extension of Roads and Infrastructure:

The proposed roads and infrastructure for the variant would be identical to the proposed project, and would not include extensions of infrastructure or oversized infrastructure beyond what is needed to serve the variant.

Conclusion

For these reasons, the variant would not directly (i.e., proposing unplanned homes and businesses) or indirectly (i.e., through extension of roads or other infrastructure) induce substantial growth in the City of Fremont. Therefore, the variant would have **no impact** related to population and housing, and this impact will not be further addressed in the EIR.

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[17] Based on 165 dwelling units (72 townhomes and 93 apartments), and a net project site area of 4.608 acres (excludes public street dedications, but includes fire station site which would be annexed into overall project site under the variant), the residential density of the variant would be 35.81 dwelling units per acre, which rounds to 36 dwelling units per acre.

[18] Based on the DOF's 2017 estimate of 3.11 persons per dwelling unit and 165 proposed dwelling units, the variant is estimated to accommodate 513 new residents at buildout.

[19] Using Keyser Marston Associates, Inc. estimate of 400 SF per employee, and the proposed 26,000 SF of retail space, the variant is estimated to provide employment opportunities for approximately 65 employees.

13b-13c) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Construction and Operation – Proposed Project or Variant: **No Impact**

The property contains one unoccupied house, which would be demolished under the proposed project or variant. As such, the proposed project or variant would not involve displacement of a substantial number of existing houses or people that would necessitate construction of replacement housing elsewhere. There would be **no impact** from construction or operation of the proposed project or variant, and these impacts will not be further addressed in the EIR.

References:

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4.14 Public Services

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
14.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?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☒	☐

Setting:

Fire Protection Services

Fire protection services for the project site are provided by the City of Fremont Fire Department. The department has 11 fire stations that are responsible for providing fire, medical, rescue and life safety emergency services within the City of Fremont. Additionally, the department is responsible for reviewing plans of new commercial and residential developments and conducting inspections to ensure buildings comply with the fire code. In 2016, the department responded to 434 fire and 10,216 medical emergencies. According to their 2015 Annual Report, the average response time in town is 3:59 minutes (City of Fremont, 2016). The nearest fire station to the project site is Station 6 at 4355 Central Avenue, approximately 0.5 mile away (City of Fremont, 2017).

Police Protection Services

The Fremont Police Department provides law enforcement services to the project site. The department deploys patrol officers from three separate zones; the project site is in Zone 2. The department has one police station at 2000 Stevenson Boulevard, which is approximately 3 miles southeast of the site.

Schools

The project site is within the service boundaries of Fremont Unified School District (FUSD). In enrollment year 2016-2017, the student enrollment exceeded the District’s capacity at all school levels, by 323 students at elementary level, 305 students at junior high level, and 224 students at high school level (Cooperative Strategies, 2017). The total student enrolment in the district (all levels combined) exceeded available capacity by approximately 2.5 percent. The project site is in an unassigned area (FUSD, no date). Unassigned areas are typically those with crowded schools; the District creates more flexibility by allowing students in these areas to attend nearby schools that are not impacted. Students living near overcrowded schools were assigned to the nearest schools with available capacity. Thus, the nearest schools in FUSD that have available capacity would serve the project site (FUSD, 2018). As of the 2016-17 school year, the closest schools to the project site (Parkmont Elementary, Centerville Junior High, and Washington High School) had available capacity (California Department of Education, 2018).

Parks and Other Public Facilities

Parks in the project vicinity include Los Cerritos Community Park, approximately 0.7 mile to the north; Centerville Community Park, approximately 0.9 mile to the southeast; Plaza Park, approximately 1 mile to the southwest; and Westridge Park, approximately 1 mile to the northwest. The City maintains a parkland standard of 5 acres of parkland per 1,000 residents, and development impact fees for new residential development are levied based on maintaining this ratio (General Plan Policy 8-1.2) (City of Fremont, 2011). Other public facilities in the vicinity include the California Department of Motor Vehicles at 4287 Central Avenue, approximately 0.5 mile to the south, and the Fremont Main Library at 2400 Stevenson Boulevard, approximately 2.5 miles to the south.

Discussion:

14a.i-14a.ii) 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 fire or police services?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Construction of the proposed project or variant could result in a small, temporary increase in the demand for fire suppression, emergency medical, and police services, due the temporary presence of construction personnel in the area. Construction is anticipated to occur over approximately 18 months, between February 2019 and October 2020. Project staffing levels for construction would vary with on-site activities; an estimated average of 100 construction employees would be on the site at any one time, with up to 400 workers during peak periods. As discussed in Section 4.13, “Population and Housing,” existing uses at the project site are estimated to employ approximately 130 people, therefore construction of the project or variant would not be expected to substantially increase the number of people or the service demands for fire, medical emergency, and police services from existing conditions.

Federal and State worker safety regulations would be adhered to, in order to minimize the likelihood of workplace injuries and accidents requiring emergency medical attention. Typical fire and safety precautions would be taken, such as prohibiting on-site fires; reporting any fires, even if they have been extinguished; discarding any smoking materials in approved containers; maintaining access to emergency vehicles; and maintaining access to fire hydrants, emergency water tanks, and emergency turnouts. Construction of the proposed project or variant would not require new or physically altered fire or police facilities to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. Thus, construction-related impacts of the proposed project or variant would be **less than significant**, and these impacts will not be further addressed in the EIR.

Operation - Proposed Project: **Less-than-Significant Impact**

As discussed in Section 4.13, “Population and Housing,” the proposed project would increase the number of residents in the area by an estimated 423 persons[20] and would be expected to employ approximately 71 people.[21] The project site is an infill site with existing services available, and as discussed in Section 4.10, “Land Use and Planning,” the proposed density of development for the proposed project is consistent with that envisioned under the General Plan. Because the proposed project is not expected to generate an increase in demand for fire suppression, medical emergency, or police services, and existing public services are available to serve the area, the proposed project would not require the construction of new or altered fire protection or police facilities that could, in turn, result in physical environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for fire and police services. Fire hazards are not expected to increase as a result of the proposed project, since it would be required to comply with the California Building Code, Fire Code, Electrical Code, and

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[20] Calculated using DOF estimate of 3.11 people per household average. 3.11 (64 apartments + 72 townhouses) equals 423 persons. Sum of components may not equal the total value due to rounding.

[21] Calculated using Keyser Marston Associates, Inc. estimate of 400 SF per employee. 28,300 SF divided by 400 SF equals 71 persons. Sum of components may not equal the total value due to rounding.

Mechanical Code. All proposed development would be reviewed by the Fire Department to ensure adequacy of access for fire and emergency vehicles and apparatus, appropriateness of design features (setbacks, clearances, etc.), and compliance with technical code requirements (City of Fremont, 2011). Operation of the proposed project would not require new or physically altered fire or police facilities to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. Thus, impact of the proposed project would be **less than significant**, and this impact will not be further addressed in the EIR.

Operation – Variant: **Less-than-Significant Impact**

As discussed in Section 4.13, "Population and Housing," the variant would increase the number of residents by approximately 504 persons,[22] and would provide employment for approximately 65 employees.[23] Similar to the proposed project, development under the variant would be consistent with the General Plan and would not be expected to generate an increase in demand for fire suppression, medical emergency, or police services that would necessitate the construction of new or altered fire protection or police facilities that could, in turn, result in significant physical environmental impacts.

The variant would be subject to the same code requirements and design review process as the proposed project, and therefore would not be expected to increase fire hazards at the site. The operational impact of the variant would be **less than significant**, and this impact will not be further addressed in the EIR.

14a.iii) 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 schools?

Construction – Proposed Project or Variant: **No Impact**

As described in Impacts 14a.i) and 14a.ii), construction activities for the proposed project or variant are anticipated to take approximately 18 months. Workers would likely come from the local labor pool and not relocate to the City from other areas, and therefore would not increase enrollment in local schools. As such, there would be **no impact** on school facilities from construction of the proposed project or variant that would trigger the need for new or modified school facilities, and this impact will not be further addressed in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

The proposed project would develop the site with 72 townhouses and 64 apartments, for a total of 136 residential units. Based on the FUSD's student generation rates, the estimated future demand for schools as a result of the proposed development under the proposed project would be approximately 54 students over all grade levels. The variant would develop the site with 72 townhouses and 93 apartments, for a total of 165 residential units. The estimated future demand for schools as a result of the proposed development under the variant would be approximately 63 students over all grade levels. Table 4.14-1 shows the breakdown by grade level for both the proposed project and the variant.

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[22] Calculated using DOF (2017) estimate of 3.11 people per household average. 3.11 (90 apartments+ 72 townhouses) equals 504. Sum of components may not equal the total value due to rounding.

[23] Calculated using Keyser Marston Associates, Inc. (2016) estimate of 400 SF per employee. 26,000 SF divided by 400 SF equals 65 persons. Sum of components may not equal the total value due to rounding.

Table 4.14-1 Estimated Generation of School Students

Grade Level	Student Generation Rates[1]		Estimated Number of New Students	
	For Multi-Family Attached Units	For Single-Family Attached Units	From Proposed Project	From Variant
K-6 (Elementary)	0.1767	0.3048	33	38
7-8 (Middle)	0.0500	0.0706	8	10
9-12 (High)	0.0533	0.1338	13	15
Total Estimated Student Generation[2]:			**54**	**63**

[1] *Student Generation Rates taken from /Cooperative Strategies, 2017.*

[2] *Sum of components may not equal the total value due to rounding.*

The project site is within an unassigned area (FUSD, no date). According to FUSD, the students generated by the proposed project or variant would be accommodated by the nearest school in the district with available space (FUSD, 2018).

Senate Bill 50 (Chapter 407, Statutes of 1998) instituted a school facility program by which school districts can levy fees for the purpose of construction or reconstruction of school facilities. The FUSD levies Level III developer fees (Association of California School Administrators, 2018). Effective May 1, 2017, the Level III fees will be $21.11 per square foot for residential construction (FUSD, 2017). The applicant would pay the State-mandated school impact fees to the FUSD that are levied at the time of development. The California Legislature has declared that payment of the State-mandated school impact fee is deemed to be full and adequate mitigation under CEQA (California Government Code Section 65996).

Because the applicant would pay State-mandated school impact fees, the operational impact of the proposed project or variant on school facilities would be **less than significant**, and this impact will not be further addressed in the EIR.

14a)(iv)-14a)(v) 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 parks or other public facilities?

Construction – Proposed Project or Variant: **No Impact**

The average number of construction workers estimated to implement project improvements would be relatively small (approximately 100), and construction activities would occur over a limited period (approximately 18 months). It is not anticipated that workers would relocate to the project area from other areas in the county, so that there would be no increase in the use of existing parks or other public facilities. In addition, construction of the proposed project would not increase the population of the project area such that construction of new parks is required to meet the County's parkland standard.

Thus, there would be **no impact** on the physical environment associated with the provision of public parks or other public facilities. This impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

The City requires all new residential development to dedicate or develop parkland or pay in-lieu fees consistent with State law and the City's impact fee program (City of Fremont, 2011). The City's goal for park acreage is to have 5 acres of parkland per 1,000 residents. Based on the estimated 423 new residents generated by the proposed project, approximately 2 acres of parkland would be required to maintain the City's parkland standard. Based on the estimated 504 new residents generated by the variant, approximately 2.5 acres of parkland would be required to maintain the City's parkland standard.

Both the proposed project and variant would include common open space/park areas for the residents in the form of a children's play area, outdoor space at the community center, and community gardens. In addition, the applicant would also pay fees in-lieu of developing additional new recreational facilities. Because the proposed project and variant would meet the parkland standard through provision of recreational facilities and payment of fees, there would not be a significant increased demand for other nearby public recreational facilities.

Therefore, operation of the proposed project or variant would have a **less-than-significant impact** on parks or other public facilities, and these impacts will not be further addressed in the EIR.

References:

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4.15 Recreation

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
15.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 be accelerated?	☐	☐	☒	☐
15.b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Setting:

The City of Fremont's Recreation Services Division provides City of Fremont residents and visitors with parks and recreational facilities and services. Recreational facilities throughout the city include four community centers, three program centers, various parks, a sports complex, tennis center, Fremont Park Golf Club, and Olive Hyde Art Gallery. Throughout the year, the Recreation Services Division provides classes for residents and summer camps for children (City of Fremont, 2018a). The Park Maintenance and Urban Forestry Division is responsible for maintaining the City's parks (City of Fremont, 2018b). The following recreational facilities are within close proximity to the proposed project:

- Los Cerritos Park and the Los Cerritos Community Center are approximately 0.5 mile northwest of the project site. The park is classified as a Neighborhood Park by the City of Fremont and offers basketball courts, baseball diamonds, playground area, and picnic areas. The community center houses a multi-purpose room and meeting room available for event rental (City of Fremont, 2018c).
- Alameda Creek Regional Trail is approximately 0.6 mile north of the project site. The trail parallels Alameda Creek and runs westward about 12 miles. The southern part of the trail is used for biking, running and walking, while the northern trail is used by equestrian riders (East Bay Regional Park District, 2018a).
- Quarry Lakes Regional Recreation Area is approximately 0.6 mile north of the project site. This area provides aquatic recreation (e.g., swimming, boating, fishing, etc.), picnicking, and hiking (East Bay Regional Park District, 2018b).

Discussion:

15a) 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?

Construction – Proposed Project or Variant: **No Impact**

The number of workers required to construct the proposed project or variant would be approximately 100 workers on most days, up to a maximum of 400 at peak periods, over a construction period of approximately 18 months. Workers would likely come from the local labor pool and would not be expected to relocate to the City from other areas, and therefore, there would be no increase in ongoing and frequent use of existing parks or recreational facilities during construction that might cause or accelerate substantial physical deterioration of these facilities. There would be **no impact** from construction of the proposed project or variant and this impact will not be addressed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

As discussed in Section 4.13, "Population and Housing," the proposed project would house approximately 423 residents and provide employment opportunities for approximately 71 people. The variant would house approximately 504 persons and 65 employees (Keyser Marston Associates, 2016).

The anticipated population density under both the proposed project and variant are within the envelope envisioned by the General Plan, and would not result in a substantial increase in the use of existing parks and recreational facilities such that physical deterioration would be accelerated, or additional recreational facilities would need to be built (City of Fremont, 2011). In addition, the City requires new residential development to dedicate or develop parkland or pay in-lieu fees consistent with State law and the City's impact fee program, which would be used to maintain the City's goal of 5 acres of parkland per 1,000 residents (City of Fremont, 2011), which would decrease the likelihood of a substantial increase in use of existing parks and facilities.

Therefore, physical deterioration of existing recreational facilities would not be accelerated by the population increase at the project site under the proposed project or variant. Because the population growth would be consistent with the General Plan, the proposed project and variant would have a **less-than-significant** impact on parks and recreational facilities, and these impacts will not be discussed further in the EIR.

15b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Both the proposed project and variant would include construction of open space areas and recreational facilities for use by residents and their visitors, including a community garden, children's playground, and community pool/clubhouse area. The impacts of construction activities, including construction of these recreational facilities, are addressed throughout this Initial Study as part of the proposed project or variant. These impacts will not be discussed further in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

As discussed above under Impacts 14.a.iv) and 15a), the anticipated population density under both the proposed project and variant are within the envelope envisioned by the General Plan, and the applicant would dedicate or develop parkland, or pay in-lieu fees consistent with State law and the City's impact fee program. As such, operation of the proposed project or variant would not result in a substantial increase in demand for parks and recreational facilities that would require the construction or expansion of recreational facilities. The impact would be **less than significant**, and will not be addressed further in the EIR.

References:

City of Fremont, 2011. City of Fremont General Plan, adopted December, 201.1

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4.16 Transportation and Traffic

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
16.a. Conflict with an applicable plan, ordinances or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
16.b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
16.c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
16.d. Substantially increase hazards due to design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
16.e. Result in inadequate emergency access?	☐	☒	☐	☐
16.f. Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

Setting:

The project site is in the Centerville area of Fremont at the east corner of Fremont and Peralta boulevards. The site has its primary frontage along Fremont Boulevard, with secondary frontages along Parish Way, Peralta Boulevard, and Jason Way. The site is on Centerville's main commercial strip along Fremont Boulevard near Fremont (Centerville) Station, and the surrounding area is characterized by a variety of uses including residential, retail/services, institutional, light industrial, and other uses.

Street Network

Primary local roadway access for the site is provided by Fremont Boulevard and Peralta Boulevard, segments both of which (together with Thornton Avenue) comprise the portion of State Route (SR) 84 through most of Fremont. Additional regional roadway access is provided by I-880 (via SR 84/Thornton Avenue and Mowry Avenue), I-680 (via Washington Boulevard/Fremont Boulevard), and SR 238/Mission Boulevard. In the vicinity of the project site, the City of Fremont General Plan classifies Fremont Boulevard and Paseo Padre Parkway, as well as Thornton Avenue west of Fremont Boulevard, as "Primary Arterial" roadways; Peralta Boulevard and Central Avenue, as well as Thornton Avenue east of Fremont Boulevard, are classified as "Minor Arterial" roadways (City of Fremont, 2011a). Average daily traffic (ADT) along Fremont Boulevard adjacent to the project site (between Peralta Boulevard and Central Avenue) is approximately 22,500 vehicles (City of Fremont, 2015).

Transit Services

The project site is approximately 300 feet southeast of the Fremont (Centerville) Station, which is along the northeast side of Fremont Boulevard between Peralta Boulevard and Bonde Way. The station is served by regional/intercity trains on Amtrak's *Capitol Corridor* service and commuter trains on the ACE. The nearest San Francisco Bay Area Rapid Transit District (BART) station is Fremont Station, approximately 1.5 miles east of the project site in Central Fremont and accessible by local bus service operated by the Alameda–Contra Costa Transit District (AC Transit).

Fremont Boulevard is a key corridor for AC Transit service, with base service provided by the following three routes, all of which have their nearest stops to the project site along Fremont Boulevard at Peralta Boulevard (in the southbound direction) and Parish Avenue (in the northbound direction).

- Line 99 connects BART stations at Hayward, South Hayward, Union City, and Fremont, with a route via Mission Boulevard, Decoto Road, Fremont Boulevard, and Walnut Avenue, operating seven days a week with 20-minute headways.
- Line 210 connects Ohlone College and Union Landing Transit Center via Fremont Boulevard and Washington Boulevard, operating seven days a week with 30-minute headways.
- "AllNighter" Line 801 provides late night and early morning service, paralleling BART's Fremont line and connecting Oakland, San Leandro, Hayward, Union City, and Fremont via 11th Street/12th Street, East 14th Street/International Boulevard, Mission Boulevard, Decoto Road, Fremont Boulevard, and Walnut Avenue. The route operates with hourly headways seven days a week.

AC Transit also operates a weekday, commute-only Transbay route, Line U, along Fremont Boulevard, connecting BART's Fremont Station and Stanford University in Palo Alto via the Dumbarton Bridge, operating in the westbound direction during the morning commute period and in the eastbound direction during the afternoon/evening commute period, generally at headways of 30–60 minutes. The nearest stops to the project site are near Fremont (Centerville) Station, at Bonde Way (in the eastbound direction) and just east of the station crossing (in the westbound direction).

One additional local route, Line 251, operates within walking distance of the project site along Paseo Padre Parkway and Thornton Avenue, connecting BART's Fremont Station with Ohlone College's Newark Campus with hourly service seven days a week. The nearest stops to the project site are along Thornton Avenue at Fremont Boulevard.[24] There are no other existing transit services or specific planned transit improvements in the immediate vicinity of the project site (AC Transit, 2015; 2016; 2018).

Bicycle and Pedestrian Facilities

In the vicinity of the project site, Class II bikeways (bicycle lanes) are provided along Fremont Boulevard (transitioning to Class III bikeways [shared lanes] north of Peralta Boulevard), Central Avenue, Thornton Avenue, and Paseo Padre Parkway.[25] Other Class III bikeways near the project site include Peralta Boulevard, Dusterberry Way, and Post Street/Bonde Way. Curbs and sidewalks are present along all site frontages, but are discontinuous on some street segments in the surrounding area, such as Parish Avenue and Peralta Boulevard east of the site. There are moderate levels of pedestrian activity due to the project site's location within the town center and main commercial strip of Centerville and the proximity of Centerville Station and other nearby transit services.

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[24] AC Transit also operates one nearby Service to Schools route, Line 625, serving Centerville Junior High School and Washington High School. The service is primarily intended for students attending these schools, however, and only operates on weekdays, with one roundtrip daily serving Centerville Junior High School (to the school in the morning and from the school, beginning at Central Avenue, in the afternoon).

[25] Includes buffered Class II facilities on some segments, including Fremont Boulevard south of Peralta Boulevard and Paseo Padre Parkway north of Peralta Boulevard.

Regulatory Setting:

Congestion Management Plan:

The Alameda County Transportation Commission's (ACTC) Congestion Management Program (CMP) describes performance measures related to the circulation system (ACTC, 2017), as summarized below, although only some of these would be directly applicable to the project. These performance measures are described in further detail in the CMP.

- Multimodal accessibility and transportation/land use integration (mode share – walk trips, mode share – school trips, mode share – work trips, land use approvals in priority development areas (PDAs), land use approvals within half-mile of transit);
- Roadways (travel times, vehicle throughput, person throughput, travel speeds / levels of service, high occupancy vehicle (HOV) or high occupancy toll (HOT) lane travel time competitiveness, person-hours of delay, bottlenecks and queues, pavement condition index, collisions and collision rate, travel reliability index, and intelligent transport system (ITS) infrastructure);
- Transit service (corridor-level transit speed, systemwide travel speed, transit system reliability, ridership, service utilization, load factor, on-time performance, cost effectiveness, service interruptions, transit fleet age, and public transit accessibility);
- Bicycling (counts at multiple locations, collisions involving bicyclists, bicyclist collision severity, local master plan adoption, miles of network built, community members participating in programs, and cyclist comfort and safety);
- Pedestrians/walking (counts at multiple locations, collisions involving pedestrians, pedestrian collision severity, local master plan adoption, number of pedestrian projects complete, and pedestrian comfort and safety);
- Goods movement (GHG emissions, air quality, equity, travel-time delay, buffer time index, truck-involved crashes, rail collisions, freight infrastructure conditions, resiliency, use of innovative technology, multimodal connectivity and redundancy, compatibility with land-use decisions, jobs and economic impact, and truck route accommodation index); and,
- Environment, equity, and health (activity center accessibility, physical activity, GHG emissions, and $PM_{2.5}$ emissions).

Standard practice exercised by the City of Fremont typically requires a detailed transportation impact analysis (TIA) for projects generating 100 vehicle-trips or more during the weekday PM peak hour. This threshold is also consistent with the threshold used by ACTC for determining whether a land use project requires preparation of a TIA to evaluate potential impacts to regional roadways in the surrounding area that are designated as part of the CMP network. In the vicinity of the project site, Fremont Boulevard, Paseo Padre Parkway (south of Peralta Boulevard), and SR 84 (Peralta Boulevard/Fremont Boulevard/Thornton Avenue) are designated as part of the CMP roadway network.

The CMP also identifies a transit monitoring network, a subset of the CMP roadway network intended for monitoring transit vehicle performance standards. Fremont Boulevard is the only portion of the transit monitoring network in the vicinity of the project site.

General Plan:

The General Plan establishes variable level of service (LOS) standards for traffic speed and travel delay based on street function, land use, and existing modes of transportation (City of Fremont, 2011). The City of Fremont's LOS standard for signalized intersections is generally LOS D. However, for signalized intersections on CMP routes of regional significance and those located within the City Center, Town Centers, Irvington and Warm Springs/South Fremont BART Station areas, and Priority Development Areas (PDAs), a level of service standard for signalized intersections of LOS E or F may be acceptable when balancing efficient vehicular operations with the goal of increasing transit use, bicycling, and walking. All four of the signalized intersections evaluated in the TIA are CMP intersections, and two of them (Fremont Boulevard/Thornton Avenue, and Fremont Boulevard/Peralta Boulevard) are also located within a Town Center, therefore LOS E is the acceptable LOS standard for these four intersections.

According to City of Fremont standards, for signalized intersections, a project is considered to create a significant adverse impact on traffic conditions if for either peak hour:

1. The level of service at the intersection degrades from its LOS standard or better under no project conditions to an unacceptable LOS under project conditions, or
2. The intersection is already operating below its LOS standard under no project conditions, and the addition of the project causes the intersection average control delay to increase by more than 4 seconds per vehicle.

For unsignalized intersections, the City uses a threshold of significance[26] based on percentage of project's traffic contribution and whether the project meets a peak-hour signal warrant. For unsignalized intersections, a project would create a significant adverse impact on traffic conditions if the project traffic contributes at least five percent of the total traffic volume at the intersection and if the addition of project traffic results in the intersection meeting the California Manual on Uniform Traffic Control Devices (MUTCD) peak-hour signal warrant.

Pedestrian Master Plan:

In addition to the performance measures described above, the City of Fremont Pedestrian Master Plan has specific quantifiable goals related to the effectiveness and performance of the pedestrian circulation system, including increasing pedestrian trips (as a percentage of all trips) from nine percent in 2007 to 15 percent by 2025, and reducing annual reported collisions between pedestrians and motor vehicles from 44.4 (five-year average for 2003–2007) to 22 by 2025 (City of Fremont, 2016).

Draft Bicycle Master Plan:

The City of Fremont Draft Bicycle Master Plan (City of Fremont, 2017) includes goals, policies, and actions that create the foundation for a safe, comfortable, convenient, and connected bicycle network for people of all ages and abilities. The plan describes a vision for the City's bikeway network—the All Ages and Abilities (AAA) Vision Network—that proposes several bikeway improvements in the vicinity of the project site, including Class IV facilities (separated bikeway) along Fremont Boulevard, Peralta Boulevard (east of Fremont Boulevard), Thornton Avenue, and Paseo Padre Parkway; Class II facilities along Peralta Boulevard (west of Fremont Boulevard) and Dusterberry Way; and Class III "neighborhood bikeway" facilities along Eggers Drive and several other streets. In particular, the plan identifies new and/or improved bikeways along several of these corridors as part of the 16 priority projects to be implemented over the next five years as the backbone of the AAA Vision Network:

- Fremont Boulevard between Paseo Padre Parkway and Blacow Road, and Washington Boulevard between Fremont Boulevard and Starr Street;
- Peralta Boulevard/Fremont Boulevard/Central Avenue between Mowry Avenue and I-880; and
- Paseo Padre Parkway between Peralta Boulevard and Driscoll Road.

Standard Details for Improvements in Public Right of Way:

The City's Standard Details for Improvements in Public Right of Way (City of Fremont, 2014) provides guidance and specifications for projects within public right of way, including for sidewalks, driveways, signs, landscaping, and streetlights.

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[26] The Traffic Impact Analysis (Appendix D) acknowledges that the City of Fremont does not have formally adopted impact criteria to apply to unsignalized intersections and that this is common for many jurisdictions because it is generally not the unsignalized intersections that limit the overall capacity of a roadway. However, the study indicates that the analysis of unsignalized intersections is typically evaluated by considering overall level of service, approach delay, and movement delay, availability of alternate routes, intersection spacing, and an analysis of traffic signal warrants. The use of this threshold of significance for unsignalized intersections, although not a formally adopted impact criteria, is used by the City of Fremont within this document, and other CEQA documents.

Discussion:

16a-16b) Would the project exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? Would the project conflict with an applicable congestion management program, including, but not limited to a level of service standard standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

The average daily traffic generated by construction activities is anticipated to be less than the estimated daily traffic generated by the project upon completion of construction and full occupancy of the site. On an average day, there would be approximately 100 construction workers at the site, increasing to a maximum of approximately 400 workers on peak days. The proposed project would include 136 residential units, which would result in approximately 423 residents, as well as various retail and commercial uses. The variant would include 165 residential units (approximately 513 residents) with slightly more retail/commercial uses. In either case, however, the expected population of the site at full occupancy—including residents (accounting for household size including parents/guardians, children, and others), employees, customers, and other regular users of the site—would likely be substantially larger than the estimated number of construction workers. For reference, and as discussed further below, the completed project and variant at full occupancy would each generate over 2,000 daily person-trips across all land uses on a typical weekday.

Construction activities at the site would also generate heavy vehicle trips, including trucks for off-site soil export (maximum of 50 daily trips), heavy equipment transport, or materials deliveries. It is expected that trucks would use a combination of major arterial roadways (e.g., Fremont Boulevard, Thornton Avenue) and freeways (e.g., I-680, I-880) when traveling to and from the site, and would be spread out over the course of the work day. Therefore, the majority of construction-related traffic during the weekday AM and PM peak periods (typically, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., respectively) would be associated with construction worker trips. The impact of construction-related traffic would be a temporary and intermittent lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. This impact would be potentially significant; however, Mitigation Measure TRA-1 is proposed to reduce the impacts of construction-related traffic.

Mitigation Measure TRA-1: Construction Traffic Management Plan.

The applicant and its construction contractor shall prepare and implement a traffic management plan for construction activities that may affect road rights-of-way during construction, to reduce traffic congestion during construction and facilitate emergency vehicle access along affected roadways. The traffic management plan must follow applicable City of Fremont Standard Details and Specifications (whichever editions are current as of the date of construction), which include minimum requirements for:

- *Conformance with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans;*
- *No lane closures during weekends and weekdays before 8:30 am or after 4:00 pm;*
- *72-hour notice prior to start of work to all affected parties (businesses, residents, agencies, schools, etc.);*
- *Removal/coverage of all conflicting signs, striping, or pavement markings when work is completed.*
- *Maintaining access to private property at all times;*
- *Minimum of one paved traffic lane no less than 10-feet wide; and*
- *All hauling on City streets shall be on adopted truck routes.*

The plan shall be in effect throughout the duration of project-related construction activities. The traffic management plan shall be submitted to the City of Fremont Department of Public Works for review and approval prior to approval of improvement plans and issuance of building permits where roadway improvements may cause impacts on traffic. The plan shall include the following items to address requirements above:

- *A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours; detour signs (if required); traffic coning and other lane closure devices; warning signs; use of flag persons to direct traffic flows (when needed); and designated construction access routes.*
- *Identification of haul routes for movement of construction vehicles that would minimize impacts on traffic, transit, bicycle, and pedestrian circulation and safety, specifically along those streets in the project area.*
- *Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.*
- *Provisions for monitoring surface streets used for haul routes so that any damage and debris attributable to haul trucks can be identified and corrected by the applicant.*
- *Methods to maintain emergency vehicle access, as well as local access to/from surrounding properties, at all times during project construction, with detours as necessary during road closures.*

Implementation of Mitigation Measure TRA-1 would reduce the potentially significant impacts associated with construction-related traffic to a **less-than-significant** level by requiring preparation and implementation of a construction traffic management plan. These impacts will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

The applicable plans, ordinances, policies, and congestion management programs relating to the proposed project or variant are summarized under “Regulatory Setting,” above. The following discussion analyzes the impacts of the proposed project and variant related to travel demand and impacts on the circulation system, as well as site access.

Travel Demand

The transportation impact analysis (TIA), included as Appendix C to this Initial Study, assessed traffic generation from the proposed project and variant, based on trip generation rates and assumptions published by the Institute of Transportation Engineers (ITE). The TIA found that the proposed project would generate approximately 2,017 weekday daily vehicle-trips (including 170 vehicle-trips during the weekday AM peak hour and 155 vehicle-trips during the weekday PM peak hour), while the variant would generate approximately 2,093 weekday daily vehicle-trips (including 154 vehicle-trips during the weekday AM peak hour and 143 vehicle-trips during the weekday PM peak hour). The proposed project generated more peak-hour trips than the variant, due to the ‘worst case’ assumption that the future use of the fire station under the proposed project may include a children’s daycare facility.

Taking into account net traffic generation at the project site (i.e., new trips less those that would be removed with demolition of the existing uses), both the proposed project and variant would result in a net reduction of approximately 96 weekday daily vehicle-trips and 20 weekday daily vehicle-trips, respectively. During the weekday peak hours, the proposed project and variant would each result in a modest net increase in vehicle traffic compared to existing conditions: 125 AM peak hour vehicle-trips and 12 PM peak hour vehicle-trips for the proposed project and 109 AM peak hour vehicle-trips and 0 PM peak hour vehicle-trips for the variant (Appendix C).

Therefore, both the proposed project and variant would result in a net number of vehicle trips below the City and ACTC thresholds for requiring a detailed TIA to evaluate potential transportation-related impacts (100 vehicle-trips during the PM peak hour).

Although not explicitly required for compliance with City and ACTC thresholds, the TIA for the project included an analysis of intersection LOS during the weekday AM peak hour at the following eight intersections in the vicinity of the project site:

1. Fremont Boulevard/Thornton Avenue;
2. Fremont Boulevard/Peralta Boulevard;
3. Fremont Boulevard/Central Avenue;
4. Paseo Padre Parkway/Peralta Boulevard;
5. Fremont Boulevard/Parish Avenue;
6. Jason Way/Peralta Boulevard;
7. Parish Avenue/Peralta Boulevard; and
8. Jason Way/Parish Avenue.

The analysis considered three main analysis scenarios—existing conditions, background conditions (existing conditions with the addition of approved, but not yet constructed projects), and cumulative conditions (year 2035, with buildout of the City of Fremont General Plan)—both with and without the project/variant. The results of this analysis are summarized in Table 4.16-1.

Table 4.16-1 Intersection Level of Service Summary

Intersection	Existing						Background						Cumulative					
	No Project		With Project				No Project		With Project				No Project		With Project			
			Proposed Project		Variant				Proposed Project		Variant				Proposed Project		Variant	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersections																		
1 Fremont/Thornton	D	37.9	D	38.0	D	38.0	D	38.1	D	38.2	D	38.2	C	28.6	C	29.4	C	29.2
2 Fremont/Peralta	C	27.0	C	27.2	C	27.3	C	27.3	C	27.5	C	27.5	C	32.7	C	32.9	C	32.9
3 Fremont/Central	C	34.8	C	34.8	C	34.8	D	35.1	D	35.5	D	35.5	E	71.3	E	75.5	E	75.3
4 Paseo Padre/Peralta	D	46.4	D	46.7	D	46.6	D	46.8	D	47.5	D	47.3	**F**	**81.9**	**F**	**83.3**	**F**	**83.0**
Unsignalized Intersections																		
5 Fremont/Parish	A F	4.2 54.9	B F	14.8 152.2	C F	15.5 156.6	A F	6.1 77.7	C F	21.0 --	C F	21.7 --	C F	15.7 --	E F	44.2 --	E F	45.6 --
6 Jason/Peralta	A B	0.1 13.8	A C	0.4 16.1	A C	0.5 16.4	A B	0.1 14.0	A C	0.4 16.3	A C	0.5 16.6	A B	0.1 14.1	A C	0.3 17.0	A C	0.3 17.4
7 Parish/Peralta	A D	4.5 33.0	A E	4.8 35.2	A D	4.7 34.6	A E	4.7 35.4	A E	5.0 38.0	A E	5.0 37.3	A D	2.7 32.2	A D	2.8 33.4	A D	2.8 33.1
8 Jason/Parish	A B	0.3 10.3	A B	0.7 10.3	A B	0.8 10.2	A B	0.3 10.4	A B	0.7 10.4	A B	0.8 10.2	A B	0.3 10.5	A B	0.7 10.5	A B	0.8 10.3

Source: Hexagon Transportation Consultants, Inc., 2018. Transportation Impact Analysis (contained in Appendix C).
Intersections analyzed according to the Highway Capacity Manual (HCM) methodology. Reported delay for signalized intersections represents average control delay for the entire intersection; reported delay for unsignalized intersections represents intersection average delay (top value) and average delay for the worst-performing approach (bottom value).
For oversaturated LOS F conditions, delay value is not meaningful or reflective of actual conditions and has not been reported.
***Bold** indicates conditions in excess of the acceptable LOS standard (for signalized intersections only) established by the City. The City has not established formal LOS significance criteria for unsignalized intersections.*

As shown in Table 4.16-1, all signalized study intersections currently operate (under existing conditions) or would operate (under background conditions) at the City of Fremont's acceptable LOS standard of LOS E or better during the weekday AM peak hour, even with the proposed project or variant. Under cumulative conditions with and without the proposed project or variant, the Paseo Padre Parkway/Peralta Boulevard intersection would operate at LOS F during the weekday AM peak hour, which is considered unacceptable by City standards. However, neither the proposed project nor the variant would cause the intersection average delay to increase by more than four seconds. Therefore, the proposed project or variant would not contribute to a significant impact at this intersection (refer to Appendix C). It should also be noted that LOS at the Fremont Boulevard/Thornton Avenue intersection during the weekday AM peak hour would improve under cumulative conditions relative to existing and background conditions due to planned improvements that would offset future increases in vehicle traffic.

Among unsignalized intersections, the westbound Parish Avenue approach at the Fremont Boulevard/Parish Avenue intersection currently operates at LOS F during the weekday AM peak hour and would continue to do so under background and cumulative conditions, with or without the proposed project or variant. The City considers that a project would have a significant impact if project traffic would contribute at least five percent of the total traffic, and if the intersection would meet the peak-hour signal warrant. Applying these significance criteria to the project, the Fremont Boulevard/Parish Avenue intersection would meet the MUTCD peak hour volume signal warrant during the weekday AM peak hour with the proposed project or variant under existing, background, and cumulative conditions, but neither the proposed project nor the variant would contribute more than five percent of the total peak hour traffic[27] at this intersection. Although the impact at this intersection would therefore be less than significant, the TIA (Appendix C) recommends installation of a traffic signal at this intersection, as described in further detail below under “Site Access.” The applicant has agreed to a condition of approval to install the signal as recommended in the TIA for safety considerations, for both the proposed project and variant (see Section 2.5, “Access and Circulation”). Separately, the Parish Avenue/Peralta Boulevard intersection would operate at LOS E during the weekday AM peak hour under existing conditions with the proposed project (but not with the variant) and under background conditions with the proposed project or the variant. However, the impact at this intersection would be less than significant because the intersection would not meet the peak-hour signal warrant under any of these three scenarios.

The proposed project or variant would also be subject to the City of Fremont’s traffic impact fee, which would be directed towards funding various intersection and roadway improvements identified in the General Plan and would further reduce any potential effects of the project on the circulation system (City of Fremont, 2018).

Site Access:

As described in Section 2.5, “Access and Circulation,” and illustrated in Figure 2-4, proposed site access would primarily be provided by a main driveway along Fremont Boulevard and a secondary driveway along Parish Avenue, the latter of which would continue through the site as the primary internal roadway running parallel to Fremont Boulevard behind (north of) the proposed mixed-use buildings. This internal roadway would intersect the main driveway and provide access to the below-grade garage and outdoor surface parking spaces serving Building A and Building B. Several smaller internal roadways would intersect the primary internal roadway, providing direct access to the townhomes in the interior of the project site and continuing through to Jason Way, which would be extended through the site (with full public access) to intersect Peralta Boulevard. A separate gated access for waste collection would be provided at the northwest corner of the site along Peralta Boulevard.

The proposed project and variant include the following measures to improve site access and circulation, which were recommended by the TIA prepared for the project (Appendix C):

- Installation of a traffic signal at Fremont Boulevard/Parish Avenue, with appropriate signal interconnects and coordination with the existing traffic signals along Fremont Boulevard at Peralta Boulevard and Central Avenue and pedestrian treatments such as high-visibility crosswalk striping.
- Restriction of the main driveway along Fremont Boulevard to right-in, right-out access only (including installation of a median island to channel traffic) and implementation of design treatments such as

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[27] Under existing conditions without the project, there are approximately 1,944 vehicles passing through the Fremont Boulevard/Parish Avenue intersection during the weekday AM peak hour. The proposed project would result in a net increase of 83 vehicle movements through the intersection, resulting in a total of approximately 2,027 vehicles and a project contribution of approximately 4.1 percent under existing conditions with the proposed project. Similarly, the variant would result in a net increase of 76 vehicle movements through the intersection, resulting in a total of approximately 2,020 vehicles and a project contribution of approximately 3.8 percent under existing conditions with the variant. Under background and cumulative conditions, project contributions for the proposed project and the variant would be lower because traffic volumes without the project would be higher under those scenarios than under existing conditions without the project.

corner bulb-outs, high-visibility crosswalk striping, a median pedestrian refuge, and/or a flashing beacon/signal.

- Prohibition of parking along the south side of Peralta Boulevard 240 feet west and 60 feet east of the new intersection with Jason Way, with appropriate landscape design and maintenance to provide adequate sight distance.

The City of Fremont Department of Public Works would review site access for consistency with applicable policies and standards, including the City's Standard Details for Improvements in Public Right of Way (City of Fremont, 2014).

Conclusion

Overall, the proposed project and variant would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, nor with an applicable congestion management program. The operational impacts of the proposed project and variant would, therefore, be **less than significant,** and these impacts will not be further addressed in the EIR.

16c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

<u>Construction and Operation – Proposed Project or Variant:</u> **No Impact**

There are no airports within the City of Fremont. The closest airports by approximate distance from the project site are Hayward Executive Airport (8.8 miles), Moffett Federal Airfield (9.3 miles), and San Jose International Airport (13 miles). The project does not include any features that would affect air traffic patterns or otherwise affect air traffic operations or safety. Therefore, construction or operation of the project would have **no impact** on air traffic patterns**,** and this impact will not be further addressed in the EIR.

16d) Would the project substantially increase hazards due to a design feature or incompatible uses?

<u>Construction – Proposed Project or Variant:</u> **Less than Significant with Mitigation**

Construction of the proposed project or variant would not substantially increase hazards from design features or incompatible uses. Construction activities are temporary in nature and common throughout the City, and therefore do not represent an incompatible use. The construction site layout and design are not yet known, therefore it is unknown if design features would substantially increase traffic hazards. Impacts could be **potentially significant**. However, the development and implementation of the construction traffic management plan required by Mitigation Measure TRA-1 (detailed in Impacts 16a and 16b, above), would reduce potential safety impacts of construction site design by requiring use of traffic control measures such as warning signs or flag persons, detours, lane closures, or other measures as needed, to maintain traffic safety during construction.

With implementation of Mitigation Measures TRA-1, the impact would be **less than significant with mitigation**, and will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

The proposed project and variant would consist of mixed-use development of residential, retail, and service uses, and would be consistent with existing uses in the surrounding area and the designated Town Center Pedestrian (TC-P) zoning district for the site. Therefore, the proposed project and variant would not result in incompatible uses or activities that could create traffic safety hazards as discussed in detail below.

Road Hazards

In terms of design features, City General Plan Policy 3-3.6 (Road Hazards) calls for minimizing road hazards associated with overgrown vegetation, structures blocking sight lines, and other visual obstructions, and requires that new development be reviewed to ensure that ingress and egress locations, driveways, crosswalks, and other circulation features are sited to reduce accident hazards. As described under Impacts 16a) and 16b), the proposed project and variant include several features that would reduce such potential hazards, including a new traffic signal, on-street parking restrictions, landscape design and maintenance, and pedestrian treatments such as high-visibility crosswalk striping. The City of Fremont Department of Public Works would review site access and roadway improvements for consistency with applicable policies and standards, including the City's Standard Details for Improvements in Public Right of Way (City of Fremont, 2014).

Grade Crossing:

There is an existing grade crossing at Centerville Station, where the Union Pacific Railroad Centerville/Niles Cutoff railroad intersects Fremont Boulevard approximately 300 feet northwest of the project site. The crossing is equipped with typical safety and warning devices, including crossbuck signage, flashing red lights (including an overhead mast structure), audible bells, and automatic dual crossing gates. Train movements at the crossing can result in substantial vehicle queues along Fremont Boulevard and connecting streets, particularly during periods with high vehicle activity, such as the weekday AM and PM peak periods. During the weekday PM peak period, for example, queues in the northbound direction may extend past the project site and as far as Centerville Junior High School (over 2,000 feet upstream of the crossing) and further to a distance of one half-mile. As detailed in Appendix C, the proposed project would result in a net increase of approximately 27 vehicle-trips heading northbound along Fremont Boulevard at the grade crossing during the weekday AM peak hour (the increase during the weekday PM peak hour would be on the order of less than five vehicle-trips and would, therefore, be negligible). This level of added traffic is the equivalent of a vehicle every two minutes on average. In comparison, the existing traffic volume along northbound Fremont Boulevard at the crossing is approximately 700 vehicles and is expected to increase to over 1,000 vehicles under future cumulative conditions in 2035. Given these considerations and the existing safety and warning devices present at the crossing, the proposed project and variant would have a negligible effect on safety conditions at the grade crossing.

Neighborhood Traffic:

Although the City of Fremont has not established significance criteria related to speeding or cut-through traffic on local neighborhood streets, the TIA for the project considered potential project effects with respect to neighborhood traffic. Existing traffic levels along Parish Avenue east of Jason Way (total across both directions) are on the order of 400 vehicles during the weekday AM peak hour and 260 vehicles during the weekday PM peak hour, with the proposed project resulting in a net increase of approximately 13 vehicles and five vehicles (the approximate equivalent of a vehicle every five minutes and every 12 minutes), respectively. The variant would result in a similar increase, within one to two vehicles during each peak hour of the expected increase under the proposed project. The installation of a traffic signal at the intersection with Fremont Boulevard may also attract additional ambient traffic, resulting in an overall increase of anywhere from zero to 50 vehicles during each of the weekday AM and PM peak hours. As detailed in Appendix C, a potential speed table at the Jason Way/Parish Avenue intersection (as illustrated in Figure 2-4) and/or other traffic calming measures (such as speed humps west of Jason Way), in combination with traffic calming devices proposed east of Jason Way as part of other nearby development projects, would likely reduce speeds on Parish Avenue and potentially discourage cut-through traffic.

Conclusion

Given these considerations, impacts associated with increased hazards due to a design feature or incompatible uses would be **less than significant,** and these impacts will not be further addressed in the EIR.

16e) Would the project result in inadequate emergency access?

Construction – Proposed Project or Variant: **Less than Significant with Mitigation**

Heavy vehicle traffic, such as haul trucks or flatbed trailers carrying equipment or materials, would be expected to use specified truck routes with adequate capacity and accommodations to handle such vehicles. As described under Impacts 16a) and 16b), construction trucks would be expected to use major arterial roadways and freeways when traveling to and from the site. Construction is expected to last approximately 18 months.

Ongoing construction activities could result in temporary lane closures along the frontages of the project site (Fremont Boulevard, Parish Avenue, Peralta Boulevard, and Jason Way), increased construction truck traffic, and other effects on roadways in the vicinity of the project site. While these effects could impede emergency access and result in a potentially significant impact, Mitigation Measure TRA-1, described above under Impacts 16a) and 16b), would require preparation and implementation of a construction traffic management plan that would provide for adequate emergency access to the project site and surrounding area during construction activities. Implementation of Mitigation Measure TRA-1 would reduce the significant impact of the proposed project or variant associated with inadequate emergency access during construction to **less than significant with mitigation incorporated.** This impact will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

The proposed project and variant would be reviewed by the Fremont Fire Department and Fremont Police Department prior to approval to confirm that the project would have adequate ingress and egress, incorporate requisite design features (setbacks, clearances, turning radii, etc.), and not impede emergency access. The City of Fremont Department of Public Works would review site access and roadway improvements for consistency with the City of Fremont Standard Details for Improvements in Public Right of Way (2014), which would ensure adequate emergency access to the project site.

As described under Impacts 16a) and 16b), the estimated net travel demand generated by the proposed project or variant would be similar to existing conditions and are not expected to result in substantial amounts of new vehicle traffic that could conflict with or impede emergency vehicle access. Furthermore, the proposed project and variant would not substantively alter the existing street network (aside from the extension of Jason Way to Peralta Boulevard), and emergency access to the site and surrounding area would generally be similar to existing conditions. Therefore, operational impacts on emergency access would be **less than significant,** and these impacts will not be further addressed in the EIR.

16f) Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

<u>Construction – Proposed Project or Variant:</u> **Less than Significant with Mitigation**

The City's Pedestrian Master Plan includes goals to increase pedestrian trips (as a percentage of all trips) and to reduce annual reported collisions between pedestrians and motor vehicles (City of Fremont, 2016). Similarly, the City's Bicycle Master Plan includes goals to prioritize bicycle safety, maintain zero fatalities, and continue to reduce severe injuries. As discussed above in relation to Impacts 16a and 16b, construction activities could result in temporary lane closures, increased construction truck traffic, and other effects on roadways in the vicinity of the project site and could result in temporary disruptions to transit, bicycle, and pedestrian circulation along these streets, which could discourage the use of these routes by cyclists and pedestrians, or provide increased potential for collisions.

While this impact would be potentially significant, Mitigation Measure TRA-1, described above under Impacts 16a) and 16b), would require preparation and implementation of a construction traffic management plan, including identification of haul routes that would minimize impacts on transit, bicycle, and pedestrian circulation and safety, and implementation of comprehensive traffic control measures. Implementation of Mitigation Measure TRA-1 would reduce the impacts of construction-related traffic from the proposed project or variant on transit, bicycle and pedestrian facilities, and therefore reduce the conflict with policies and plans supporting alternative transportation, to **less than significant with mitigation incorporated**. This impact will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

The proposed project and variant would generate bicycle and pedestrian activity on surrounding streets and transit ridership on nearby transit services, but are unlikely to result in substantial crowding that would affect the performance or safety of bicycle and pedestrian facilities or exceed the available capacity on transit vehicles, as existing bicycle and pedestrian facilities in the vicinity of the project site generally operate at free-flow conditions, with available capacity to handle additional bicyclists and pedestrians. Likewise, existing transit services in the vicinity of the project site generally have available capacity to accommodate additional riders.

In addition, the net increase in vehicle traffic associated with the proposed project and variant, as described in “Project Travel Demand” under Impacts 16a) and 16b), would not present a barrier to bicycle or pedestrian circulation or substantially affect transit operations. In particular, this vehicle traffic would be spread across multiple access points along all four frontages of the project site (Fremont Boulevard, Parish Avenue, Peralta Boulevard, and Jason Way), such that the magnitude of potential conflicts at any one location would be minimized. The proposed project and variant would also dedicate right-of-way along the north side of Parish Avenue adjacent to the project site to allow for sidewalk widening; extend Jason Way through the project site to Peralta Boulevard as a through-street with sidewalks, improving bicycle and pedestrian access and connectivity; and consolidate the number of driveways along Fremont Boulevard—a key transit, bicycle, and pedestrian route—from five existing driveways to a single proposed driveway, reducing potential conflict points.

For the existing northbound far-side bus stop along Fremont Boulevard at Parish Avenue, AC Transit also requested that the project install a bench and bike rack and provide an unimpeded ADA-accessible path to/from the stop. These features would improve pedestrian access to/from the stop, provide amenities for waiting passengers, and facilitate bicycle travel to/from the project site and surrounding area. The TIA for the project (Appendix C) recommends that the applicant coordinate with the City of Fremont and AC Transit staff on the desirability of these suggested improvements.

As described under “Setting,” there are no specific planned transit improvements in the immediate vicinity of the project site. While the City of Fremont Draft Bicycle Master Plan identifies future bikeway improvements along Fremont Boulevard and Peralta Boulevard adjacent to the project site, the proposed project and variant would not preclude these improvements. Curb cut and driveway consolidation as described above would be consistent with the overall goals of providing Class IV (separated) bikeways along these streets by reducing potential conflict points and increasing bicyclist safety and comfort.

As described under Impacts 16a) and 16b), the proposed project and variant include several features that would reduce potential effects on the performance and safety of transit, bicycle, and pedestrian facilities, including a new traffic signal, on-street parking restrictions, landscape design and maintenance, and pedestrian treatments such as high-visibility crosswalk striping. The City of Fremont Department of Public Works would review site access and roadway improvements for consistency with applicable policies and standards such as the City’s Standard Details for Improvements in Public Right of Way (City of Fremont, 2014), which include design standards for street geometrics such as travel lane width and sidewalk width. As described under the discussion of Impacts 16d, General Plan Policy 3-3.6 (Road Hazards) calls for minimizing road hazards and requires that new development be reviewed to ensure that circulation features are sited to minimize accident hazards, including hazards for bicyclists and pedestrians.

Overall, given the project’s estimated travel demand and the other considerations described above, the project would not include design features or uses or substantially increase traffic activity, transit ridership, bicycle activity, or pedestrian activity such that it could conflict with the performance or safety of existing or planned transit, bicycle, or pedestrian facilities. Therefore, this operational impact of the proposed project or variant would be **less than significant,** and this impact will not be further addressed in the EIR.

References:

Alameda-Contra Costa Transit District (AC Transit), 2015 (December 8). *Short Range Transit Plan: Fiscal Years 2014/15 through 2023/24*. Available online: http://www.actransit.org/wp-content/uploads/SRTP-2016_Jan_Final.pdf.

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Alameda County Transportation Commission (ACTC), 2017 (December). *Congestion Management Program*. Available online: https://www.alamedactc.org/files/managed/Document/22576/2017_Alameda_County_CMP.pdf.

City of Fremont, 2011. *City of Fremont General Plan* (Adopted December 2011). Available online: https://fremont.gov/398/General-Plan.

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_____, 2017 (October). *City of Fremont Draft Bicycle Master Plan*. Prepared by Fehr & Peers. Available online: https://www.fremont.gov/DocumentCenter/View/36860.

_____, 2018. *Fee Schedule (With Developer Deposit Schedule); Master Resolution No. 8672 (Fees as amended through January 1, 2018)*. Available online: https://fremont.gov/DocumentCenter/View/25240.

4.17 Tribal Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
17.a. 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 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 (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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

Setting:

Section 4.5, “Cultural Resources” contains a more detailed description of the environmental setting for the project site, relating to cultural and tribal resources. Pertinent details relating to tribal cultural resources are repeated below.

Context:

The following brief context statement is derived from a cultural resources review prepared for the Centerville Redevelopment Plan Environmental Impact Report (Basin Research Associates, Inc., 1997) unless otherwise cited.

There are no known indigenous settlements within or adjacent to the project area, although the project site’s general setting near seasonal and perennial watercourses, the marshlands of the Bay, and the nearby hills would have been a favorable location. CA-ALA-21, a prehistoric village/mound site, is the nearest recorded archaeological site, approximately 0.25 mile to the southwest. This site was noted on J.D. Whitney’s 1873 “Map of the Region Adjacent to the Bay of San Francisco” and recorded in 1950 based on the map (William Self Associates, 1997).

Ethnographic literature indicates that the project site is near the territorial border of the Alson and Tuibun tribes, who occupied the Fremont Plain of southwest Alameda County. Although precise territorial boundaries are not known, the Alson may have controlled the area along the Bay shoreline from near today’s Highway 84 south to Scott Creek, while the Tuibun were located just to the north (Milliken, 1995). The Alson and Tuibun tribes spoke a dialect of Ohlone, one of the five mutually unintelligible language families that existed in the San Francisco Bay Area that also included Bay Miwok, Plains Miwok, Patwin, and Wappo (Milliken, 1995).

Sacred Lands File Search:

On March 5, 2018, AECOM requested a Sacred Lands File (SLF) search and Native American contact list for the project site from the Native American Heritage Commission (NAHC). On March 27, 2018 (in a letter dated March 21, 2018), the NAHC responded that the SLF search was "negative… [h]owever, the absence of site specific information in the SLF does not preclude the presence of cultural resources in any project area."

Discussion:

17a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource?

Construction – Proposed Project or Variant: **Less-Than-Significant Impact**

As discussed in Section 4.5, "Cultural Resources", above, no tribal cultural resources that are listed or eligible for listing in the CRHR or local register of historical resources were identified during background research at the NWIC or NAHC or during the archaeological field survey. However, records maintained by the NWIC and NAHC are not exhaustive and negative results do not preclude the presence of tribal cultural resources at the project site. The project would be required to implement the City of Fremont's standard development requirements (codified in FMC Section 18.218.050), which include the City's notification of Native American tribes that might have knowledge of tribal cultural resources within the project site:

> ***Notification, Affiliated California Native American Tribes.*** *Prior to preparation of an environmental assessment and within 14 days of determining that an application for a project is complete, the City shall provide formal notification to the designated contact or a tribal representative of traditionally and culturally affiliated California Native American tribes that have requested to receive such notice from the city. The written notification shall include a brief description of the proposed project and its location, project contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to AB 52.*

Notice of the proposed project was sent to the local California Native American Tribes named on the Native American Contacts list for Alameda County provided by the NAHC on October 24, 2017, to allow early consultation (City of Fremont, 2017). No requests for such consultation were received by the City and no tribal cultural resources have been identified on the proposed site. Thus, construction of the proposed project or variant would have a **less-than-significant impact** on tribal resources and these impacts will not be further addressed in the EIR.

In addition, it is noted that implementation of Mitigation Measure CUL-1, requiring an archaeological monitoring plan to be developed and implemented during construction as detailed in Section 4.5, "Cultural Resources," would further reduce the potential for these already less-than-significant impacts.

Operation – Proposed Project or Variant: **No Impact**

Operation of the proposed project or variant, once constructed, would not require disturbance of additional areas outside of the construction footprint. As such, operation of the proposed project or variant would have **no impact** in relation to tribal resources and will not be further addressed in the EIR.

References:

Basin Research Associates, Inc., 1997. Cultural Resources Review. Centerville Redevelopment Plan Environmental Impact Report, City of Fremont, Alameda County, California. Prepared for David J. Powers & Associates, San Jose, California. Prepared by Basin Research Associates, Inc., San Leandro, California. Study (S-21145) on file at the NWIC, Sonoma State University, Rohnert Park, California.

City of Fremont (City), 2017. Re: Assembly Bill 52 Consultation for SiliconSage Centerville Mixed-Use Project 37358-37494 Fremont Blvd. and 3768-3820 Peralta Blvd., Fremont, CA 94536 (City of Fremont Planning Application No. PLN2017-00229). Sent to: Indian Canyon Mutsun Band of

Costanoans, Torres Martinez Desert Cahuilla Indians, North Valley Yokuts Tribe, Amah/Mutsun Tribal Band, Costanoan Rumsen Carmel Tribe, The Ohlone Indian Tribe, Muwekma Ohlone Indian Tribe of the SF Bay Area, and Ione Band of Miwok Indians. October 24, 2017.

Milliken, Randall, 1995. A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810. Ballena Press, Menlo Park, California.

William Self Associates, Inc. 1997. Cultural Resources Assessment Report: Alameda County Water District Pipeline and Desalination Plant Project, Fremont, Alameda County, California. Report (S-20036) on file at the NWIC, Sonoma State University, Rohnert Park.

4.18 Utilities and Services

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
18.a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
18.b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
18.c. Require or results in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
18.d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
18.e. Result in 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?	☐	☐	☒	☐
18.f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
18.g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Setting:

Wastewater

The Union Sanitary District (USD) operates Alvarado Treatment Plant, and provides wastewater collection, treatment and disposal services to over 347,000 people in Fremont, Newark and Union City. The Alvarado Treatment Plant has a capacity of 33 million gallons per day (mgd), and in 2015 treated an average of 21.85 mgd (USD, 2016a). The treatment plant provides both primary and secondary treatment. The District maintains over 800 miles of sewer lines and has 110,151 connections for residential units and 1,771 commercial connections (USD, 2016b). There are a total of seven pump stations in USD's service area. Most of Fremont's wastewater goes to the Irvington Pump Station first, and is then conveyed to the Alvarado Treatment Plant (USD, 2016a).

Water Supply and Treatment

ACWD provides water supply services to the project site through existing water infrastructure. ACWD serves a population of approximately 351,000 people over 104.8 square miles in Fremont, Newark and Union City (ACWD, 2018). ACWD has developed an Integrated Resource Plan to manage water supply and ensure that current and future demands are met. The Plan analyzes long-term water needs of the Tri-City area (Fremont, Newark, Union City) and identifies the most efficient ways to meet them. Through water saving strategies, demand has dropped by more than 25 percent from 1995, despite continued growth. ACWD set a target of reducing demand by 2.9 million gallons per day by 2025, by implementing a number of conservation programs (ACWD, 2014).

The State of California's Urban Water Management Planning Act, Water Code Sections 10610 through 10656, requires that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an urban water management plan (UWMP) (ACWD, 2016). ACWD developed its UWMP 2015-2020 in 2016, which includes growth projections for the Tri-City up to the year 2040, based on current City plans (general and specific) as well as forecast development included in ABAG regional projections. Table 4.18-1 shows ACWD's estimated future water demands by land use category.

Table 4.18-1 Estimated Future Water Demands for Alameda County Water District

Land Use Category	Estimated Future Water Demands (AF/yr)		
	Year 2020	Year 2030	Year 2040
Single Family Residential	22,700	22,900	22,600
Multi-Family Residential	10,700	11,700	12,200
Commercial	7,100	8,000	8,800
Industrial	4,400	5,300	5,500
Institutional	4,400	5,400	5,400
Other	300	300	300
Total Distribution System Demand (without losses)	**49,600**	**53,500**	**54,700**

Source: adapted from Alameda County Water District 2015.

Approximately 50 percent of the water production is obtained from Niles Cone Groundwater Basin and 50 percent from Del Valle Reservoir (ACWD, 2014). Approximately 70 percent of the water produced is for residential use and 16 percent for business use. In 2016-2017 the average daily production was 34.8 mgd and the maximum day production was 527.4 million gallons. Water treatment is provided by the ACWD Water Treatment Plant Number Two (WTP2). The sustainable production rate at WTP2 is 26 mgd (ACWD, 2018).

Storm Drainage

The Alameda County Flood Control and Water Conservation District (ACFCWCD) provides flood protection to the project site and surrounding areas via planning, designing, constructing and maintaining flood control projects, including natural creeks, channels, levees, pump stations, dams and reservoirs to Alameda County residents and businesses (ACFCWCD, 2017a). The project site is located in the neighborhood Zone 5, which includes pump stations Station J2, Station J3, Quail Run; 6 miles of concrete channels; 33 miles of earth channels; and 34 miles of natural creeks (ACFCWCD, 2017b). The City of Fremont manages the municipal stormwater system.

The existing stormwater system contains curb gutters along Fremont Boulevard, Peralta Avenue, Jason Way and Parish Avenue and underground stormdrain inlets at the southwest, southeast, and northwest corners of the project site.

Solid Waste

Republic Services provides recycling and solid waste pickup services to the project site and surrounding areas. Waste is delivered to the Fremont Recycling and Transfer Station facility located at 41149 Boyce Road, where waste is sorted and recyclable materials are recovered. Waste is transferred to Altamont Landfill at 10840 Altamont Pass Road in Livermore. The Altamont Landfill has a maximum permitted capacity of more than 124 million cubic yards, and a maximum permitted throughput of 11,150 tons per day (tpd) (CalRecycle, 2017). The landfill is anticipated to have disposal capacity through 2045 at current disposal rates because of municipal programs to recover and divert waste in landfill.

The Alameda County Waste Management Authority, now known as Stopwaste.org, is responsible for developing and implementing a Countywide Integrated Waste Management Plan. This plan includes a Source Reduction and Recycling Element, a Nondisposal Facility Element and a Household Hazardous Waste Element (City of Fremont, 2011). According to data supplied by the Alameda County Waste Management Authority, the 2011 diversion rate for Fremont is 73 percent. This rate is above the diversion rate required by AB 939, which mandates jurisdictions to divert 50 percent of their landfill waste. The Fremont Recycling and Transfer Station facility has diverted more than 250,000 tons of recyclable materials since 2006, at the time of its opening. Alameda County is planning to establish a countywide composting facility, which would further improve Fremont's diversion rate (City of Fremont, 2011).

Discussion:

18a, 18e) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? Would the project 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?

<u>Construction – Proposed Project or Variant:</u> **Less-than-Significant Impact**

Construction of the proposed project or variant would not generate significant volumes of wastewater that would exceed the capacity of the wastewater treatment provider or exceed applicable treatment requirements. Anticipated groundwater levels at the project site are below the proposed maximum depth of construction; therefore, construction dewatering is not anticipated. Water quality impacts of construction are addressed further in Section 4.9, "Hydrology and Water Quality." Construction impacts from the proposed project or variant relating to wastewater would therefore be **less than significant**, and this impact will not be further addressed in the EIR.

<u>Operation – Proposed Project:</u> **Less-than-Significant Impact**

Operation of the proposed project would generate wastewater from toilets, sinks, washing machines, dishwashers, and leaks associated with the 136 proposed residential units. Additional, wastewater would be generated from toilets, sinks, dish washer(s) and leaks from the restaurant and other retail businesses within the mixed use buildings. New sanitary sewer lines serving the proposed buildings would connect to the existing sanitary sewer infrastructure to accommodate the project's wastewater generation. Per capita rates for wastewater generation are typically around 100 gallons per day;[28] therefore, the proposed residential uses under the proposed project[29] would generate approximately 42,300 gallons per day of wastewater, which is approximately 0.13 percent of the Alvarado Treatment Plant's existing capacity. The density of the proposed project is consistent with the City's General Plan designation and zoning for the site. The proposed project would include approximately 25,000 SF of retail uses, which is substantially less than the existing 51,000 SF of retail uses currently at the project site, therefore commercial wastewater generation would be expected to decrease compared to the existing wastewater flows from the project site. Wastewater generation from the proposed project would therefore not be expected to result in a determination by the Union Sanitation District that it has inadequate capacity to serve the project.

Additionally, wastewater generated by the proposed project would be typical of residential and commercial developments in the area and would not require special treatment or otherwise exceed wastewater treatment requirements of the San Francisco Bay RWQCB.

Operational impacts of the proposed project related to wastewater would be **less than significant**, and these impacts will not be further addressed in the EIR.

<u>Operation – Variant:</u> **Less-than-Significant Impact**

Operation of the variant would generate wastewater from the 162 proposed residential units and from the 26,000 SF of proposed retail businesses. Due to the slightly greater area of retail space and greater number of residential units under the variant, the amount of wastewater generated would be slightly more

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[28] Based on a per capita wastewater generation rate of 100 gallons per day per capita, which is the highest average daily wastewater flow recorded for the years 1998 and 2007 at the San Jose/Santa Clara Water Pollution Control Plant, the closest wastewater facility for which per capita generation rates were available (City of San Jose, 2009).

[29] Based on the DOF's 2017 estimate of 3.11 persons per dwelling unit and 136 proposed dwelling units, the proposed project is estimated to accommodate 423 new residents at buildout.

than for the proposed project. Residential wastewater generation from the variant would be approximately 50,400 gallons per day,[30] or approximately 0.15 percent of the Alvarado Treatment Plant's capacity. The density of the variant would be consistent with the City's General Plan designation and zoning for the site. Commercial wastewater generation would be expected to decrease compared to existing conditions, due to a substantial reduction in commercial floor space. Wastewater generation from the variant would therefore not exceed the capacity of existing wastewater infrastructure and treatment facilities.

Wastewater generated by the variant would be typical of residential and commercial developments in the area and would not require special treatment or otherwise exceed wastewater treatment requirements of the San Francisco Bay RWQCB.

For these reasons, operational impacts of the variant related to wastewater would be **less than significant**, and these impacts will not be further addressed in the EIR.

18b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

<u>Construction – Proposed Project or Variant:</u> **Less-than-Significant Impact**

As discussed under Impacts 17a) and 17f) above in relation to wastewater, and under Impact 17d) below for water, construction of the proposed project or variant would not generate substantial volumes of wastewater, or generate substantial demand for water supplies. Anticipated groundwater levels at the project site are below the proposed maximum depth of construction; therefore, construction dewatering is not anticipated. Water demands during construction (for dust control, concrete mixing, etc.) would be short term, and would be met by existing service connections to municipal suppliers or would be imported by truck.

Therefore, expansion of existing or construction of new water or wastewater treatment facilities to serve construction of the proposed project or variant would not be required. Construction impacts would therefore be **less than significant**, and this impact will not be further addressed in the EIR.

<u>Operation – Proposed Project or Variant:</u> **Less-than-Significant Impact**

As discussed under Impacts 17a) and 17f) above in relation to wastewater, and under Impact 17d) below for water, operation of the proposed project or variant would not generate substantial volumes of wastewater, or generate substantial demand for water supplies.

For both the proposed project and variant, retail wastewater generation is anticipated to decrease compared to existing conditions, and residential wastewater generation would be less than 0.15 percent of the available treatment capacity of the Alvarado Treatment Plant. Similarly, for both the proposed project and variant, retail water demand is anticipated to decrease compared to existing conditions, and residential water demand would be less than 0.2 percent of the sustainable production rate of ACWD's water treatment plant.

Therefore, expansion of existing or construction of new water or wastewater treatment facilities to serve operation of the proposed project or variant would not be required. Operational impacts would therefore be **less than significant**, and this impact will not be further addressed in the EIR.

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[30] Based on the DOF's 2017 estimate of 3.11 persons per dwelling unit and 162 proposed dwelling units, the proposed project is estimated to accommodate 504 new residents at buildout. Wastewater generation rate of 100 gallons per day per capita, as described in footnote 18.

18c) Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

The proposed project and variant would construct new stormwater drainage facilities, including bioretention basins, inlet filters, and pervious pavement. Physical impacts associated with construction of stormwater facilities are evaluated throughout this Initial Study in sections such as Section 4.3, “Air Quality,” Section 4.5, “Cultural Resources,” Section 4.8, “Hazards and Hazardous Materials,” Section 4.9, “Hydrology and Water Quality,” and other sections, which specifically analyze the potential impacts of project construction. Mitigation measures are identified for potentially significant impacts throughout this Initial Study so that those construction impacts of the proposed project or variant would be reduced to **less than significant,** and these impacts will not be further addressed in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

As discussed in Section 4.9, “Hydrology and Water Quality,” the proposed storm drainage system for the proposed project and variant are similar, and would increase stormwater infiltration on site through the use of bioretention basins and pervious pavement. Because the proposed project or variant would create and/or replace more than 10,000 square feet of impervious surface area, stormwater drainage control features in accordance with the National Pollution Discharge Elimination System (NPDES) C.3 requirements of the Municipal Regional Permit (MRP) and the Alameda County Clean Water Program (California Water Boards, 2009) would be required.

Stormwater from the proposed project or variant would be infiltrated on site and/or be conveyed to bioretention planters and stormwater filtration units before being discharged to the municipal drainage system. New subdrains, roof drain downspouts, and pervious pavers would be constructed to provide stormwater control, on-site infiltration and reduced the magnitude of peak runoff from the site.

Implementation of the drainage controls required by the MRP and Alameda County Clean Water Program would reduce the magnitude of, and change the timing of, peak runoff from the site. Although the project site would continue to contribute flows to the existing Alameda County flood control channel southwest of I-880, the total volume of stormwater would be reduced and the peak flow would be delayed. As such, the proposed project or variant would not contribute substantial amounts of additional runoff to the municipal storm drain system that would necessitate the construction or expansion of storm drainage facilities. Therefore, the impacts of the proposed project or variant would be **less than significant**, and these impacts will not be further addressed in the EIR.

Impacts associated with changes in existing drainage patterns, increased stormwater runoff that could exceed the capacity of stormwater drainage systems, and other water quality effects are addressed in Section 4.9, “Hydrology and Water Quality.”

18d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Construction of the proposed project or variant would not generate significant demand for new water supplies. Water demands during construction (for dust control, concrete mixing, etc.) would be met by existing service connections to municipal suppliers or water would be imported by truck by the construction contractors. Construction demands for water supplies would be short term and small compared to the existing water supply demands within AWCD. Consequently, construction of the proposed project or variant would not substantially affect water supplies or result in new or expanded water supply entitlements. The impact would be **less than significant**, and will not be addressed further in the EIR.

Operation – Proposed Project: **Less-than-Significant Impact**

The proposed project would utilize water for landscaping, commercial, and residential purposes. As identified in the City's General Plan EIR, in order to minimize additional demands on potable water supplies, new development would be required to install the latest technology in water efficient plumbing fixtures, irrigation systems, and landscaping according to the California Green Building Code (CALGreen). The landscaping of the proposed project would be required to comply with the Water Efficient Landscape Ordinance (State ordinance enforced through the building permit plan review process).

Demand for water from commercial uses would be expected to decrease compared to existing conditions, due to the substantial reduction in retail floor space proposed by the project (25,000 SF) compared to current conditions (approximately 52,000 SF).

Residential water demand would be estimated at approximately 42,300 gallons per day or 15.4 million gallons per year[31]. This equates to approximately 47.4 acre-feet per year, or less than 0.15 percent of the ACWD's total estimated residential demand in 2020. Similarly, the estimated residential water demand for the proposed project would be approximately 0.12 percent of ACWD's average daily production. In addition, the residential density of the proposed project is consistent with the City's General Plan, and future land use envisioned by the General Plan has been incorporated into the UWMP water demand projections.

The UWMP predicts that under normal year water supply conditions, ACWD will have sufficient supplies to meet projected future water demands, but could face shortages during severe or prolonged drought conditions. It is anticipated that ACWD water conservation programs, in combination with the City's water conservation efforts, would ensure adequate water supply to meet projected future demands. Additionally, ACWD has a water supply shortage contingency plan that would address a water supply shortage of up to 50 percent (ACWD, 2016). Sufficient water supplies are therefore available to serve the proposed project from existing entitlements, and no new or expanded entitlements would be required to accommodate the proposed project's water supply demand. Therefore, the impact of the proposed project would be **less than significant** and this impact will not be further addressed in the EIR.

Operation – Variant: **Less-than-Significant Impact**

Similar to the proposed project, the variant would utilize water for landscaping, commercial, and residential purposes, and would be subject to the same requirements for water efficiency. Residential water use for the variant would be approximately 50,400 gallons per day[32] or 18.4 million gallons per year (56.5 acre-feet per year). This equates to less than 0.17 percent of the estimated residential demand in 2020 and less than 0.15 percent of ACWD's average daily production. The density of the variant is consistent with the General Plan's designation, and water projections for the ACWD include planned development envisioned by the General Plan. Sufficient water supplies are therefore available to serve the variant from existing entitlements, and no new or expanded entitlements would be required to accommodate the variant's water supply demand. Therefore, the impact of the variant would be **less than significant** and this impact will not be further addressed in the EIR.

18f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

During construction, solid waste such as asphalt, concrete, scrap wood, scrap metal, brick, mortar, sheet rock, packaging, and rubble would be generated from the demolition of existing on-site structures and unused construction materials used to build the new townhomes, mixed use buildings, and community

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[31] Calculation is based on a projected project population of 423 residents and 100 gallons per day per capita water use (water use rates adjusted from ACWD, 2016. Urban Water Management Plan 2015-2016).

[32] Calculation is based on a projected project population of 504 residents and 100 gallons per day per capita water use (water use rates adjusted from ACWD, 2016. Urban Water Management Plan 2015-2016).

facilities. The USEPA has calculated average debris generation rates for residential and non-residential construction and demolition activities, as summarized in Table 4.18-2 below.

Table 4.18-2 Average Debris Generation Rates for Construction and Demolition

	Average Debris Generation Rates (pounds per square foot)	
	Construction	**Demolition**
Residential	4.38	111 (for single family homes)
Non-Residential	3.89	155

Adapted from USEPA 1998. Characterization of Building-Related Construction and Demolition Debris in the United States.

Based on these average rates and the proposed type and size of structures to be demolished and constructed under the proposed project or variant, the total amount of debris generated during construction would be on the order of approximately 5,000 tons, the majority of which would be generated during the demolition phase (approximately two months). Averaged over the 2-month demolition period, daily generation of solid waste from project would equate to less than 0.75 percent of the Altamont Landfill's permitted daily capacity.

Construction of the proposed project or variant would be required to comply with the City's Construction and Demolition Debris Recycling Ordinance (No. 11-2008, Section 2, 9-2-08). The Ordinance requires 100 percent of asphalt and concrete and 50 percent of all remaining debris to be reused or recycled (City of Fremont, 2010). A Waste Handling Plan must be approved before permits are issued and work commences. Additionally, a Debris Diversion and Disposal report must be submitted within 30 days of completion and receipts to show that recycling requirements were met. As such, the total amount of construction-related debris requiring landfill disposal would be substantially less than the estimate provided above, and would therefore be well within the capacity of the Altamont Landfill. With adherence to the City's Construction and Demolition Debris Recycling Ordinance, impacts during construction on landfill capacity would be **less than significant**, and this impact will not be further addressed in the EIR.

<u>Operation – Proposed Project:</u> **Less-than-Significant Impact**

According to CalRecycle, the solid waste generation rate for the City of Fremont is 4.2 pounds/capita/day (Cal Recycle, 2015). The proposed project's anticipated population of 423 residents would therefore be expected to generate approximately 1,777 pounds per day of solid waste. The solid waste generation rate for typical retail stores is estimated at 4.7 lb/employee/day, whereas restaurants are estimated at 12.1 lb/employee/day (Cascadia Consulting Group, 2006). As discussed in Section 4.13, "Population and Housing," the proposed project is estimated to create approximately 71 jobs. Retail generation of solid waste could therefore vary from approximately 334 to 859 pounds per day, depending on the mix of retail and restaurant uses. The total estimated amount of solid waste generation by the proposed project would therefore be approximately 2,100 to 2,600 pounds per day or approximately 1.05 to 1.32 tons per day, which is less than 0.012 percent of Altamont landfill's daily maximum permitted throughput. Therefore, the landfill would be able to accommodate waste generated by the proposed project, and operational impacts related to landfill capacity would be **less than significant.** This impact will not be further addressed in the EIR.

<u>Operation – Variant:</u> **Less-than-Significant Impact**

Operation of the project would increase the amount of solid waste being produced and disposed in Altamont Landfill. Using the same generation rates as for the proposed project, discussed above, and the proposed residential and employee population under the variant,[33] the total estimated amount of solid waste generation by the variant would be approximately 2,400 to 2,900 pounds per day, or 1.21 to 1.46 tons per day, which is less than 0.014 percent of the landfill's daily maximum permitted throughput.

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[33] The variant would have approximately 504 residents and 65 employees, as discussed in Section 4.13, "Population and Housing."

Therefore, the landfill would be able to accommodate waste generated by the variant, and operational impacts related to landfill capacity would be **less than significant**. This impact will not be further addressed in the EIR.

18g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Construction – Proposed Project or Variant: **Less-than-Significant Impact**

Construction of the proposed project or variant would not conflict with or interfere with the City's ability to implement its adopted solid waste management programs and policies. As discussed above under impact 17f), construction of the project or variant would comply with the City's Construction and Demolition Debris Recycling Ordinance (No. 11-2008, Section 2, 9-2-08) requiring 100 percent of asphalt and concrete and 50 percent of all remaining debris to be reused or recycled (City of Fremont, 2010), approval of a Waste Handling Plan, and submission of a Debris Diversion and Disposal report within 30 days of completion. Impacts of construction would be **less than significant**, and this impact will not be further addressed in the EIR.

Operation – Proposed Project or Variant: **Less-than-Significant Impact**

The proposed project or variant would not conflict with or interfere with the City's ability to implement its adopted solid waste management programs and policies, including Alameda County's Measure D. Waste collection services for the proposed project or variant would be provided weekly by Republic Services and would be subject to existing requirements regarding recycling and waste disposal. Since waste disposal in Fremont complies with federal, State and local requirements, the proposed project or variant would not violate any federal, State or local regulations related to solid waste. Thus, the impact would be **less than significant**, and this impact will not be further addressed in the EIR.

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4.19 Mandatory Findings of Significance

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
19.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?	☒	☐	☐	☐
19.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 pas projects, the effects of other current projects, and the effects of probably future projects)?	☒	☐	☐	☐
19.c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion:

19a) 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?

<u>Construction and Operation – Proposed Project or Variant:</u> **Potentially Significant Impact**

Based upon background research, site visits, and the analysis in this Initial Study, the proposed project or variant would not have the potential to 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, or reduce the number or restrict the range of a rare or endangered plant or animal. As discussed in Section 4.4, "Biological Resources," compliance with standard development regulations codified in the FMC Chapter 18.218 would reduce such impacts on biological resources to a less-than-significant level.

The Initial Study has identified that the proposed project or variant would have **potentially significant** impacts to historical architectural resources, as discussed above in Section 4.5, "Cultural Resources." Impacts to historical architectural resources will be analyzed in the EIR.

19b) 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 pas projects, the effects of other current projects, and the effects of probably future projects)?

<u>Construction and Operation – Proposed Project or Variant:</u> **Potentially Significant Impact**

Cumulative impacts, other than those related to noise and historical architectural resources, would be less than significant, or the proposed project or proposed variant would result in a less than cumulatively considerable contribution to cumulative impacts. These impacts will not be further addressed in the EIR.

However, cumulative impacts related to noise and historical architectural resources would be **potentially significant** and will be analyzed in the EIR.

19c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

<u>Construction and Operation – Proposed Project or Variant:</u> **Potentially Significant Impact**

Based upon background research, site visits, and the analysis in this Initial Study, the proposed project or variant would potentially cause substantial impacts on human beings because of the impacts identified with respect to hazardous materials, water quality, and traffic. However, mitigation measures designed to minimize environmental effects for these impacts to a less-than-significant level are listed in the relevant sections of this Initial Study.

The Initial Study has identified that the proposed project or variant would have **potentially significant** impacts related to noise, as discussed above in Section 4.12, “Noise.” Impacts related to noise will be analyzed in the EIR.

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Appendix A-1: Air Quality and Greenhouse Gas Analysis for Proposed Project

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SILICON SAGE AIR QUALITY & GREENHOUSE GAS EMISSIONS ASSESSMENT

Fremont, California

October 15, 2017
Revised June 7, 2018

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Project: 17-152

Introduction

The purpose of this report is to address air quality and greenhouse (GHG) impacts associated with the proposed mixed-use residential development project. The proposed project would demolish existing buildings located from 37358 - 37494 Fremont Boulevard and 3768 - 3820 Peralta Boulevard, and would construct a new mixed-use development featuring two multi-story buildings containing a combined 25,000 square feet (sf) of ground-floor commercial space with 64 apartment units and 72 townhomes.

Air pollutant and GHG emissions associated with construction and operation of the project were modeled. In addition, the potential construction health risk impacts to nearby sensitive receptors were evaluated, along with the community risk impacts of existing toxic air contaminant (TAC) sources upon future project residences. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).

Setting

The project is located in Alameda County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent OEHHA risk assessment guidelines were published in February of 2015.[1] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the Federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of nitrogen oxides, or NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified diesel particulate matter as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce PM and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[2]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new

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[1] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

[2] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD) is currently required for use by all vehicles in the U.S.

All of the above Federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles[3]. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the Federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road, or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent Federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

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[3] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD *CEQA Air Quality Guidelines*[4] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of their *CEQA Guidelines*. In May 2011, the updated BAAQMD *CEQA Air Quality Guidelines* were amended to include a risk and hazards threshold for new receptors and modify procedures for assessing impacts related to risk and hazard impacts.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, 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. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are residences north of the project site on Jason Way, with additional nearby residences to the east, north, and south of the project site. There are also several preschools and a school in the project vicinity. These include the Holy Spirit preschool and school located across from the site to the east on Parish Avenue, A Childs Hideaway preschool southeast from the site on Fremont Boulevard, and the Genius Kids preschool northeast of the project site on Peralta Boulevard.

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[4] Bay Area Air Quality Management District, 2011. *CEQA Air Quality Guidelines*. May. (Updated May 2017)

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1. The BAAQMD's adoption of significance thresholds contained in the 2011 *CEQA Air Quality Guidelines* was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires the BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds (Cal. Court of Appeal, First Appellate District, Case Nos. A135335 & A136212). CBIA sought review by the California Supreme Court on three issues, including the appellate court's decision to uphold the BAAQMD's adoption of the thresholds, and the Court granted review on just one: Under what circumstances, if any, does CEQA require an analysis of how existing environmental conditions will impact future residents or users of a proposed project? In December 2015, the Supreme Court determined that an analysis of the impacts of the environment on a project – known as "CEQA-in-reverse" – is only required under two limited circumstances: (1) when a statute provides an express legislative directive to consider such impacts; and (2) when a proposed project risks exacerbating environmental hazards or conditions that already exist (Cal. Supreme Court Case No. S213478). The Supreme Court reversed the Court of Appeal's decision and remanded the matter back to the appellate court to reconsider the case in light of the Supreme Court's ruling. In response to the legal issues, BAAQMD revised their CEQA Guidelines in May 2017. The thresholds identified in Table 1 represent the most recent guidance provided by BAAQMD and the community risk thresholds that are used by the City of Fremont. Though not necessarily a CEQA issue, the effect of existing TAC sources on future project receptors (residences) is analyzed to comply with the Clean Air Plan key goal of reducing population TAC exposure and protecting public health in the Bay Area.

For assessing community health risk impacts to new sensitive receptors, the City has developed a significance threshold of 100 incidents of cancer per million per General Plan implementation measure 7-7.3.B, taking into account the combined impact from existing sources of TACs.

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards for New Sensitive Receptors - Combined Sources (Cumulative from all sources within 1,000 foot zone of influence) – City of Fremont Thresholds			
Excess Cancer Risk	>100 per one million		
Hazard Index	>10.0		
Annual Average $PM_{2.5}$	>0.8 µg/m^3		
Health Risks and Hazards for New Sources – Single and Combined Sources (Cumulative from all sources within 1,000 foot zone of influence) – BAAQMD Thresholds			
Excess Cancer Risk	>10.0 in one million (single source) and >100 per one million (cumulative)		
Hazard Index	>1.0 (single source) and >10.0 (cumulative)		
Annual Average $PM_{2.5}$	>0.3 µg/m^3 (single) and >0.8 µg/m^3 (cumulative)		
Greenhouse Gas Emissions			
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons or 4.6 metric tons per capita		
Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less; and GHG = greenhouse gas.			

Impacts and Mitigation Measures

Impact 1: Conflict with or obstruct implementation of the applicable air quality plan? ***No impact.***

The most recent clean air plan is the *2017 Clean Air Plan* that was adopted by BAAQMD in April 2017. The proposed project would not conflict with the latest Clean Air planning efforts since 1) the project would have emissions below the BAAQMD thresholds (see Impact 2), 2) the project would be considered urban infill, 3) the project would be located near employment centers, and 4) the project would be located near transit with regional connections.

> **Impact 2:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less-than-Significant with Construction-Period Mitigation.***

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.1 was used to predict emissions from construction and operation of the site assuming full build out of the project. The project land use types and size were input to CalEEMod.

Construction period emissions

CalEEMod provided annual emissions for construction. CalEEMod provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and schedule, was developed based on CalEEMod defaults for a project of this type and size. The proposed project land uses for each phase were input into CalEEMod, including 72 dwelling units entered as "Condo/Townhouse," 64 dwelling units entered as "Apartments Low Rise," 23,450 sf entered as "Regional Shopping Center," 1,550 sf entered as "Fast Food Restaurant w/o Drive Thru," 2,610 sf entered as "Day-Care Center," and 273 parking spaces entered as "Enclosed Parking with Elevator" on a 4.5-acre site. In addition, 20,100 cubic yards (cy) of soil off-haul is anticipated during the grading phase and demolition of 55,000 sf of buildings was entered into the model.

The project would be built out over a period of approximately 14 months beginning in March 2018 according to the CalEEMod default schedule, or an approximate 299 construction workdays. Average daily emissions were computed for each phase by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, estimated the construction period emissions would not exceed the BAAQMD significance thresholds. *Attachment 2* includes the CalEEMod input and output worksheets.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are implemented to reduce these emissions. *Mitigation Measure 1 would implement BAAQMD-recommended best management practices*.

Table 2. Construction Period Emissions by Phase

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	1.61 tons	4.47 tons	0.22 tons	0.20 tons
Average daily emissions (pounds)[1]	**10.8 lbs./day**	**29.9 lbs./day**	**1.5 lbs./day**	**1.3 lbs./day**
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	**No**	**No**	**No**	**No**
Notes: [1]Assumes 299 workdays.				

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residents, employees and customers. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

Land Uses

The project land uses were input to CalEEMod, as described above. In addition, an Existing run was conducted which included 43,468 sf entered as "Regional Shopping Center," 7,843 sf entered as "Quality Restaurant," 970 sf entered as "Unrefrigerated Warehouse-No Rail," and one dwelling unit entered as "Single Family Housing."

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project could possibly be constructed and begin operating would be 2020. Emissions associated with build-out later than 2020 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project trip generation table, including the trip reductions for internalization, pass-by, and transit. The default trip lengths and trip types specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use were used, which include the 2013 Title 24 Building Standards.

Other Inputs

Wood-burning stoves and fireplaces are not allowed in new developments in the Bay Area; however, it was assumed that residential units could contain gas-powered fireplaces. Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project.

Table 3. Operational Emissions

Scenario	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
2020 Project	1.39 tons	3.86 tons	1.50 tons	0.44 tons
Existing Uses	0.88 tons	3.80 tons	1.28 tons	0.37 tons
Net Emissions	**0.51 tons**	**0.06 tons**	**0.22 tons**	**0.07 tons**
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	**No**	**No**	**No**	**No**
Net Project Operational Emissions (*pounds/day*)	2.8 lbs	0.3 lbs	1.2 lbs	0.4 lbs
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**

[1] Assumes 365-day operation.

As shown in Table 3, operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact.

***Mitigation Measure 1:* Include basic measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less than significant level. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less-than-Significant.***

As discussed under Impact 2, the project would have emissions less than the BAAQMD thresholds for evaluating regional impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. The highest measured level over any 8-hour averaging period during the last 3 years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. Intersections affected by the project would have traffic volumes less than the 10,000 vehicles per hour[5] and, thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.[6]

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[5] The maximum hourly volume would be 3,683 vehicles per hour for "Cumulative with Project Traffic Volumes" – see Figure 13 of the TIA, dated December 1, 2017.

[6] For a land-use development project, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections with more than 44,000 vehicles per hour.

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? ***Less-than-Significant with Construction-Period Mitigation.***

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The project would introduce new sensitive receptors (residences) in the proximity of nearby TAC sources, such as Peralta Boulevard (State Route 84), local roadways, and railroad traffic. Though not necessarily a CEQA issue, the effect of existing TAC sources on future project receptors (residences) is analyzed to comply with the Clean Air Plan goal of reducing population TAC exposure and protecting public health in the Bay Area. The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs.

The project would not be a substantial source of localized TACs. However, temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors.

Operational Community Risk Impacts (Planning Consideration)

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site. These sources include freeways or highways, busy surface streets and stationary sources identified by BAAQMD. Traffic on high volume roadways is a source of TAC emissions that may adversely affect sensitive receptors in close proximity to the roadway. A review of the project area did not reveal any stationary sources within 1,000 feet with substantial risk. For local roadways, BAAQMD considers roadways with traffic volumes of over 10,000 vehicles per day to have a potentially significant impact on a proposed project. A review of the project area identified several sources of TAC emissions, such as SR-84/Peralta Boulevard, local surface streets, and nearby railroad traffic. Community risks from each source are discussed below.

Peralta Boulevard (SR 84) and Local Roadways

BAAQMD provides a Highway Screening Analysis Google Earth Map tool to identify estimated risk and hazard impacts from highways throughout the Bay Area. Cumulative risk, hazard and $PM_{2.5}$ impacts at various distances from the highway are estimated for different segments of the highways. The tool uses the average annual daily traffic (AADT) count, fleet mix and other modeling parameters specific to that segment of the highway. Impacts from Link 479 (6ft elevation) SR-84, which is 10 feet or greater north of the project site, were identified using this tool. The cancer risk at the project site was found to be 21.2 in a million. The $PM_{2.5}$ concentration was found to be 0.17 $\mu g/m^3$ and the HI is 0.02. The estimated cancer risk was adjusted using a

factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools.[7]
For local roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates and (2) adjustment of cancer risk to reflect new OEHHA guidance (see *Attachment 1*).

The calculator uses EMFAC2011 emission rates for the year 2014. Overall, emission rates will decrease by the time the project is constructed and occupied. A new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for year 2018.[8]

As described previously, the predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.

The average daily traffic (ADT) on Fremont Boulevard was estimated to be 21,309 based on the City traffic data.[9] Using the BAAQMD *Roadway Screening Analysis Calculator* for Alameda County for east-west directional roadways and at a distance of 10 feet or greater north of the roadway, estimated cancer risk from Fremont Boulevard at the project site would be would be 15.7 in one million and $PM_{2.5}$ concentration would be 0.46 µg/m^3. Chronic or acute HI for the roadway would be below 0.03.

Railroad Traffic

The project site is located near Centerville rail line, and rail activity currently generates TAC and $PM_{2.5}$ emissions from locomotive exhaust. These rail lines are used for passenger and freight service by trains using diesel fueled locomotives. The project site is about 300 feet or greater from the rail line. Dispersion modeling of this rail segment was conducted as part of the Fremont General Plan Update[10] and computed cancer risks at various distances were estimated. According to the assessment, excess cancer risk along this segment at 300 feet would be 11.5 in one million. Annual $PM_{2.5}$ concentration would be 0.02 µg/m^3.

Combined Community Risk Levels

Adding the maximum TAC impacts together, although they would occur at different locations, the combined cancer risk would be 48.4 per million, combined $PM_{2.5}$ concentration would be 0.65 and

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[7] Correspondence with Alison Kirk, BAAQMD, November 23, 2015.

[8] Though the project will likely be operational after 2018, this analysis year was used for the *Roadway Screening Analysis Calculator* as a conservative measure for estimating community risk.

[9] Available online: https://fremont.gov/DocumentCenter/Home/View/5722. Accessed: October 13, 2017.

[10] City of Fremont, 2011. *Fremont Draft General Plan Update*. July.

the non-cancer hazard index would be less than 0.05. Therefore, community risk impacts would be below the City of Fremont community risk thresholds.

Table 4. Combined Community TAC Levels

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ (µg/m^3)	Acute or Chronic Hazard Index
Peralta Boulevard (SR-84)	21.2	0.17	0.02
Fremont Boulevard	15.7	0.46	<0.03
Centerville Rail Line	11.5	0.02	
Combined Sources	48.4	0.65	<0.05
Fremont Combined Source Threshold	*100.0*	*0.8*	*10.0*

Note: The maximum for each source unlikely to occur in same place on the project site, but this combined level assumes that scenario as a worst-case assessment.

Project Construction Activity

Construction activities, particularly during site preparation and grading would temporarily generate fugitive dust in the form of respirable particulate matter (PM_{10}) and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. *Mitigation Measure 1 would implement BAAQMD-required best management practices.*

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects of sensitive receptors at these nearby residences from construction emissions of DPM and $PM_{2.5}$.[11] The closest sensitive receptors to the project site are residences north of the project site on Jason Way, with additional nearby residences to the east, north, and south of the project site. There are also several preschools and a school in the project vicinity. These include the Holy Spirit preschool and school located across from the site to the east on Parish Avenue, A Childs Hideaway preschool southeast from the site on Fremont Boulevard, and the Genius Kids preschool northeast of the project site on Peralta Boulevard (see Figure 1). Children at these locations are three years of age and older. Emissions and dispersion modeling was conducted to predict the off-site concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

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[11] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

Construction Period Emissions

Construction activity is anticipated to include demolition, grading and site preparation, building construction, and paving. Construction period emissions of DPM and $PM_{2.5}$ were modeled using the CalEEMod model, as previously described for project air pollutant emissions. Construction of the project is expected to occur over an approximate 14-month period beginning in 2018. Construction period emissions were modeled using CalEEMod along with the anticipated project construction activity. The number and types of construction equipment and diesel vehicles, along with the anticipated length of their use for different phases of construction, were based on a site-specific construction schedule. The CalEEMod modeling included emissions from truck and worker travel, assumed to occur over a distance of one-half mile on or near the site.

The CalEEMod model provided total uncontrolled annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages of 0.208 tons (416 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one-half mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.045 tons (90 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA ISCST3 dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at existing sensitive receptors in the vicinity of the project construction area. The ISCST3 dispersion model is a BAAQMD-recommended model for use in modeling these types of emission activities for CEQA projects.[12] Emission sources for the construction site were grouped into two categories, exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions. The ISCST3 modeling utilized four area sources to represent the on-site construction emissions, two area sources for DPM exhaust emissions and two area sources for fugitive $PM_{2.5}$ dust emissions. For the exhaust emissions from construction equipment, an emission release height of 6 meters (20 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. Emissions from vehicle travel around the project site were included in the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. and 4 p.m., when the majority of the construction activity involving equipment usage would occur.

The modeling used a five-year data set (1990 - 1994) of hourly meteorological data for Fremont that was prepared by the BAAQMD for use with the ISCST3 model. The Fremont monitoring

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[12] Bay Area Air Quality Management District (BAAQMD), 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

station is about 1.2 miles southeast of the project site. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2018 - 2019 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby residential receptors at a receptor height of 1.5 meters (4.9 feet). Receptor heights of 1.0 meters were used for modeling of preschool and school child receptors.

The maximum-modeled DPM and $PM_{2.5}$ concentrations at a residence occurred north of the construction site at residence on Jason Way and the maximum DPM and $PM_{2.5}$ concentrations at a preschool or school occurred at the Holy Spirit preschool across from the project site on Parish Avenue. The locations where the maximum $PM_{2.5}$ and DPM concentrations occurred (and maximum cancer risks) are identified on Figure 1.

Predicted Cancer Risks and Hazards

Increased cancer risks were calculated using the maximum modeled concentrations for the 2018 - 2019 period and BAAQMD recommended risk assessment methods for an infant exposure (3^{rd} trimester through two years of age) and for an adult exposure at residences and child exposures (three years to 16 years of age) at the preschools and school. The cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations, as described Attachment 1. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Infant and adult exposures were assumed to occur at all residences through the entire construction period and child exposures were assumed to occur at the preschools and school through the entire construction period. Table 5 shows the construction risk levels from the project and the combination with existing nearby TAC sources.

Results of this assessment indicate that the maximum increased residential cancer risks would be 109.8 in one million for an infant exposure and 1.9 in one million for an adult exposure. For a preschool child exposure the maximum increased cancer risk would be 16.8 in one million. The location of the receptor with the maximum cancer risk, or maximally exposed individual (MEI), is shown in Figure 1.

The maximum-modeled annual $PM_{2.5}$ concentration, which is based on combined exhaust and fugitive dust emissions, was 0.8 $\mu g/m^3$, occurring at the residential site with the maximum cancer risk. This would exceed the single-source threshold and be considered *significant*.

The maximum modeled annual DPM concentration (i.e., from construction exhaust) was 0.6687 $\mu g/m^3$. The maximum computed hazard index (HI) based on this DPM concentration is 0.13.

Table 5. Cumulative Community TAC Levels at Construction MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Acute or Chronic Hazard Index
Project Construction	**109.8 (infant)**	**0.8**	0.13
Peralta Boulevard (SR-84)	4.6	0.04	<0.01
Fremont Boulevard	2.8	0.08	<0.03
Centerville Rail Line	<7.8	<0.01	<0.01
Cumulative Sources Total	**<125**	<0.93	<0.18
Single Source Threshold	*>10.0*	*>0.3*	*>1.0*
Exceed Single Source Threshold	*Yes*	*Yes*	*No*
Cumulative Source Threshold	*>100.0*	*>0.8*	*>10.0*
Exceed Combined Source Threshold	*Yes*	*Yes*	*No*

As shown in Table 5, the project would have a *significant* impact with respect to community risk caused by project construction activities, since cancer risk and annual $PM_{2.5}$ concentration and above the single- and cumulative-source thresholds for cancer risk and annual $PM_{2.5}$ concentrations. *Attachment 2* includes the emission calculations and source information used in the modeling and the cancer risk calculations. *Implementation of Mitigation Measure 1 and 2 would reduce this impact to a level of less than significant.*

Mitigation Measure 2: **Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:**

> All diesel-powered off-road equipment operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent. Note that the construction contractor could use other measures to minimize construction period DPM emission to reduce the predicted cancer risk below the thresholds. The use of equipment that includes CARB-certified Level 3 Diesel Particulate Filters[13] or alternatively-fueled equipment (i.e., non-diesel) would meet this requirement. Other measures may be the use of added exhaust devices, or a combination of measures, provided that these measures are approved by the City and demonstrated to reduce community risk impacts to less than significant.

Effectiveness of Mitigation

Implementation of *Mitigation Measure 1* is considered to reduce exhaust emissions by 5 percent and fugitive dust emissions by over 50 percent. Implementation of *Mitigation Measure 2* would further reduce on-site diesel exhaust emissions by over 90 percent. Table 6 reports the maxim construction community risks and combined community risk levels with mitigation measures

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[13] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

implemented. With mitigation, the maximum construction risk would be reduced to 6.3 per million for a residential infant and 1.0 for a pre-school child. Maximum PM2.5 annual concentrations would be reduced to less than 0.1 µg/m^3. The combined increased lifetime residential cancer risk from construction, assuming infant exposure, would be less than 21.5 in one million. With mitigation, the combined annual $PM_{2.5}$ concentrations with construction would be less than 0.21µg/m^3 for a residential exposure. *After implementation of these recommended measures, the project would have a less-than-significant impact with respect to community risk caused by construction activities.*

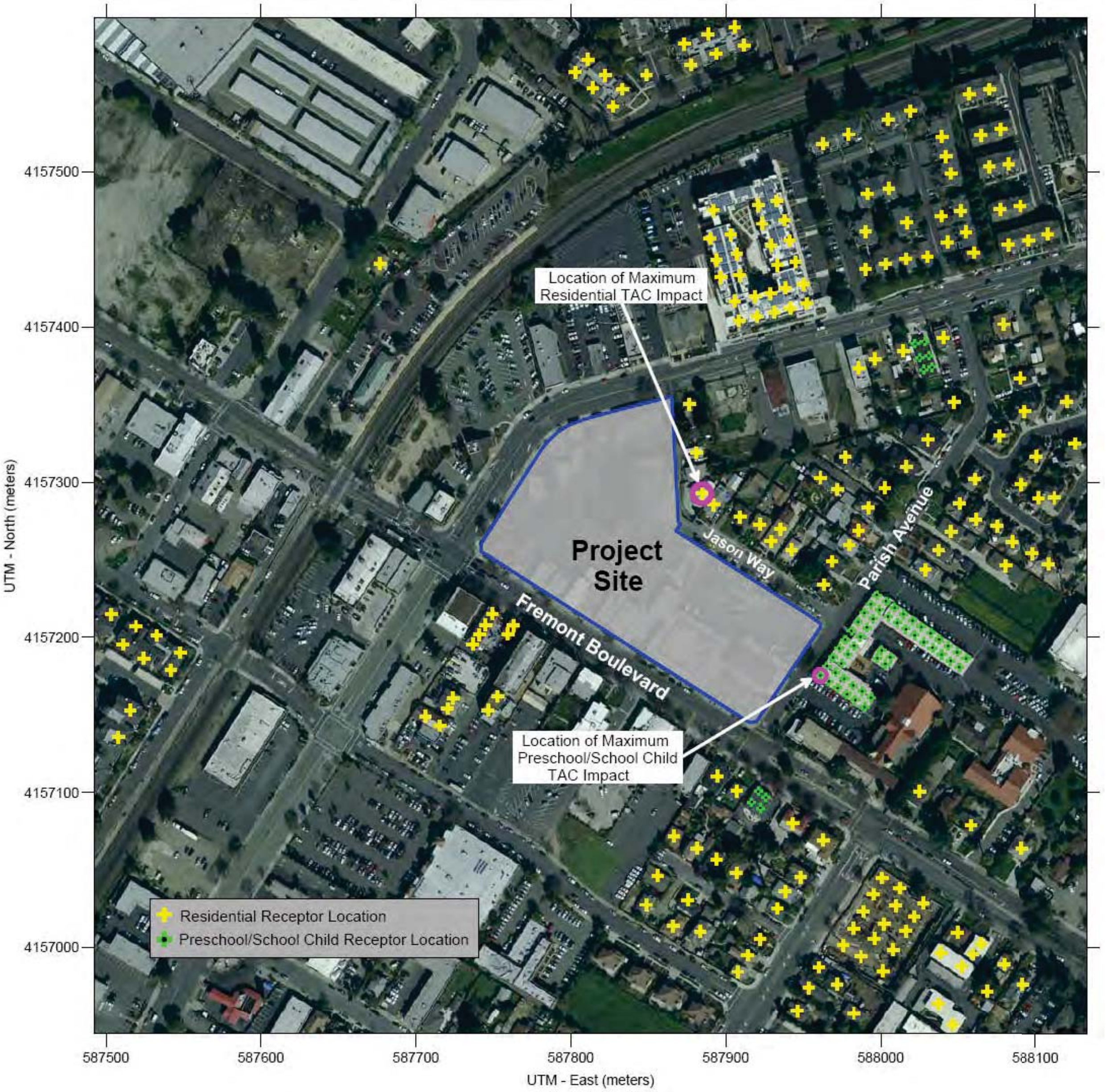
Table 6. Mitigated Combined Community TAC Levels at Construction MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ (µg/m^3)	Acute or Chronic Hazard Index
Mitigated Project Construction	6.3	0.08	0.01
Peralta Boulevard (SR-84)	4.6	0.04	<0.01
Fremont Boulevard	2.8	0.08	<0.03
Centerville Rail Line	<7.8	<0.01	<0.01
Cumulative Sources Total	<21.5	<0.21	<0.06
Single Source Threshold	*>10.0*	*>0.3*	*>1.0*
Exceed Single Source Threshold	*No*	*No*	*No*
Cumulative Source Threshold	*>100.0*	*>0.8*	*>10.0*
Exceed Combined Source Threshold	*No*	*No*	*No*

Impact 5: Create objectionable odors affecting a substantial number of people? ***Less than significant.***

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent receptors. However, they would be localized and are not likely to adversely affect people off site by resulting in confirmed odor complaints. The project would not include any sources of significant odors that would cause complaints from surrounding uses. This would be a *less-than-significant impact.*

Figure 1. Project Construction Site and Locations of Off-Site Sensitive Receptors and Maximum TAC and $PM_{2.5}$ Impacts



Greenhouse Gas Emissions

Impact 6: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***Less than significant.***

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to estimate GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above, including an Existing run to compute project net emissions. Unless otherwise noted below, the CalEEMod model defaults for Alameda County were used. CalEEMod provides emissions for transportation, areas sources, electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport. CalEEMod output worksheets are included in *Attachment 2*.

Trip Generation Rates

CalEEMod allows the user to enter specific trip generation rates. The daily trip data was obtained from the project traffic report, as described above.

Model Year

The model uses mobile emission factors from CARB's EMFAC2014 model. This model is sensitive to the year selected, since vehicle emissions have and continue to be reduced due to fuel efficiency standards and low carbon fuels. The year 2020 was analyzed since it is the first year that the built-out project could conceivably be occupied.

Energy

CalEEMod has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The rate was adjusted to account for PG&E's projected 2020 CO_2 intensity rate. This 2020 rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. The derived 2020 rate for PG&E was estimated at 290 pounds of CO_2 per megawatt of electricity delivered.[14] The model includes the 2013 Title 24 Building Standards. Default rates for energy consumption were assumed in the model.

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[14] Pacific Gas & Electric, 2015. *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*. November.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project. No new wood-burning fireplaces are allowed in the Bay Area, but it was assumed that new residences could include gas-powered fireplaces.

Construction Emissions

GHG emissions associated with construction were computed to be 750 metric tons (MT) of CO_2e for the total construction period and 584 MT for the maximum year. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate annual net missions associated with operation of the fully-developed site under the proposed project. In 2020, as shown in Table 7, annual net emissions resulting from operation of the proposed project are estimated to be 3.0 MT of CO_2e/year/service population, which would be below the BAAQMD significance threshold of 1,100 MT of CO_2e/ year. Therefore, this would be considered a less than significant impact.

Table 7. Annual GHG emissions of CO_2e (MT/year)

Source Category	Existing Uses	2020 Proposed Project
Area	<1	7
Energy Consumption	178	455
Mobile	1,655	1,843
Waste	28	55
Water Usage	13	26
Total	1,874	2,386
Net Emissions		512
BAAQMD Threshold		**1,100 MT of CO_2e**
Significant?		***No***

Impact 7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? ***Less than significant.***

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, CARB, California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from business-as-usual (BAU) emissions projected in 2020 back down to 1990 levels. BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB is currently working on a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The proposed Scoping Plan Update was published on January 20, 2017 as directed by SB 32 companion legislation AB 197. The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan. For example, proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[15] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[16] This HRA used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[17] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

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[15] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

[16] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

[17] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. January 2016.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = *CPF x Inhalation Dose x ASF x ED/AT x FAH x* 10^{6}

Where:

CPF = Cancer potency factor (mg/kg-day)$^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} *x DBR x A x (EF/365) x* 10^{-6}

Where:

C_{air} = concentration in air (μg/m^{3})
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

	Exposure Type →	**Infant**		**Child**		**Adult**
Parameter	***Age Range →***	**3rd Trimester**	**0<2**	**2 < 9**	**2 < 16**	**16 - 30**
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	631	572	261
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Input and Output Worksheets, and Risk Calculations

Fremont Blvd Mixed Use Project - Fremont, CA

DPM Emissions and Modeling Emission Rates

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions			Modeled Area (m^2)	DPM Emission Rate (g/s/m^2)
				(lb/yr)	(lb/hr)	(g/s)		
2018-2019	Construction	0.2082	CON_DPM	416.4	0.12676	1.60E-02	20,679	7.72E-07
Total		***0.2082***		***416.4***	***0.1268***	***0.0160***		

Operation Hours
hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

PM2.5 Fugitive Dust Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions				Modeled Area (m^2)	PM2.5 Emission Rate g/s/m^2
			(ton/year)	(lb/yr)	(lb/hr)	(g/s)		
2018-2019	Construction	CON_FUG	0.0450	90.0	0.02740	3.45E-03	20,679	1.67E-07
Total			***0.0450***	***90.0***	***0.0274***	***0.0035***		

Operation Hours
hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions			Modeled Area (m^2)	DPM Emission Rate (g/s/m^2)
				(lb/yr)	(lb/hr)	(g/s)		
2018-2019	Construction	0.0120	CON_DPM	24.0	0.00731	9.21E-04	20,679	4.45E-08
Total		***0.0120***		***24***	***0.0073***	***0.0009***		

Construction Hours
hr/day = 10 (7am - 4pm)
days/yr = 365
hours/year = 3285

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions				Modeled Area (m^2)	PM2.5 Emission Rate g/s/m^2
			(ton/year)	(lb/yr)	(lb/hr)	(g/s)		
2018-2019	Construction	CON_FUG	0.0122	24.4	0.00743	9.37E-04	20,679	4.53E-08
Total			***0.0122***	***24.4***	***0.0074***	***0.0009***		

Construction Hours
hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

Fremont Blvd Mixed Use Project - Fremont, CA - Health Impact Summary

Maximum Impacts at Residential MEI Location - Unmitigated

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m^3)
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Child	Adult		
2018-2019	0.6687	0.1492	**109.8**	**1.9**	**0.13**	**0.82**

Maximum Impacts at Preschool/School Child MEI Location - Unmitigated

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m^3)
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Child	Adult		
2018-2019	0.5872	0.1314	**16.8**	**1.7**	**0.12**	**0.72**

Maximum Impacts at MEI Location - with Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m^3)
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Child	Adult		
2018-2019	0.0385	0.0400	**6.3**	**0.1**	**0.01**	**0.08**

Maximum Impacts at Preschool/School Child MEI Location -with Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m^3)
	Exhaust PM10/DPM (µg/m^3)	Fugitive PM2.5 (µg/m^3)	Child	Adult		
2018-2019	0.0339	0.0356	**1.0**	**0.1**	**0.01**	**0.07**

Fremont Blvd Mixed Use Project - Fremont, CA - Unmitigated Construction Impacts

Maximum DPM Cancer Risk and PM2.5 Calculations From Construction Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (μg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Informatior			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)		
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3)**		**Age Sensitivity Factor**		**Modeled DPM Conc (ug/m3)**		**Age Sensitivity Factor**		**Fugitive PM2.5**	**Total PM2.5**
			Year	**Annual**			**Year**	**Annual**				
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2018	0.6687	10	109.82	2018	0.6687	1	1.92	0.1492	0.818
2	1	1 - 2	2019	0.0000	10	0.00	2019	0.0000	1	0.00		
3	1	2 - 3	2020	0.0000	3	0.00	2020	0.0000	1	0.00		
4	1	3 - 4	2021	0.0000	3	0.00	2021	0.0000	1	0.00		
5	1	4 - 5	2022	0.0000	3	0.00	2022	0.0000	1	0.00		
6	1	5 - 6	2023	0.0000	3	0.00	2023	0.0000	1	0.00		
7	1	6 - 7	2024	0.0000	3	0.00	2024	0.0000	1	0.00		
8	1	7 - 8	2025	0.0000	3	0.00	2025	0.0000	1	0.00		
9	1	8 - 9	2026	0.0000	3	0.00	2026	0.0000	1	0.00		
10	1	9 - 10	2027	0.0000	3	0.00	2027	0.0000	1	0.00		
11	1	10 - 11	2028	0.0000	3	0.00	2028	0.0000	1	0.00		
12	1	11 - 12	2029	0.0000	3	0.00	2029	0.0000	1	0.00		
13	1	12 - 13	2030	0.0000	3	0.00	2030	0.0000	1	0.00		
14	1	13 - 14	2031	0.0000	3	0.00	2031	0.0000	1	0.00		
15	1	14 - 15	2032	0.0000	3	0.00	2032	0.0000	1	0.00		
16	1	15 - 16	2033	0.0000	3	0.00	2033	0.0000	1	0.00		
17	1	16-17	2034	0.0000	1	0.00	2034	0.0000	1	0.00		
18	1	17-18	2035	0.0000	1	0.00	2035	0.0000	1	0.00		
19	1	18-19	2036	0.0000	1	0.00	2036	0.0000	1	0.00		
20	1	19-20	2037	0.0000	1	0.00	2037	0.0000	1	0.00		
21	1	20-21	2038	0.0000	1	0.00	2038	0.0000	1	0.00		
22	1	21-22	2039	0.0000	1	0.00	2039	0.0000	1	0.00		
23	1	22-23	2040	0.0000	1	0.00	2040	0.0000	1	0.00		
24	1	23-24	2041	0.0000	1	0.00	2041	0.0000	1	0.00		
25	1	24-25	2042	0.0000	1	0.00	2042	0.0000	1	0.00		
26	1	25-26	2043	0.0000	1	0.00	2043	0.0000	1	0.00		
27	1	26-27	2044	0.0000	1	0.00	2044	0.0000	1	0.00		
28	1	27-28	2045	0.0000	1	0.00	2045	0.0000	1	0.00		
29	1	28-29	2046	0.0000	1	0.00	2046	0.0000	1	0.00		
30	1	29-30	2047	0.0000	1	0.00	2047	0.0000	1	0.00		
Total Increased Cancer Risk						**109.8**				**1.92**		

* Third trimester of pregnancy

Fremont Blvd Mixed Use Project - Fremont, CA - Construction Impacts with Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (μg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Informatior			Infant/Child	Adult - Exposure Information			Adult		
	Exposure				Age	Cancer	Modeled		Age	Cancer		
Exposure Year	Duration (years)	Age	DPM Conc (ug/m3) Year	Annual	Sensitivity Factor	Risk (per million)	DPM Conc (ug/m3) Year	Annual	Sensitivity Factor	Risk (per million)	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2018	0.0385	10	6.33	2018	0.0385	1	0.11	0.0400	0.079
2	1	1 - 2	2019	0.0000	10	0.00	2019	0.0000	1	0.00		
3	1	2 - 3	2020	0.0000	3	0.00	2020	0.0000	1	0.00		
4	1	3 - 4	2021	0.0000	3	0.00	2021	0.0000	1	0.00		
5	1	4 - 5	2022	0.0000	3	0.00	2022	0.0000	1	0.00		
6	1	5 - 6	2023	0.0000	3	0.00	2023	0.0000	1	0.00		
7	1	6 - 7	2024	0.0000	3	0.00	2024	0.0000	1	0.00		
8	1	7 - 8	2025	0.0000	3	0.00	2025	0.0000	1	0.00		
9	1	8 - 9	2026	0.0000	3	0.00	2026	0.0000	1	0.00		
10	1	9 - 10	2027	0.0000	3	0.00	2027	0.0000	1	0.00		
11	1	10 - 11	2028	0.0000	3	0.00	2028	0.0000	1	0.00		
12	1	11 - 12	2029	0.0000	3	0.00	2029	0.0000	1	0.00		
13	1	12 - 13	2030	0.0000	3	0.00	2030	0.0000	1	0.00		
14	1	13 - 14	2031	0.0000	3	0.00	2031	0.0000	1	0.00		
15	1	14 - 15	2032	0.0000	3	0.00	2032	0.0000	1	0.00		
16	1	15 - 16	2033	0.0000	3	0.00	2033	0.0000	1	0.00		
17	1	16-17	2034	0.0000	1	0.00	2034	0.0000	1	0.00		
18	1	17-18	2035	0.0000	1	0.00	2035	0.0000	1	0.00		
19	1	18-19	2036	0.0000	1	0.00	2036	0.0000	1	0.00		
20	1	19-20	2037	0.0000	1	0.00	2037	0.0000	1	0.00		
21	1	20-21	2038	0.0000	1	0.00	2038	0.0000	1	0.00		
22	1	21-22	2039	0.0000	1	0.00	2039	0.0000	1	0.00		
23	1	22-23	2040	0.0000	1	0.00	2040	0.0000	1	0.00		
24	1	23-24	2041	0.0000	1	0.00	2041	0.0000	1	0.00		
25	1	24-25	2042	0.0000	1	0.00	2042	0.0000	1	0.00		
26	1	25-26	2043	0.0000	1	0.00	2043	0.0000	1	0.00		
27	1	26-27	2044	0.0000	1	0.00	2044	0.0000	1	0.00		
28	1	27-28	2045	0.0000	1	0.00	2045	0.0000	1	0.00		
29	1	28-29	2046	0.0000	1	0.00	2046	0.0000	1	0.00		
30	1	29-30	2047	0.0000	1	0.00	2047	0.0000	1	0.00		
Total Increased Cancer Risk						**6.3**				**0.11**		

* Third trimester of pregnancy

Fremont Blvd Mixed Use Project - Fremont, CA - Construction Impacts
Maximum DPM Cancer Risk Calculations From Construction
Daycare/School Child Receptor Locations

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Informatior			**Infant/Child**	**Adult - Exposure Information**			**Adult**		
	Exposure				**Age**	**Cancer**	**Modeled**		**Age**	**Cancer**		
Exposure	**Duration**		**DPM Conc (ug/m3)**		**Sensitivity**	**Risk**	**DPM Conc (ug/m3)**		**Sensitivity**	**Risk**	**Fugitive**	**Total**
Year	**(years)**	**Age**	**Year**	**Annual**	**Factor**	**(per million)**	**Year**	**Annual**	**Factor**	**(per million)**	**PM2.5**	**PM2.5**
2018	1	5 - 6	2018	0.5872	3	16.75	2018	0.5872	1	1.69	0.1314	0.719
Total Increased Cancer Risk						**16.75**				**1.69**		

Fremont Blvd Mixed Use Project - Fremont, CA - Construction Impacts with Mitigation
Maximum DPM Cancer Risk Calculations From Construction
Daycare/School Child Receptor Locations

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (μg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age --> **Parameter**	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Informatior			**Infant/Child**	**Adult - Exposure Information**			**Adult**		
	Exposure				**Age**	**Cancer**	**Modeled**		**Age**	**Cancer**		
Exposure	**Duration**		**DPM Conc (ug/m3)**		**Sensitivity**	**Risk**	**DPM Conc (ug/m3)**		**Sensitivity**	**Risk**	**Fugitive**	**Total**
Year	**(years)**	**Age**	**Year**	**Annual**	**Factor**	**(per million)**	**Year**	**Annual**	**Factor**	**(per million)**	**PM2.5**	**PM2.5**
2018	1	5 - 6	2018	0.0339	3	0.97	2018	0.0339	1	0.10	0.0356	0.069
Total Increased Cancer Risk						**0.97**				**0.10**		

Silicon Sage - Centerville, Construction and Operations - Alameda County, Annual

Silicon Sage - Centerville, Construction and Operations

Alameda County, Annual

Criteria Air Pollutant and GHG Oputput

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Day-Care Center	2.61	1000sqft	0.00	2,610.00	0
Enclosed Parking with Elevator	273.00	Space	0.00	109,200.00	0
Fast Food Restaurant w/o Drive Thru	1.55	1000sqft	0.00	1,550.00	0
Apartments Low Rise	64.00	Dwelling Unit	0.00	64,000.00	183
Condo/Townhouse	72.00	Dwelling Unit	4.50	72,000.00	206
Regional Shopping Center	23.45	1000sqft	0.00	23,450.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 carbon rate

Land Use - Land uses and site acreage from traffic report and plan drawings

Construction Phase - default, assume March 2018 start

Trips and VMT -

Demolition - Up to 55,000 sf of bldg demo

Grading - 20,100cy soil export

Vehicle Trips - Trip rates from project traffic report. Pass-by set to zero for retail since already included in trip reductions.

Woodstoves - No woodstoves, possible gas-powered fireplaces

Energy Use - default

Construction Off-road Equipment Mitigation - Tier 4 engines for equip > 25hp. BAAQMD BMPs.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblEnergyUse	LightingElect	2.51	2.58
tblEnergyUse	LightingElect	1.75	2.63
tblEnergyUse	LightingElect	5.34	5.48
tblEnergyUse	LightingElect	4.88	5.00
tblEnergyUse	NT24E	3,172.76	3,418.36
tblEnergyUse	NT24E	3,795.01	4,109.59
tblEnergyUse	T24E	233.06	274.84
tblEnergyUse	T24E	204.52	231.62
tblEnergyUse	T24E	0.66	0.69
tblEnergyUse	T24E	2.67	2.80
tblEnergyUse	T24E	2.24	2.35
tblEnergyUse	T24NG	17,734.50	25,590.91
tblEnergyUse	T24NG	20,104.20	25,448.35
tblEnergyUse	T24NG	14.85	14.93
tblEnergyUse	T24NG	39.90	40.10
tblEnergyUse	T24NG	3.90	3.92
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	9.60	20.48
tblFireplaces	NumberGas	10.80	23.04
tblFireplaces	NumberWood	10.88	0.00
tblFireplaces	NumberWood	12.24	0.00
tblGrading	MaterialExported	0.00	20,100.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	2.46	0.00
tblLandUse	LotAcreage	0.04	0.00

tblLandUse	LotAcreage	4.00	0.00
tblLandUse	LotAcreage	0.54	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	51.00	63.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	7.16	5.58
tblVehicleTrips	ST_TR	5.67	4.37
tblVehicleTrips	ST_TR	696.00	361.92
tblVehicleTrips	ST_TR	49.97	29.48
tblVehicleTrips	SU_TR	6.07	4.73
tblVehicleTrips	SU_TR	4.84	3.73
tblVehicleTrips	SU_TR	500.00	260.00
tblVehicleTrips	SU_TR	25.24	14.89
tblVehicleTrips	WD_TR	6.59	5.17
tblVehicleTrips	WD_TR	5.81	4.49
tblVehicleTrips	WD_TR	716.00	372.90
tblVehicleTrips	WD_TR	42.70	25.25
tblWoodstoves	NumberCatalytic	1.28	0.00
tblWoodstoves	NumberCatalytic	1.44	0.00
tblWoodstoves	NumberNoncatalytic	1.28	0.00
tblWoodstoves	NumberNoncatalytic	1.44	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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					
2018	0.3981	3.7503	2.6249	6.3700e-003	0.2594	0.1766	0.4360	0.0858	0.1657	0.2515	0.0000	581.9978	581.9978	0.0846	0.0000	584.1124
2019	1.2096	0.7234	0.6509	1.3500e-003	0.0363	0.0376	0.0739	9.7900e-003	0.0353	0.0451	0.0000	120.7194	120.7194	0.0199	0.0000	121.2165
Maximum	**1.2096**	**3.7503**	**2.6249**	**6.3700e-003**	**0.2594**	**0.1766**	**0.4360**	**0.0858**	**0.1657**	**0.2515**	**0.0000**	**581.9978**	**581.9978**	**0.0846**	**0.0000**	**584.1124**

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					
2018	0.1496	2.1769	2.6866	6.3700e-003	0.1822	0.0146	0.1968	0.0528	0.0143	0.0672	0.0000	581.9975	581.9975	0.0846	0.0000	584.1121
2019	1.1585	0.4484	0.6819	1.3500e-003	0.0363	3.3000e-003	0.0396	9.7900e-003	3.2500e-003	0.0130	0.0000	120.7193	120.7193	0.0199	0.0000	121.2165
Maximum	**1.1585**	**2.1769**	**2.6866**	**6.3700e-003**	**0.1822**	**0.0146**	**0.1968**	**0.0528**	**0.0143**	**0.0672**	**0.0000**	**581.9975**	**581.9975**	**0.0846**	**0.0000**	**584.1121**

	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	**18.63**	**41.31**	**-2.83**	**0.00**	**26.10**	**91.63**	**53.63**	**34.51**	**91.25**	**72.95**	**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	**3-1-2018**	**5-31-2018**	1.7026	0.9920
2	**6-1-2018**	**8-31-2018**	1.0610	0.5805
3	**9-1-2018**	**11-30-2018**	1.0541	0.5788

4	**12-1-2018**	**2-28-2019**	0.9807	0.5660
5	**3-1-2019**	**5-31-2019**	1.3448	1.2735
		Highest	1.7026	1.2735

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	0.7901	0.0164	1.0180	8.0000e-005		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003	0.0000	7.0879	7.0879	1.7300e-003	1.0000e-004	7.1608
Energy	0.0229	0.1965	0.0920	1.2500e-003		0.0158	0.0158		0.0158	0.0158	0.0000	452.0343	452.0343	0.0269	8.8200e-003	455.3357
Mobile	0.5774	3.6424	6.0677	0.0200	1.4565	0.0242	1.4807	0.3916	0.0229	0.4144	0.0000	1,840.9353	1,840.9353	0.0881	0.0000	1,843.1376
Waste						0.0000	0.0000		0.0000	0.0000	22.0083	0.0000	22.0083	1.3007	0.0000	54.5246
Water						0.0000	0.0000		0.0000	0.0000	3.5470	11.1663	14.7133	0.3654	8.8300e-003	26.4813
Total	**1.3903**	**3.8553**	**7.1776**	**0.0213**	**1.4565**	**0.0460**	**1.5025**	**0.3916**	**0.0446**	**0.4362**	**25.5553**	**2,311.2238**	**2,336.7791**	**1.7828**	**0.0178**	**2,386.6399**

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	0.7901	0.0164	1.0180	8.0000e-005		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003	0.0000	7.0879	7.0879	1.7300e-003	1.0000e-004	7.1608
Energy	0.0229	0.1965	0.0920	1.2500e-003		0.0158	0.0158		0.0158	0.0158	0.0000	452.0343	452.0343	0.0269	8.8200e-003	455.3357
Mobile	0.5774	3.6424	6.0677	0.0200	1.4565	0.0242	1.4807	0.3916	0.0229	0.4144	0.0000	1,840.9353	1,840.9353	0.0881	0.0000	1,843.1376

Waste						0.0000	0.0000		0.0000	0.0000	22.0083	0.0000	22.0083	1.3007	0.0000	54.5246
Water						0.0000	0.0000		0.0000	0.0000	3.5470	11.1663	14.7133	0.3654	8.8300e-003	26.4813
Total	**1.3903**	**3.8553**	**7.1776**	**0.0213**	**1.4565**	**0.0460**	**1.5025**	**0.3916**	**0.0446**	**0.4362**	**25.5553**	**2,311.2238**	**2,336.7791**	**1.7828**	**0.0178**	**2,386.6399**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2018	3/28/2018	5	20	
2	Site Preparation	Site Preparation	3/29/2018	4/4/2018	5	5	
3	Grading	Grading	4/5/2018	4/16/2018	5	8	
4	Building Construction	Building Construction	4/17/2018	3/4/2019	5	230	
5	Paving	Paving	3/5/2019	3/28/2019	5	18	
6	Architectural Coating	Architectural Coating	3/29/2019	4/23/2019	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 275,400; Residential Outdoor: 91,800; Non-Residential Indoor: 41,415; Non-Residential Outdoor: 13,805; Striped

OffRoad Equipment

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	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	250.00	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	6	15.00	0.00	2,513.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	153.00	37.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	31.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	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

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

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					0.0271	0.0000	0.0271	4.1000e-003	0.0000	4.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**	**0.0271**	**0.0194**	**0.0465**	**4.1000e-003**	**0.0181**	**0.0222**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

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	1.1900e-003	0.0409	6.7700e-003	1.0000e-004	2.1200e-003	1.5000e-004	2.2700e-003	5.8000e-004	1.5000e-004	7.3000e-004	0.0000	9.7694	9.7694	5.1000e-004	0.0000	9.7822
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	6.3000e-004	4.9000e-004	4.9300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1207	1.1207	4.0000e-005	0.0000	1.1216
Total	**1.8200e-003**	**0.0413**	**0.0117**	**1.1000e-004**	**3.3100e-003**	**1.6000e-004**	**3.4600e-003**	**9.0000e-004**	**1.6000e-004**	**1.0500e-003**	**0.0000**	**10.8901**	**10.8901**	**5.5000e-004**	**0.0000**	**10.9038**

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					6.0900e-003	0.0000	6.0900e-003	9.2000e-004	0.0000	9.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8400e-003	0.1356	0.2467	3.9000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**5.8400e-003**	**0.1356**	**0.2467**	**3.9000e-004**	**6.0900e-003**	**6.2000e-004**	**6.7100e-003**	**9.2000e-004**	**6.2000e-004**	**1.5400e-003**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

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	1.1900e-003	0.0409	6.7700e-003	1.0000e-004	2.1200e-003	1.5000e-004	2.2700e-003	5.8000e-004	1.5000e-004	7.3000e-004	0.0000	9.7694	9.7694	5.1000e-004	0.0000	9.7822
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	6.3000e-004	4.9000e-004	4.9300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1207	1.1207	4.0000e-005	0.0000	1.1216
Total	**1.8200e-003**	**0.0413**	**0.0117**	**1.1000e-004**	**3.3100e-003**	**1.6000e-004**	**3.4600e-003**	**9.0000e-004**	**1.6000e-004**	**1.0500e-003**	**0.0000**	**10.8901**	**10.8901**	**5.5000e-004**	**0.0000**	**10.9038**

3.3 Site Preparation - 2018

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.1205	0.0562	1.0000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**0.0114**	**0.1205**	**0.0562**	**1.0000e-004**	**0.0452**	**6.4400e-003**	**0.0516**	**0.0248**	**5.9300e-003**	**0.0308**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

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	1.9000e-004	1.5000e-004	1.4800e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3362	0.3362	1.0000e-005	0.0000	0.3365
Total	**1.9000e-004**	**1.5000e-004**	**1.4800e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3362**	**0.3362**	**1.0000e-005**	**0.0000**	**0.3365**

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					0.0102	0.0000	0.0102	5.5900e-003	0.0000	5.5900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7400e-003	0.0304	0.0574	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**1.7400e-003**	**0.0304**	**0.0574**	**1.0000e-004**	**0.0102**	**1.6000e-004**	**0.0103**	**5.5900e-003**	**1.6000e-004**	**5.7500e-003**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

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	1.9000e-004	1.5000e-004	1.4800e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3362	0.3362	1.0000e-005	0.0000	0.3365
Total	**1.9000e-004**	**1.5000e-004**	**1.4800e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3362**	**0.3362**	**1.0000e-005**	**0.0000**	**0.3365**

3.4 Grading - 2018

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					0.0274	0.0000	0.0274	0.0136	0.0000	0.0136	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1227	0.0663	1.2000e-004		6.2100e-003	6.2100e-003		5.7100e-003	5.7100e-003	0.0000	10.8428	10.8428	3.3800e-003	0.0000	10.9271
Total	**0.0111**	**0.1227**	**0.0663**	**1.2000e-004**	**0.0274**	**6.2100e-003**	**0.0336**	**0.0136**	**5.7100e-003**	**0.0194**	**0.0000**	**10.8428**	**10.8428**	**3.3800e-003**	**0.0000**	**10.9271**

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	0.0120	0.4107	0.0680	1.0200e-003	0.0213	1.5500e-003	0.0228	5.8600e-003	1.4800e-003	7.3400e-003	0.0000	98.2015	98.2015	5.1800e-003	0.0000	98.3309
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	2.0000e-004	1.9700e-003	0.0000	4.7000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4483	0.4483	1.0000e-005	0.0000	0.4486
Total	**0.0122**	**0.4109**	**0.0700**	**1.0200e-003**	**0.0218**	**1.5500e-003**	**0.0233**	**5.9900e-003**	**1.4800e-003**	**7.4700e-003**	**0.0000**	**98.6497**	**98.6497**	**5.1900e-003**	**0.0000**	**98.7795**

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					6.1500e-003	0.0000	6.1500e-003	3.0700e-003	0.0000	3.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0413	0.0760	1.2000e-004		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	10.8427	10.8427	3.3800e-003	0.0000	10.9271
Total	**2.0800e-003**	**0.0413**	**0.0760**	**1.2000e-004**	**6.1500e-003**	**1.9000e-004**	**6.3400e-003**	**3.0700e-003**	**1.9000e-004**	**3.2600e-003**	**0.0000**	**10.8427**	**10.8427**	**3.3800e-003**	**0.0000**	**10.9271**

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	0.0120	0.4107	0.0680	1.0200e-003	0.0213	1.5500e-003	0.0228	5.8600e-003	1.4800e-003	7.3400e-003	0.0000	98.2015	98.2015	5.1800e-003	0.0000	98.3309
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	2.0000e-004	1.9700e-003	0.0000	4.7000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4483	0.4483	1.0000e-005	0.0000	0.4486

Total	**0.0122**	**0.4109**	**0.0700**	**1.0200e-003**	**0.0218**	**1.5500e-003**	**0.0233**	**5.9900e-003**	**1.4800e-003**	**7.4700e-003**	**0.0000**	**98.6497**	**98.6497**	**5.1900e-003**	**0.0000**	**98.7795**

3.5 Building Construction - 2018

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	0.2479	2.1636	1.6262	2.4900e-003		0.1387	0.1387		0.1304	0.1304	0.0000	219.9347	219.9347	0.0539	0.0000	221.2818
Total	**0.2479**	**2.1636**	**1.6262**	**2.4900e-003**		**0.1387**	**0.1387**		**0.1304**	**0.1304**	**0.0000**	**219.9347**	**219.9347**	**0.0539**	**0.0000**	**221.2818**

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	0.0170	0.4613	0.1054	9.6000e-004	0.0225	3.2900e-003	0.0258	6.5000e-003	3.1500e-003	9.6500e-003	0.0000	91.7916	91.7916	5.8700e-003	0.0000	91.9384
Worker	0.0593	0.0466	0.4647	1.1700e-003	0.1119	8.2000e-004	0.1127	0.0298	7.5000e-004	0.0305	0.0000	105.7388	105.7388	3.3200e-003	0.0000	105.8217
Total	**0.0763**	**0.5079**	**0.5700**	**2.1300e-003**	**0.1344**	**4.1100e-003**	**0.1385**	**0.0363**	**3.9000e-003**	**0.0402**	**0.0000**	**197.5303**	**197.5303**	**9.1900e-003**	**0.0000**	**197.7601**

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	0.0494	1.0094	1.6533	2.4900e-003		7.8300e-003	7.8300e-003		7.8300e-003	7.8300e-003	0.0000	219.9344	219.9344	0.0539	0.0000	221.2815
Total	**0.0494**	**1.0094**	**1.6533**	**2.4900e-003**		**7.8300e-003**	**7.8300e-003**		**7.8300e-003**	**7.8300e-003**	**0.0000**	**219.9344**	**219.9344**	**0.0539**	**0.0000**	**221.2815**

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	0.0170	0.4613	0.1054	9.6000e-004	0.0225	3.2900e-003	0.0258	6.5000e-003	3.1500e-003	9.6500e-003	0.0000	91.7916	91.7916	5.8700e-003	0.0000	91.9384
Worker	0.0593	0.0466	0.4647	1.1700e-003	0.1119	8.2000e-004	0.1127	0.0298	7.5000e-004	0.0305	0.0000	105.7388	105.7388	3.3200e-003	0.0000	105.8217
Total	**0.0763**	**0.5079**	**0.5700**	**2.1300e-003**	**0.1344**	**4.1100e-003**	**0.1385**	**0.0363**	**3.9000e-003**	**0.0402**	**0.0000**	**197.5303**	**197.5303**	**9.1900e-003**	**0.0000**	**197.7601**

3.5 Building Construction - 2019

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	0.0531	0.4743	0.3862	6.1000e-004		0.0290	0.0290		0.0273	0.0273	0.0000	52.8984	52.8984	0.0129	0.0000	53.2206
Total	**0.0531**	**0.4743**	**0.3862**	**6.1000e-004**		**0.0290**	**0.0290**		**0.0273**	**0.0273**	**0.0000**	**52.8984**	**52.8984**	**0.0129**	**0.0000**	**53.2206**

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	3.7500e-003	0.1065	0.0236	2.3000e-004	5.4700e-003	6.8000e-004	6.1500e-003	1.5800e-003	6.5000e-004	2.2300e-003	0.0000	22.1757	22.1757	1.3700e-003	0.0000	22.2099
Worker	0.0130	9.9400e-003	0.1004	2.8000e-004	0.0272	1.9000e-004	0.0274	7.2400e-003	1.8000e-004	7.4200e-003	0.0000	24.9682	24.9682	7.1000e-004	0.0000	24.9860
Total	**0.0168**	**0.1164**	**0.1240**	**5.1000e-004**	**0.0327**	**8.7000e-004**	**0.0336**	**8.8200e-003**	**8.3000e-004**	**9.6500e-003**	**0.0000**	**47.1439**	**47.1439**	**2.0800e-003**	**0.0000**	**47.1959**

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	0.0120	0.2455	0.4022	6.1000e-004		1.9000e-003	1.9000e-003		1.9000e-003	1.9000e-003	0.0000	52.8984	52.8984	0.0129	0.0000	53.2206
Total	**0.0120**	**0.2455**	**0.4022**	**6.1000e-004**		**1.9000e-003**	**1.9000e-003**		**1.9000e-003**	**1.9000e-003**	**0.0000**	**52.8984**	**52.8984**	**0.0129**	**0.0000**	**53.2206**

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	3.7500e-003	0.1065	0.0236	2.3000e-004	5.4700e-003	6.8000e-004	6.1500e-003	1.5800e-003	6.5000e-004	2.2300e-003	0.0000	22.1757	22.1757	1.3700e-003	0.0000	22.2099
Worker	0.0130	9.9400e-003	0.1004	2.8000e-004	0.0272	1.9000e-004	0.0274	7.2400e-003	1.8000e-004	7.4200e-003	0.0000	24.9682	24.9682	7.1000e-004	0.0000	24.9860
Total	**0.0168**	**0.1164**	**0.1240**	**5.1000e-004**	**0.0327**	**8.7000e-004**	**0.0336**	**8.8200e-003**	**8.3000e-004**	**9.6500e-003**	**0.0000**	**47.1439**	**47.1439**	**2.0800e-003**	**0.0000**	**47.1959**

3.6 Paving - 2019

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	0.0114	0.1148	0.1108	1.7000e-004		6.4800e-003	6.4800e-003		5.9700e-003	5.9700e-003	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1148**	**0.1108**	**1.7000e-004**		**6.4800e-003**	**6.4800e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

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	6.8000e-004	5.2000e-004	5.2500e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3055	1.3055	4.0000e-005	0.0000	1.3065
Total	**6.8000e-004**	**5.2000e-004**	**5.2500e-003**	**1.0000e-005**	**1.4200e-003**	**1.0000e-005**	**1.4300e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3055**	**1.3055**	**4.0000e-005**	**0.0000**	**1.3065**

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	3.4100e-003	0.0756	0.1260	1.7000e-004		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.4100e-003**	**0.0756**	**0.1260**	**1.7000e-004**		**4.6000e-004**	**4.6000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

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	6.8000e-004	5.2000e-004	5.2500e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3055	1.3055	4.0000e-005	0.0000	1.3065

Total	**6.8000e-004**	**5.2000e-004**	**5.2500e-003**	**1.0000e-005**	**1.4200e-003**	**1.0000e-005**	**1.4300e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3055**	**1.3055**	**4.0000e-005**	**0.0000**	**1.3065**

3.7 Architectural Coating - 2019

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	1.1241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4000e-003	0.0165	0.0166	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**1.1265**	**0.0165**	**0.0166**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

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	1.0600e-003	8.1000e-004	8.1400e-003	2.0000e-005	2.2100e-003	2.0000e-005	2.2200e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	2.0236	2.0236	6.0000e-005	0.0000	2.0250
Total	**1.0600e-003**	**8.1000e-004**	**8.1400e-003**	**2.0000e-005**	**2.2100e-003**	**2.0000e-005**	**2.2200e-003**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**2.0236**	**2.0236**	**6.0000e-005**	**0.0000**	**2.0250**

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	1.1241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9000e-004	9.5400e-003	0.0165	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**1.1246**	**9.5400e-003**	**0.0165**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

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	1.0600e-003	8.1000e-004	8.1400e-003	2.0000e-005	2.2100e-003	2.0000e-005	2.2200e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	2.0236	2.0236	6.0000e-005	0.0000	2.0250
Total	**1.0600e-003**	**8.1000e-004**	**8.1400e-003**	**2.0000e-005**	**2.2100e-003**	**2.0000e-005**	**2.2200e-003**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**2.0236**	**2.0236**	**6.0000e-005**	**0.0000**	**2.0250**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.5774	3.6424	6.0677	0.0200	1.4565	0.0242	1.4807	0.3916	0.0229	0.4144	0.0000	1,840.9353	1,840.9353	0.0881	0.0000	1,843.1376
Unmitigated	0.5774	3.6424	6.0677	0.0200	1.4565	0.0242	1.4807	0.3916	0.0229	0.4144	0.0000	1,840.9353	1,840.9353	0.0881	0.0000	1,843.1376

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	330.88	357.12	302.72	763,569	763,569
Condo/Townhouse	323.28	314.64	268.56	725,745	725,745
Day-Care Center	193.30	16.21	15.22	167,881	167,881
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	578.00	560.98	403.00	1,061,767	1,061,767
Regional Shopping Center	592.11	691.31	349.17	1,175,134	1,175,134
Total	2,017.56	1,940.25	1,338.67	3,894,096	3,894,096

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Fast Food Restaurant w/o Drive	9.50	7.30	7.30	1.50	79.50	19.00	63	37	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Condo/Townhouse	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Day-Care Center	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Enclosed Parking with Elevator	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Fast Food Restaurant w/o Drive Thru	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Regional Shopping Center	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759

5.0 Energy Detail

Historical Energy Use: N

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	225.8860	225.8860	0.0226	4.6700e-003	227.8434
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	225.8860	225.8860	0.0226	4.6700e-003	227.8434
NaturalGas Mitigated	0.0229	0.1965	0.0920	1.2500e-003		0.0158	0.0158		0.0158	0.0158	0.0000	226.1484	226.1484	4.3300e-003	4.1500e-003	227.4922
NaturalGas Unmitigated	0.0229	0.1965	0.0920	1.2500e-003		0.0158	0.0158		0.0158	0.0158	0.0000	226.1484	226.1484	4.3300e-003	4.1500e-003	227.4922

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					
Apartments Low Rise	1.80518e+006	9.7300e-003	0.0832	0.0354	5.3000e-004		6.7300e-003	6.7300e-003		6.7300e-003	6.7300e-003	0.0000	96.3312	96.3312	1.8500e-003	1.7700e-003	96.9036
Condo/Townhouse	2.02056e+006	0.0109	0.0931	0.0396	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	107.8248	107.8248	2.0700e-003	1.9800e-003	108.4656
Day-Care Center	43195.5	2.3000e-004	2.1200e-003	1.7800e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3051	2.3051	4.0000e-005	4.0000e-005	2.3188
Enclosed Parking with Elevator	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
Fast Food Restaurant w/o	260586	1.4100e-003	0.0128	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004	0.0000	13.9059	13.9059	2.7000e-004	2.5000e-004	13.9885
Regional Shopping Center	108339	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7814	5.7814	1.1000e-004	1.1000e-004	5.8157
Total		**0.0229**	**0.1965**	**0.0920**	**1.2400e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**	**0.0000**	**226.1484**	**226.1484**	**4.3400e-003**	**4.1500e-003**	**227.4922**

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					
Apartments Low Rise	1.80518e+006	9.7300e-003	0.0832	0.0354	5.3000e-004		6.7300e-003	6.7300e-003		6.7300e-003	6.7300e-003	0.0000	96.3312	96.3312	1.8500e-003	1.7700e-003	96.9036
Condo/Townhouse	2.02056e+006	0.0109	0.0931	0.0396	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	107.8248	107.8248	2.0700e-003	1.9800e-003	108.4656
Day-Care Center	43195.5	2.3000e-004	2.1200e-003	1.7800e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3051	2.3051	4.0000e-005	4.0000e-005	2.3188
Enclosed Parking with Elevator	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
Fast Food Restaurant w/o	260586	1.4100e-003	0.0128	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004	0.0000	13.9059	13.9059	2.7000e-004	2.5000e-004	13.9885
Regional Shopping Center	108339	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7814	5.7814	1.1000e-004	1.1000e-004	5.8157
Total		**0.0229**	**0.1965**	**0.0920**	**1.2400e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**	**0.0000**	**226.1484**	**226.1484**	**4.3400e-003**	**4.1500e-003**	**227.4922**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	288228	37.9140	3.7900e-003	7.8000e-004	38.2426
Condo/Townhouse	384646	50.5971	5.0600e-003	1.0500e-003	51.0355
Day-Care Center	11849.4	1.5587	1.6000e-004	3.0000e-005	1.5722
Enclosed Parking with Elevator	736008	96.8158	9.6800e-003	2.0000e-003	97.6548
Fast Food Restaurant w/o Drive Thru	45337.5	5.9638	6.0000e-004	1.2000e-004	6.0155
Regional Shopping Center	251150	33.0367	3.3000e-003	6.8000e-004	33.3229
Total		**225.8860**	**0.0226**	**4.6600e-003**	**227.8434**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	288228	37.9140	3.7900e-003	7.8000e-004	38.2426
Condo/Townhouse	384646	50.5971	5.0600e-003	1.0500e-003	51.0355
Day-Care Center	11849.4	1.5587	1.6000e-004	3.0000e-005	1.5722
Enclosed Parking with Elevator	736008	96.8158	9.6800e-003	2.0000e-003	97.6548
Fast Food Restaurant w/o Drive Thru	45337.5	5.9638	6.0000e-004	1.2000e-004	6.0155
Regional Shopping Center	251150	33.0367	3.3000e-003	6.8000e-004	33.3229

Total		**225.8860**	**0.0226**	**4.6600e-003**	**227.8434**

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	0.7901	0.0164	1.0180	8.0000e-005		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003	0.0000	7.0879	7.0879	1.7300e-003	1.0000e-004	7.1608
Unmitigated	0.7901	0.0164	1.0180	8.0000e-005		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003	0.0000	7.0879	7.0879	1.7300e-003	1.0000e-004	7.1608

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	0.1124					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6460					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	5.5000e-004	4.6900e-003	2.0000e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	5.4330	5.4330	1.0000e-004	1.0000e-004	5.4653
Landscaping	0.0311	0.0117	1.0160	5.0000e-005		5.5800e-003	5.5800e-003		5.5800e-003	5.5800e-003	0.0000	1.6549	1.6549	1.6200e-003	0.0000	1.6955

Total	**0.7901**	**0.0164**	**1.0180**	**8.0000e-005**		**5.9600e-003**	**5.9600e-003**		**5.9600e-003**	**5.9600e-003**	**0.0000**	**7.0879**	**7.0879**	**1.7200e-003**	**1.0000e-004**	**7.1608**

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	0.1124					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6460					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	5.5000e-004	4.6900e-003	2.0000e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	5.4330	5.4330	1.0000e-004	1.0000e-004	5.4653
Landscaping	0.0311	0.0117	1.0160	5.0000e-005		5.5800e-003	5.5800e-003		5.5800e-003	5.5800e-003	0.0000	1.6549	1.6549	1.6200e-003	0.0000	1.6955
Total	**0.7901**	**0.0164**	**1.0180**	**8.0000e-005**		**5.9600e-003**	**5.9600e-003**		**5.9600e-003**	**5.9600e-003**	**0.0000**	**7.0879**	**7.0879**	**1.7200e-003**	**1.0000e-004**	**7.1608**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.7133	0.3654	8.8300e-003	26.4813
Unmitigated	14.7133	0.3654	8.8300e-003	26.4813

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.16986 / 2.62882	5.5012	0.1363	3.2900e-003	9.8904
Condo/Townhouse	4.69109 / 2.95743	6.1888	0.1533	3.7100e-003	11.1266
Day-Care Center	0.111942 / 0.28785	0.2477	3.6700e-003	9.0000e-005	0.3664
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.470477 / 0.0300305	0.4980	0.0154	3.7000e-004	0.9921
Regional Shopping Center	1.737 / 1.06461	2.2776	0.0568	1.3700e-003	4.1058
Total		**14.7133**	**0.3654**	**8.8300e-003**	**26.4813**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.16986 / 2.62882	5.5012	0.1363	3.2900e-003	9.8904
Condo/Townhouse	4.69109 / 2.95743	6.1888	0.1533	3.7100e-003	11.1266
Day-Care Center	0.111942 / 0.28785	0.2477	3.6700e-003	9.0000e-005	0.3664
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000

Fast Food Restaurant w/o Drive Thru	0.470477 / 0.0300305	0.4980	0.0154	3.7000e-004	0.9921
Regional Shopping Center	1.737 / 1.06461	2.2776	0.0568	1.3700e-003	4.1058
Total		**14.7133**	**0.3654**	**8.8300e-003**	**26.4813**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	22.0083	1.3007	0.0000	54.5246
Unmitigated	22.0083	1.3007	0.0000	54.5246

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.44	5.9761	0.3532	0.0000	14.8054
Condo/Townhouse	33.12	6.7231	0.3973	0.0000	16.6561

Day-Care Center	3.39	0.6881	0.0407	0.0000	1.7048
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	17.85	3.6234	0.2141	0.0000	8.9768
Regional Shopping Center	24.62	4.9976	0.2954	0.0000	12.3814
Total		**22.0083**	**1.3007**	**0.0000**	**54.5246**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.44	5.9761	0.3532	0.0000	14.8054
Condo/Townhouse	33.12	6.7231	0.3973	0.0000	16.6561
Day-Care Center	3.39	0.6881	0.0407	0.0000	1.7048
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	17.85	3.6234	0.2141	0.0000	8.9768
Regional Shopping Center	24.62	4.9976	0.2954	0.0000	12.3814
Total		**22.0083**	**1.3007**	**0.0000**	**54.5246**

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

Silicon Sage - Existing Run

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	43.47	1000sqft	4.50	43,468.00	0
Quality Restaurant	7.84	1000sqft	0.00	7,843.00	0
Unrefrigerated Warehouse-No Rail	0.97	1000sqft	0.00	970.00	0
Single Family Housing	1.00	Dwelling Unit	0.00	1,800.00	3

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 rate

Land Use - Land uses from project traffic report

Vehicle Trips - Trip rates from project traffic report. Pass-bys (accounted for in trip reductions) set to zero.

Woodstoves - No woodstoves or fireplaces, possible gas-powered fireplaces

Energy Use - default

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	228.80	0.00

tblFireplaces	NumberGas	0.25	0.68
tblFireplaces	NumberWood	0.43	0.00
tblLandUse	LotAcreage	1.00	4.50
tblLandUse	LotAcreage	0.18	0.00
tblLandUse	LotAcreage	0.02	0.00
tblLandUse	LotAcreage	0.32	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	OperationalYear	2018	2019
tblVehicleTrips	ST_TR	94.36	63.22
tblVehicleTrips	ST_TR	49.97	43.97
tblVehicleTrips	ST_TR	1.68	2.50
tblVehicleTrips	SU_TR	72.16	48.35
tblVehicleTrips	SU_TR	25.24	22.21
tblVehicleTrips	SU_TR	1.68	2.50
tblVehicleTrips	WD_TR	89.95	60.56
tblVehicleTrips	WD_TR	42.70	37.41
tblVehicleTrips	WD_TR	1.68	2.50
tblWoodstoves	NumberCatalytic	0.04	0.00
tblWoodstoves	NumberNoncatalytic	0.04	0.00
tblWoodstoves	WoodstoveDayYear	21.06	0.00
tblWoodstoves	WoodstoveWoodMass	956.80	0.00

2.0 Emissions Summary

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	0.2400	1.6000e-004	7.9800e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0980	0.0980	2.0000e-005	0.0000	0.0988
Energy	8.4900e-003	0.0770	0.0637	4.6000e-004		5.8600e-003	5.8600e-003		5.8600e-003	5.8600e-003	0.0000	177.0031	177.0031	0.0109	3.4600e-003	178.3083
Mobile	0.6325	3.7267	6.1629	0.0180	1.2482	0.0251	1.2733	0.3356	0.0237	0.3593	0.0000	1,652.9509	1,652.9509	0.0907	0.0000	1,655.2178
Waste						0.0000	0.0000		0.0000	0.0000	11.1564	0.0000	11.1564	0.6593	0.0000	27.6395
Water						0.0000	0.0000		0.0000	0.0000	1.8683	5.1891	7.0575	0.1924	4.6400e-003	13.2501
Total	**0.8810**	**3.8039**	**6.2346**	**0.0184**	**1.2482**	**0.0310**	**1.2792**	**0.3356**	**0.0296**	**0.3652**	**13.0247**	**1,835.2411**	**1,848.2658**	**0.9534**	**8.1000e-003**	**1,874.5145**

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	0.2400	1.6000e-004	7.9800e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0980	0.0980	2.0000e-005	0.0000	0.0988
Energy	8.4900e-003	0.0770	0.0637	4.6000e-004		5.8600e-003	5.8600e-003		5.8600e-003	5.8600e-003	0.0000	177.0031	177.0031	0.0109	3.4600e-003	178.3083
Mobile	0.6325	3.7267	6.1629	0.0180	1.2482	0.0251	1.2733	0.3356	0.0237	0.3593	0.0000	1,652.9509	1,652.9509	0.0907	0.0000	1,655.2178
Waste						0.0000	0.0000		0.0000	0.0000	11.1564	0.0000	11.1564	0.6593	0.0000	27.6395
Water						0.0000	0.0000		0.0000	0.0000	1.8683	5.1891	7.0575	0.1924	4.6400e-003	13.2501
Total	**0.8810**	**3.8039**	**6.2346**	**0.0184**	**1.2482**	**0.0310**	**1.2792**	**0.3356**	**0.0296**	**0.3652**	**13.0247**	**1,835.2411**	**1,848.2658**	**0.9534**	**8.1000e-003**	**1,874.5145**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.6325	3.7267	6.1629	0.0180	1.2482	0.0251	1.2733	0.3356	0.0237	0.3593	0.0000	1,652.9509	1,652.9509	0.0907	0.0000	1,655.2178
Unmitigated	0.6325	3.7267	6.1629	0.0180	1.2482	0.0251	1.2733	0.3356	0.0237	0.3593	0.0000	1,652.9509	1,652.9509	0.0907	0.0000	1,655.2178

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Quality Restaurant	474.97	495.83	379.21	550,704	550,704
Regional Shopping Center	1,626.14	1,911.29	965.42	2,757,047	2,757,047
Single Family Housing	9.52	9.91	8.62	21,819	21,819
Unrefrigerated Warehouse-No Rail	2.43	2.43	2.43	7,080	7,080
Total	2,113.05	2,419.46	1,355.68	3,336,650	3,336,650

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Unrefrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779
Quality Restaurant	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779
Unrefrigerated Warehouse-No Rail	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779
Single Family Housing	0.556416	0.041967	0.190895	0.111485	0.018156	0.005234	0.022193	0.041963	0.002079	0.002948	0.005586	0.000300	0.000779

5.0 Energy Detail

Historical Energy Use: N

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	93.0290	93.0290	9.3000e-003	1.9200e-003	93.8352
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	93.0290	93.0290	9.3000e-003	1.9200e-003	93.8352
NaturalGas Mitigated	8.4900e-003	0.0770	0.0637	4.6000e-004		5.8600e-003	5.8600e-003		5.8600e-003	5.8600e-003	0.0000	83.9741	83.9741	1.6100e-003	1.5400e-003	84.4731
NaturalGas Unmitigated	8.4900e-003	0.0770	0.0637	4.6000e-004		5.8600e-003	5.8600e-003		5.8600e-003	5.8600e-003	0.0000	83.9741	83.9741	1.6100e-003	1.5400e-003	84.4731

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					
Quality Restaurant	1.31857e+006	7.1100e-003	0.0646	0.0543	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003	0.0000	70.3637	70.3637	1.3500e-003	1.2900e-003	70.7818
Regional Shopping Center	200822	1.0800e-003	9.8400e-003	8.2700e-003	6.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	10.7166	10.7166	2.1000e-004	2.0000e-004	10.7803
Single Family Housing	52879.3	2.9000e-004	2.4400e-003	1.0400e-003	2.0000e-005		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	2.8218	2.8218	5.0000e-005	5.0000e-005	2.8386
Unrefrigerated Warehouse-No	1348.3	1.0000e-005	7.0000e-005	6.0000e-005	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0720	0.0720	0.0000	0.0000	0.0724
Total		**8.4900e-003**	**0.0770**	**0.0637**	**4.7000e-004**		**5.8700e-003**	**5.8700e-003**		**5.8700e-003**	**5.8700e-003**	**0.0000**	**83.9741**	**83.9741**	**1.6100e-003**	**1.5400e-003**	**84.4731**

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					
Quality Restaurant	1.31857e+006	7.1100e-003	0.0646	0.0543	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003	0.0000	70.3637	70.3637	1.3500e-003	1.2900e-003	70.7818
Regional Shopping Center	200822	1.0800e-003	9.8400e-003	8.2700e-003	6.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	10.7166	10.7166	2.1000e-004	2.0000e-004	10.7803
Single Family Housing	52879.3	2.9000e-004	2.4400e-003	1.0400e-003	2.0000e-005		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	2.8218	2.8218	5.0000e-005	5.0000e-005	2.8386
Unrefrigerated Warehouse-No	1348.3	1.0000e-005	7.0000e-005	6.0000e-005	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0720	0.0720	0.0000	0.0000	0.0724
Total		**8.4900e-003**	**0.0770**	**0.0637**	**4.7000e-004**		**5.8700e-003**	**5.8700e-003**		**5.8700e-003**	**5.8700e-003**	**0.0000**	**83.9741**	**83.9741**	**1.6100e-003**	**1.5400e-003**	**84.4731**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

Quality Restaurant	229408	30.1767	3.0200e-003	6.2000e-004	30.4382
Regional Shopping Center	465542	61.2383	6.1200e-003	1.2700e-003	61.7689
Single Family Housing	8535.77	1.1228	1.1000e-004	2.0000e-005	1.1325
Unrefrigerated Warehouse-No	3734.5	0.4912	5.0000e-005	1.0000e-005	0.4955
Total		**93.0290**	**9.3000e-003**	**1.9200e-003**	**93.8352**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Quality Restaurant	229408	30.1767	3.0200e-003	6.2000e-004	30.4382
Regional Shopping Center	465542	61.2383	6.1200e-003	1.2700e-003	61.7689
Single Family Housing	8535.77	1.1228	1.1000e-004	2.0000e-005	1.1325
Unrefrigerated Warehouse-No	3734.5	0.4912	5.0000e-005	1.0000e-005	0.4955
Total		**93.0290**	**9.3000e-003**	**1.9200e-003**	**93.8352**

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	0.2400	1.6000e-004	7.9800e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0980	0.0980	2.0000e-005	0.0000	0.0988
Unmitigated	0.2400	1.6000e-004	7.9800e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0980	0.0980	2.0000e-005	0.0000	0.0988

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	0.0285					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2112					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0000e-005	7.0000e-005	3.0000e-005	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0849	0.0849	0.0000	0.0000	0.0854
Landscaping	2.7000e-004	9.0000e-005	7.9500e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0131	0.0131	1.0000e-005	0.0000	0.0134
Total	**0.2400**	**1.6000e-004**	**7.9800e-003**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0980**	**0.0980**	**1.0000e-005**	**0.0000**	**0.0988**

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	0.0285					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2112					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0000e-005	7.0000e-005	3.0000e-005	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0849	0.0849	0.0000	0.0000	0.0854
Landscaping	2.7000e-004	9.0000e-005	7.9500e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0131	0.0131	1.0000e-005	0.0000	0.0134
Total	**0.2400**	**1.6000e-004**	**7.9800e-003**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0980**	**0.0980**	**1.0000e-005**	**0.0000**	**0.0988**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.0575	0.1924	4.6400e-003	13.2501
Unmitigated	7.0575	0.1924	4.6400e-003	13.2501

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Quality Restaurant	2.3797 / 0.151896	2.5187	0.0777	1.8700e-003	5.0182

Regional Shopping Center	3.21993 / 1.97351	4.2220	0.1052	2.5400e-003	7.6110
Single Family Housing	0.065154 / 0.0410754	0.0860	2.1300e-003	5.0000e-005	0.1545
Unrefrigerated Warehouse-No	0.224313 / 0	0.2308	7.3300e-003	1.8000e-004	0.4664
Total		**7.0575**	**0.1924**	**4.6400e-003**	**13.2501**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Quality Restaurant	2.3797 / 0.151896	2.5187	0.0777	1.8700e-003	5.0182
Regional Shopping Center	3.21993 / 1.97351	4.2220	0.1052	2.5400e-003	7.6110
Single Family Housing	0.065154 / 0.0410754	0.0860	2.1300e-003	5.0000e-005	0.1545
Unrefrigerated Warehouse-No	0.224313 / 0	0.2308	7.3300e-003	1.8000e-004	0.4664
Total		**7.0575**	**0.1924**	**4.6400e-003**	**13.2501**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e

	MT/yr			
Mitigated	11.1564	0.6593	0.0000	27.6395
Unmitigated	11.1564	0.6593	0.0000	27.6395

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Quality Restaurant	7.15	1.4514	0.0858	0.0000	3.5958
Regional Shopping Center	45.64	9.2645	0.5475	0.0000	22.9524
Single Family Housing	1.26	0.2558	0.0151	0.0000	0.6337
Unrefrigerated Warehouse-No Rail	0.91	0.1847	0.0109	0.0000	0.4576
Total		**11.1564**	**0.6593**	**0.0000**	**27.6395**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Quality Restaurant	7.15	1.4514	0.0858	0.0000	3.5958
Regional Shopping Center	45.64	9.2645	0.5475	0.0000	22.9524

Single Family Housing	1.26	0.2558	0.0151	0.0000	0.6337
Unrefrigerated Warehouse-No	0.91	0.1847	0.0109	0.0000	0.4576
Total		**11.1564**	**0.6593**	**0.0000**	**27.6395**

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

Silicon Sage - Centerville, Construction and Operations

Alameda County, Annual

Construction TAC Analysis

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Day-Care Center	2.61	1000sqft	0.00	2,610.00	0
Enclosed Parking with Elevator	273.00	Space	0.00	109,200.00	0
Fast Food Restaurant w/o Drive Thru	1.55	1000sqft	0.00	1,550.00	0
Apartments Low Rise	64.00	Dwelling Unit	0.00	64,000.00	183
Condo/Townhouse	72.00	Dwelling Unit	4.50	72,000.00	206
Regional Shopping Center	23.45	1000sqft	0.00	23,450.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 carbon rate

Land Use - Land uses and site acreage from traffic report and plan drawings

Construction Phase - default, assume March 2018 start

Trips and VMT - on- and near-site construction

Demolition - Up to 55,000 sf of bldg demo

Grading - 20,100cy soil export

Vehicle Trips - Trip rates from project traffic report. Pass-by set to zero for retail since already included in trip reductions.

Woodstoves - No woodstoves, possible gas-powered fireplaces

Energy Use - default

Construction Off-road Equipment Mitigation - Tier 4 engines for equip > 25hp. BAAQMD BMPs.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblEnergyUse	LightingElect	2.51	2.58
tblEnergyUse	LightingElect	1.75	2.63
tblEnergyUse	LightingElect	5.34	5.48
tblEnergyUse	LightingElect	4.88	5.00
tblEnergyUse	NT24E	3,172.76	3,418.36
tblEnergyUse	NT24E	3,795.01	4,109.59
tblEnergyUse	T24E	233.06	274.84
tblEnergyUse	T24E	204.52	231.62
tblEnergyUse	T24E	0.66	0.69
tblEnergyUse	T24E	2.67	2.80
tblEnergyUse	T24E	2.24	2.35
tblEnergyUse	T24NG	17,734.50	25,590.91
tblEnergyUse	T24NG	20,104.20	25,448.35
tblEnergyUse	T24NG	14.85	14.93
tblEnergyUse	T24NG	39.90	40.10
tblEnergyUse	T24NG	3.90	3.92
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	9.60	20.48
tblFireplaces	NumberGas	10.80	23.04
tblFireplaces	NumberWood	10.88	0.00
tblFireplaces	NumberWood	12.24	0.00
tblGrading	MaterialExported	0.00	20,100.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	2.46	0.00
tblLandUse	LotAcreage	0.04	0.00
tblLandUse	LotAcreage	4.00	0.00
tblLandUse	LotAcreage	0.54	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50

tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	VendorTripLength	7.30	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblTripsAndVMT	WorkerTripLength	10.80	0.50
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	51.00	63.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	7.16	5.58
tblVehicleTrips	ST_TR	5.67	4.37
tblVehicleTrips	ST_TR	696.00	361.92
tblVehicleTrips	ST_TR	49.97	29.48
tblVehicleTrips	SU_TR	6.07	4.73
tblVehicleTrips	SU_TR	4.84	3.73
tblVehicleTrips	SU_TR	500.00	260.00
tblVehicleTrips	SU_TR	25.24	14.89
tblVehicleTrips	WD_TR	6.59	5.17
tblVehicleTrips	WD_TR	5.81	4.49
tblVehicleTrips	WD_TR	716.00	372.90
tblVehicleTrips	WD_TR	42.70	25.25
tblWoodstoves	NumberCatalytic	1.28	0.00
tblWoodstoves	NumberCatalytic	1.44	0.00
tblWoodstoves	NumberNoncatalytic	1.28	0.00
tblWoodstoves	NumberNoncatalytic	1.44	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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					
2018						0.1715		0.0447	0.1608	0.2054						
2019						0.0368		5.1000e-004	0.0345	0.0350						
Maximum						**0.1715**		**0.0447**	**0.1608**	**0.2054**						

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					
2018						9.4800e-003		0.0117	9.4500e-003	0.0211						
2019						2.5200e-003		5.1000e-004	2.5100e-003	3.0200e-003						
Maximum						**9.4800e-003**		**0.0117**	**9.4500e-003**	**0.0211**						

	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	**19.53**	**47.88**	**-3.41**	**0.00**	**70.75**	**94.24**	**86.16**	**73.02**	**93.88**	**89.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2018	3/28/2018	5	20	
2	Site Preparation	Site Preparation	3/29/2018	4/4/2018	5	5	
3	Grading	Grading	4/5/2018	4/16/2018	5	8	
4	Building Construction	Building Construction	4/17/2018	3/4/2019	5	230	
5	Paving	Paving	3/5/2019	3/28/2019	5	18	
6	Architectural Coating	Architectural Coating	3/29/2019	4/23/2019	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 275,400; Residential Outdoor: 91,800; Non-Residential Indoor: 41,415; Non-Residential Outdoor: 13,805; Striped

OffRoad Equipment

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	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38

Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	250.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	2,513.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	9	153.00	37.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	31.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	0.50	0.50	0.50	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

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					0.0271	0.0000	0.0271	4.1000e-003	0.0000	4.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0372	0.3832	0.2230	3.9000e-004		0.0194	0.0194		0.0181	0.0181	0.0000	35.1241	35.1241	9.6800e-003	0.0000	35.3660
Total	**0.0372**	**0.3832**	**0.2230**	**3.9000e-004**	**0.0271**	**0.0194**	**0.0465**	**4.1000e-003**	**0.0181**	**0.0222**	**0.0000**	**35.1241**	**35.1241**	**9.6800e-003**	**0.0000**	**35.3660**

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	2.9000e-004	0.0136	1.7900e-003	2.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.5233	1.5233	3.0000e-004	0.0000	1.5309
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	2.0000e-004	9.0000e-005	1.1900e-003	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0829	0.0829	1.0000e-005	0.0000	0.0831
Total	**4.9000e-004**	**0.0137**	**2.9800e-003**	**2.0000e-005**	**1.2000e-004**	**1.0000e-005**	**1.3000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**1.6062**	**1.6062**	**3.1000e-004**	**0.0000**	**1.6140**

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					6.0900e-003	0.0000	6.0900e-003	9.2000e-004	0.0000	9.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8400e-003	0.1356	0.2467	3.9000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	35.1240	35.1240	9.6800e-003	0.0000	35.3660
Total	**5.8400e-003**	**0.1356**	**0.2467**	**3.9000e-004**	**6.0900e-003**	**6.2000e-004**	**6.7100e-003**	**9.2000e-004**	**6.2000e-004**	**1.5400e-003**	**0.0000**	**35.1240**	**35.1240**	**9.6800e-003**	**0.0000**	**35.3660**

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	2.9000e-004	0.0136	1.7900e-003	2.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.5233	1.5233	3.0000e-004	0.0000	1.5309
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	2.0000e-004	9.0000e-005	1.1900e-003	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0829	0.0829	1.0000e-005	0.0000	0.0831
Total	**4.9000e-004**	**0.0137**	**2.9800e-003**	**2.0000e-005**	**1.2000e-004**	**1.0000e-005**	**1.3000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**1.6062**	**1.6062**	**3.1000e-004**	**0.0000**	**1.6140**

3.3 Site Preparation - 2018

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.1205	0.0562	1.0000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**0.0114**	**0.1205**	**0.0562**	**1.0000e-004**	**0.0452**	**6.4400e-003**	**0.0516**	**0.0248**	**5.9300e-003**	**0.0308**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

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	6.0000e-005	3.0000e-005	3.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0249	0.0249	0.0000	0.0000	0.0249
Total	**6.0000e-005**	**3.0000e-005**	**3.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0249**	**0.0249**	**0.0000**	**0.0000**	**0.0249**

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					0.0102	0.0000	0.0102	5.5900e-003	0.0000	5.5900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7400e-003	0.0304	0.0574	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	8.6900	8.6900	2.7100e-003	0.0000	8.7576
Total	**1.7400e-003**	**0.0304**	**0.0574**	**1.0000e-004**	**0.0102**	**1.6000e-004**	**0.0103**	**5.5900e-003**	**1.6000e-004**	**5.7500e-003**	**0.0000**	**8.6900**	**8.6900**	**2.7100e-003**	**0.0000**	**8.7576**

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	6.0000e-005	3.0000e-005	3.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0249	0.0249	0.0000	0.0000	0.0249
Total	**6.0000e-005**	**3.0000e-005**	**3.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0249**	**0.0249**	**0.0000**	**0.0000**	**0.0249**

3.4 Grading - 2018

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					0.0274	0.0000	0.0274	0.0136	0.0000	0.0136	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1227	0.0663	1.2000e-004		6.2100e-003	6.2100e-003		5.7100e-003	5.7100e-003	0.0000	10.8428	10.8428	3.3800e-003	0.0000	10.9271
Total	**0.0111**	**0.1227**	**0.0663**	**1.2000e-004**	**0.0274**	**6.2100e-003**	**0.0336**	**0.0136**	**5.7100e-003**	**0.0194**	**0.0000**	**10.8428**	**10.8428**	**3.3800e-003**	**0.0000**	**10.9271**

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	2.9400e-003	0.1365	0.0180	1.6000e-004	5.6000e-004	1.4000e-004	7.0000e-004	1.6000e-004	1.3000e-004	2.9000e-004	0.0000	15.3123	15.3123	3.0500e-003	0.0000	15.3886
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	8.0000e-005	4.0000e-005	4.8000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Total	**3.0200e-003**	**0.1366**	**0.0184**	**1.6000e-004**	**5.8000e-004**	**1.4000e-004**	**7.2000e-004**	**1.7000e-004**	**1.3000e-004**	**3.0000e-004**	**0.0000**	**15.3454**	**15.3454**	**3.0500e-003**	**0.0000**	**15.4218**

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					6.1500e-003	0.0000	6.1500e-003	3.0700e-003	0.0000	3.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0413	0.0760	1.2000e-004		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	10.8427	10.8427	3.3800e-003	0.0000	10.9271
Total	**2.0800e-003**	**0.0413**	**0.0760**	**1.2000e-004**	**6.1500e-003**	**1.9000e-004**	**6.3400e-003**	**3.0700e-003**	**1.9000e-004**	**3.2600e-003**	**0.0000**	**10.8427**	**10.8427**	**3.3800e-003**	**0.0000**	**10.9271**

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	2.9400e-003	0.1365	0.0180	1.6000e-004	5.6000e-004	1.4000e-004	7.0000e-004	1.6000e-004	1.3000e-004	2.9000e-004	0.0000	15.3123	15.3123	3.0500e-003	0.0000	15.3886
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	8.0000e-005	4.0000e-005	4.8000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Total	**3.0200e-003**	**0.1366**	**0.0184**	**1.6000e-004**	**5.8000e-004**	**1.4000e-004**	**7.2000e-004**	**1.7000e-004**	**1.3000e-004**	**3.0000e-004**	**0.0000**	**15.3454**	**15.3454**	**3.0500e-003**	**0.0000**	**15.4218**

3.5 Building Construction - 2018

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	0.2479	2.1636	1.6262	2.4900e-003		0.1387	0.1387		0.1304	0.1304	0.0000	219.9347	219.9347	0.0539	0.0000	221.2818
Total	**0.2479**	**2.1636**	**1.6262**	**2.4900e-003**		**0.1387**	**0.1387**		**0.1304**	**0.1304**	**0.0000**	**219.9347**	**219.9347**	**0.0539**	**0.0000**	**221.2818**

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	6.7100e-003	0.2457	0.0583	2.5000e-004	1.6200e-003	4.1000e-004	2.0300e-003	4.8000e-004	3.9000e-004	8.7000e-004	0.0000	24.1056	24.1056	4.5200e-003	0.0000	24.2186
Worker	0.0191	8.5400e-003	0.1126	9.0000e-005	5.3100e-003	1.3000e-004	5.4400e-003	1.4300e-003	1.2000e-004	1.5500e-003	0.0000	7.8235	7.8235	6.0000e-004	0.0000	7.8385
Total	**0.0258**	**0.2542**	**0.1709**	**3.4000e-004**	**6.9300e-003**	**5.4000e-004**	**7.4700e-003**	**1.9100e-003**	**5.1000e-004**	**2.4200e-003**	**0.0000**	**31.9290**	**31.9290**	**5.1200e-003**	**0.0000**	**32.0570**

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	0.0494	1.0094	1.6533	2.4900e-003		7.8300e-003	7.8300e-003		7.8300e-003	7.8300e-003	0.0000	219.9344	219.9344	0.0539	0.0000	221.2815
Total	**0.0494**	**1.0094**	**1.6533**	**2.4900e-003**		**7.8300e-003**	**7.8300e-003**		**7.8300e-003**	**7.8300e-003**	**0.0000**	**219.9344**	**219.9344**	**0.0539**	**0.0000**	**221.2815**

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	6.7100e-003	0.2457	0.0583	2.5000e-004	1.6200e-003	4.1000e-004	2.0300e-003	4.8000e-004	3.9000e-004	8.7000e-004	0.0000	24.1056	24.1056	4.5200e-003	0.0000	24.2186
Worker	0.0191	8.5400e-003	0.1126	9.0000e-005	5.3100e-003	1.3000e-004	5.4400e-003	1.4300e-003	1.2000e-004	1.5500e-003	0.0000	7.8235	7.8235	6.0000e-004	0.0000	7.8385
Total	**0.0258**	**0.2542**	**0.1709**	**3.4000e-004**	**6.9300e-003**	**5.4000e-004**	**7.4700e-003**	**1.9100e-003**	**5.1000e-004**	**2.4200e-003**	**0.0000**	**31.9290**	**31.9290**	**5.1200e-003**	**0.0000**	**32.0570**

3.5 Building Construction - 2019

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	0.0531	0.4743	0.3862	6.1000e-004		0.0290	0.0290		0.0273	0.0273	0.0000	52.8984	52.8984	0.0129	0.0000	53.2206
Total	**0.0531**	**0.4743**	**0.3862**	**6.1000e-004**		**0.0290**	**0.0290**		**0.0273**	**0.0273**	**0.0000**	**52.8984**	**52.8984**	**0.0129**	**0.0000**	**53.2206**

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	1.5000e-003	0.0583	0.0130	6.0000e-005	3.9000e-004	9.0000e-005	4.8000e-004	1.2000e-004	8.0000e-005	2.0000e-004	0.0000	5.8516	5.8516	1.0500e-003	0.0000	5.8779
Worker	4.1900e-003	1.8100e-003	0.0243	2.0000e-005	1.2900e-003	3.0000e-005	1.3200e-003	3.5000e-004	3.0000e-005	3.8000e-004	0.0000	1.8501	1.8501	1.3000e-004	0.0000	1.8533
Total	**5.6900e-003**	**0.0601**	**0.0373**	**8.0000e-005**	**1.6800e-003**	**1.2000e-004**	**1.8000e-003**	**4.7000e-004**	**1.1000e-004**	**5.8000e-004**	**0.0000**	**7.7017**	**7.7017**	**1.1800e-003**	**0.0000**	**7.7311**

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	0.0120	0.2455	0.4022	6.1000e-004		1.9000e-003	1.9000e-003		1.9000e-003	1.9000e-003	0.0000	52.8984	52.8984	0.0129	0.0000	53.2206
Total	**0.0120**	**0.2455**	**0.4022**	**6.1000e-004**		**1.9000e-003**	**1.9000e-003**		**1.9000e-003**	**1.9000e-003**	**0.0000**	**52.8984**	**52.8984**	**0.0129**	**0.0000**	**53.2206**

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	1.5000e-003	0.0583	0.0130	6.0000e-005	3.9000e-004	9.0000e-005	4.8000e-004	1.2000e-004	8.0000e-005	2.0000e-004	0.0000	5.8516	5.8516	1.0500e-003	0.0000	5.8779
Worker	4.1900e-003	1.8100e-003	0.0243	2.0000e-005	1.2900e-003	3.0000e-005	1.3200e-003	3.5000e-004	3.0000e-005	3.8000e-004	0.0000	1.8501	1.8501	1.3000e-004	0.0000	1.8533
Total	**5.6900e-003**	**0.0601**	**0.0373**	**8.0000e-005**	**1.6800e-003**	**1.2000e-004**	**1.8000e-003**	**4.7000e-004**	**1.1000e-004**	**5.8000e-004**	**0.0000**	**7.7017**	**7.7017**	**1.1800e-003**	**0.0000**	**7.7311**

3.6 Paving - 2019

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	0.0114	0.1148	0.1108	1.7000e-004		6.4800e-003	6.4800e-003		5.9700e-003	5.9700e-003	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.1148**	**0.1108**	**1.7000e-004**		**6.4800e-003**	**6.4800e-003**		**5.9700e-003**	**5.9700e-003**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

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	9.0000e-005	1.2700e-003	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0967	0.0967	1.0000e-005	0.0000	0.0969
Total	**2.2000e-004**	**9.0000e-005**	**1.2700e-003**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0967**	**0.0967**	**1.0000e-005**	**0.0000**	**0.0969**

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	3.4100e-003	0.0756	0.1260	1.7000e-004		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	15.0501	15.0501	4.6300e-003	0.0000	15.1658
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.4100e-003**	**0.0756**	**0.1260**	**1.7000e-004**		**4.6000e-004**	**4.6000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**15.0501**	**15.0501**	**4.6300e-003**	**0.0000**	**15.1658**

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	9.0000e-005	1.2700e-003	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0967	0.0967	1.0000e-005	0.0000	0.0969
Total	**2.2000e-004**	**9.0000e-005**	**1.2700e-003**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0967**	**0.0967**	**1.0000e-005**	**0.0000**	**0.0969**

3.7 Architectural Coating - 2019

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	1.1241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4000e-003	0.0165	0.0166	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**1.1265**	**0.0165**	**0.0166**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

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	3.4000e-004	1.5000e-004	1.9700e-003	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1499	0.1499	1.0000e-005	0.0000	0.1502
Total	**3.4000e-004**	**1.5000e-004**	**1.9700e-003**	**0.0000**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1499**	**0.1499**	**1.0000e-005**	**0.0000**	**0.1502**

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	1.1241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9000e-004	9.5400e-003	0.0165	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.2979	2.2979	1.9000e-004	0.0000	2.3028
Total	**1.1246**	**9.5400e-003**	**0.0165**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.2979**	**2.2979**	**1.9000e-004**	**0.0000**	**2.3028**

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	3.4000e-004	1.5000e-004	1.9700e-003	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1499	0.1499	1.0000e-005	0.0000	0.1502
Total	**3.4000e-004**	**1.5000e-004**	**1.9700e-003**	**0.0000**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1499**	**0.1499**	**1.0000e-005**	**0.0000**	**0.1502**

Appendix A-2: Air Quality and Greenhouse Gas Analysis for Variant

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Variant Analysis: Air Quality - Greenhouse Gas Summary

CONSTRUCTION	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
Year	Tons per year										Metric Tons/Year
2019	0.4336	4.8831	3.0024	9.75E-03	0.3182	0.1749	0.4932	0.1051	0.164	0.2691	903.6861
2020	1.5541	1.9557	1.835	4.15E-03	0.1291	0.0928	0.2219	0.0348	0.0872	0.122	371.3382
Silicon Sage Variant Total (tons per year)	**1.99**	**6.84**	**4.84**	**0.01**	**0.45**	**0.27**	**0.72**	**0.14**	**0.25**	**0.39**	**1275.02**
Average Daily Emissions (pounds per day) [1]	**9.2**	**31.5**	**22.3**	**0.1**	**2.1**	**1.2**	**3.3**	**0.6**	**1.2**	**1.8**	
Thresholds of Significance (lb/day) [2]	54	54				82			54		
Significant?	No	No				No			No		

Notes: NOx = oxides of nitrogen; PM10 and PM2.5 = particulate matter less than or equal to 10 microns in diameter or 2.5 micrometers in diameter, respectively; ROG = reactive organic gases

[1] Average daily emissions calculated assuming 434 workdays based on August 2019 - April 2019 work schedule

[2] BAAQMD CEQA Guidelines (May 2017)

Greenhouse Gas Emissions - Construction	
Total Emissions (MT CO2e)	1,275.02
Amortized Emissions (MT CO2e/year) [1]	**42.50**

Notes: MT CO2e = metric tons carbon dioxide equivalents

[1] Amortized GHG emissions assumed a project lifetime of 30 years

OPERATIONS

Criteria Pollutants	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Variant (tons)	1.61	4.44	8.56	0.03	1.81	0.05	1.86	0.49	0.05	0.53
Existing Uses (tons)	0.88	3.80					1.28			0.37
Net Emissions (tons)	0.73	0.64					0.58			0.16
Net Emissions (lbs)	1,451.00	1,283.20					1,157.20			329.80
Average Daily Net Emissions (lbs/day)	3.98	3.52					3.17			0.90

Notes: Average daily emissions calculated assuming 365 days of operation.

Conversion Factor	
lbs/ton	2000

Greenhouse Gas Emissions		
Emissions Source	**Existing Uses MT CO2e**	**Variant MT CO2e**
Amortized Construction Emissions	-	43
Area Sources	<1	9
Energy Consumption	178	431
Mobile Sources	1655	2,258
Waste	28	52
Water Usage	13	30
Total Annual Operational Emissions	1874	2,823
Net Emissions	-	949

Silicon Sage Centerville Mixed Use Project Variant

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	319.00	Space	0.00	127,600.00	0
Apartments Low Rise	93.00	Dwelling Unit	0.00	93,000.00	266
Condo/Townhouse	72.00	Dwelling Unit	4.60	72,000.00	206
Regional Shopping Center	26.00	1000sqft	0.00	26,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Silicon Sage Centerville Mixed Use Project Variant - Alameda County, Annual

Project Characteristics - PG&E CO2 intensity rate

Land Use - Land uses and site acreage consistent with PD.

Construction Phase - Default schedule from proposed project scaled up to account for additional development under variant, assume February 2019 start date.

Demolition - Approx. 55,000 sf of building demolition + fire station demolition (3,300 sq. ft)

Grading - 29,000 cy export

Vehicle Trips - Approx. 2,093 daily vehicle trips for variant.

Woodstoves - No woodstoves, possible gas-powered fireplaces.

Energy Use - Default.

Construction Off-road Equipment Mitigation - Tier 4 engines for equip. > 25 hp. BAAQMD BMPs.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

Silicon Sage Centerville Mixed Use Project Variant - Alameda County, Annual

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	18.00	26.00
tblConstructionPhase	NumDays	230.00	334.00
tblConstructionPhase	NumDays	20.00	29.00
tblConstructionPhase	NumDays	8.00	12.00
tblConstructionPhase	NumDays	18.00	26.00
tblConstructionPhase	NumDays	5.00	7.00
tblFireplaces	NumberGas	13.95	29.76
tblFireplaces	NumberGas	10.80	23.04
tblFireplaces	NumberWood	15.81	0.00
tblFireplaces	NumberWood	12.24	0.00
tblGrading	AcresOfGrading	6.00	4.00
tblGrading	MaterialExported	0.00	29,000.00
tblLandUse	LotAcreage	2.87	0.00
tblLandUse	LotAcreage	5.81	0.00
tblLandUse	LotAcreage	4.50	4.60
tblLandUse	LotAcreage	0.60	0.00

tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblVehicleTrips	ST_TR	7.16	0.00
tblVehicleTrips	ST_TR	5.67	29.07
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	6.07	0.00
tblVehicleTrips	SU_TR	4.84	29.07
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	6.59	0.00
tblVehicleTrips	WD_TR	5.81	29.07
tblVehicleTrips	WD_TR	42.70	0.00
tblWoodstoves	NumberCatalytic	1.86	0.00
tblWoodstoves	NumberCatalytic	1.44	0.00
tblWoodstoves	NumberNoncatalytic	1.86	0.00
tblWoodstoves	NumberNoncatalytic	1.44	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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					
2019	0.4336	4.8831	3.0024	9.7500e-003	0.3484	0.1749	0.5233	0.1217	0.1640	0.2857	0.0000	901.0245	901.0245	0.1065	0.0000	903.6861
2020	1.5541	1.9557	1.8350	4.1500e-003	0.1291	0.0928	0.2219	0.0348	0.0872	0.1220	0.0000	369.9674	369.9674	0.0548	0.0000	371.3382
Maximum	**1.5541**	**4.8831**	**3.0024**	**9.7500e-003**	**0.3484**	**0.1749**	**0.5233**	**0.1217**	**0.1640**	**0.2857**	**0.0000**	**901.0245**	**901.0245**	**0.1065**	**0.0000**	**903.6861**

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					
2019	0.1924	3.3700	3.1271	9.7500e-003	0.2684	0.0191	0.2875	0.0790	0.0186	0.0976	0.0000	901.0241	901.0241	0.1065	0.0000	903.6857
2020	1.4270	1.3077	1.9311	4.1500e-003	0.1291	9.2400e-003	0.1384	0.0348	9.1100e-003	0.0439	0.0000	369.9671	369.9671	0.0548	0.0000	371.3380
Maximum	**1.4270**	**3.3700**	**3.1271**	**9.7500e-003**	**0.2684**	**0.0191**	**0.2875**	**0.0790**	**0.0186**	**0.0976**	**0.0000**	**901.0241**	**901.0241**	**0.1065**	**0.0000**	**903.6857**

	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	**18.53**	**31.60**	**-4.56**	**0.00**	**16.74**	**89.43**	**42.85**	**27.28**	**88.97**	**65.29**	**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	**2-1-2019**	**4-30-2019**	2.7154	2.0090
2	**5-1-2019**	**7-31-2019**	0.9938	0.5997
3	**8-1-2019**	**10-31-2019**	0.9962	0.6021
4	**11-1-2019**	**1-31-2020**	0.9705	0.6000
5	**2-1-2020**	**4-30-2020**	0.8889	0.5719
6	**5-1-2020**	**7-31-2020**	0.8479	0.5461
7	**8-1-2020**	**9-30-2020**	1.4536	1.4057
		Highest	2.7154	2.0090

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	0.9250	0.0199	1.2348	1.0000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	8.5989	8.5989	2.0900e-003	1.2000e-004	8.6873
Energy	0.0197	0.1684	0.0741	1.0700e-003		0.0136	0.0136		0.0136	0.0136	0.0000	427.8053	427.8053	0.0271	8.3900e-003	430.9824
Mobile	0.6608	4.2532	7.2547	0.0245	1.8080	0.0297	1.8377	0.4861	0.0280	0.5141	0.0000	2,255.8424	2,255.8424	0.1034	0.0000	2,258.4276
Waste						0.0000	0.0000		0.0000	0.0000	20.9487	0.0000	20.9487	1.2380	0.0000	51.8994
Water						0.0000	0.0000		0.0000	0.0000	4.0216	12.6864	16.7080	0.4143	0.0100	30.0508
Total	**1.6055**	**4.4416**	**8.5636**	**0.0257**	**1.8080**	**0.0505**	**1.8586**	**0.4861**	**0.0488**	**0.5349**	**24.9703**	**2,704.9330**	**2,729.9033**	**1.7849**	**0.0185**	**2,780.0476**

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	0.9250	0.0199	1.2348	1.0000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	8.5989	8.5989	2.0900e-003	1.2000e-004	8.6873
Energy	0.0197	0.1684	0.0741	1.0700e-003		0.0136	0.0136		0.0136	0.0136	0.0000	427.8053	427.8053	0.0271	8.3900e-003	430.9824
Mobile	0.6608	4.2532	7.2547	0.0245	1.8080	0.0297	1.8377	0.4861	0.0280	0.5141	0.0000	2,255.8424	2,255.8424	0.1034	0.0000	2,258.4276
Waste						0.0000	0.0000		0.0000	0.0000	20.9487	0.0000	20.9487	1.2380	0.0000	51.8994
Water						0.0000	0.0000		0.0000	0.0000	4.0216	12.6864	16.7080	0.4143	0.0100	30.0508
Total	**1.6055**	**4.4416**	**8.5636**	**0.0257**	**1.8080**	**0.0505**	**1.8586**	**0.4861**	**0.0488**	**0.5349**	**24.9703**	**2,704.9330**	**2,729.9033**	**1.7849**	**0.0185**	**2,780.0476**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	2/1/2019	3/13/2019	5	29	
2	Site Preparation	Site Preparation	3/14/2019	3/22/2019	5	7	
3	Grading	Grading	3/23/2019	4/9/2019	5	12	
4	Building Construction	Building Construction	4/10/2019	7/20/2020	5	334	
5	Paving	Paving	7/21/2020	8/25/2020	5	26	
6	Architectural Coating	Architectural Coating	8/26/2020	9/30/2020	5	26	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 334,125; Residential Outdoor: 111,375; Non-Residential Indoor: 39,000; Non-Residential Outdoor: 13,000; Striped Parking Area: 7,656 (Architectural Coating – sqft)

OffRoad Equipment

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	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	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	5,765.00	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	6	15.00	0.00	3,625.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	181.00	43.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	36.00	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

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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	0.0509	0.5189	0.3199	5.6000e-004		0.0260	0.0260		0.0242	0.0242	0.0000	50.2082	50.2082	0.0140	0.0000	50.5574
Total	**0.0509**	**0.5189**	**0.3199**	**5.6000e-004**		**0.0260**	**0.0260**		**0.0242**	**0.0242**	**0.0000**	**50.2082**	**50.2082**	**0.0140**	**0.0000**	**50.5574**

3.2 Demolition - 2019

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	0.0263	0.8958	0.1530	2.3200e-003	0.0488	3.2400e-003	0.0521	0.0134	3.1000e-003	0.0165	0.0000	223.0531	223.0531	0.0116	0.0000	223.3433
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	8.2000e-004	6.3000e-004	6.3400e-003	2.0000e-005	1.7200e-003	1.0000e-005	1.7300e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.5775	1.5775	4.0000e-005	0.0000	1.5786
Total	**0.0271**	**0.8964**	**0.1593**	**2.3400e-003**	**0.0505**	**3.2500e-003**	**0.0538**	**0.0139**	**3.1100e-003**	**0.0170**	**0.0000**	**224.6306**	**224.6306**	**0.0117**	**0.0000**	**224.9219**

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	8.4700e-003	0.1966	0.3578	5.6000e-004		8.9000e-004	8.9000e-004		8.9000e-004	8.9000e-004	0.0000	50.2081	50.2081	0.0140	0.0000	50.5573
Total	**8.4700e-003**	**0.1966**	**0.3578**	**5.6000e-004**		**8.9000e-004**	**8.9000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**50.2081**	**50.2081**	**0.0140**	**0.0000**	**50.5573**

3.2 Demolition - 2019

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	0.0263	0.8958	0.1530	2.3200e-003	0.0488	3.2400e-003	0.0521	0.0134	3.1000e-003	0.0165	0.0000	223.0531	223.0531	0.0116	0.0000	223.3433
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	8.2000e-004	6.3000e-004	6.3400e-003	2.0000e-005	1.7200e-003	1.0000e-005	1.7300e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.5775	1.5775	4.0000e-005	0.0000	1.5786
Total	**0.0271**	**0.8964**	**0.1593**	**2.3400e-003**	**0.0505**	**3.2500e-003**	**0.0538**	**0.0139**	**3.1100e-003**	**0.0170**	**0.0000**	**224.6306**	**224.6306**	**0.0117**	**0.0000**	**224.9219**

3.3 Site Preparation - 2019

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					0.0632	0.0000	0.0632	0.0348	0.0000	0.0348	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0152	0.1595	0.0772	1.3000e-004		8.3700e-003	8.3700e-003		7.7000e-003	7.7000e-003	0.0000	11.9590	11.9590	3.7800e-003	0.0000	12.0536
Total	**0.0152**	**0.1595**	**0.0772**	**1.3000e-004**	**0.0632**	**8.3700e-003**	**0.0716**	**0.0348**	**7.7000e-003**	**0.0425**	**0.0000**	**11.9590**	**11.9590**	**3.7800e-003**	**0.0000**	**12.0536**

3.3 Site Preparation - 2019

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	2.4000e-004	1.8000e-004	1.8400e-003	1.0000e-005	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4569	0.4569	1.0000e-005	0.0000	0.4573
Total	**2.4000e-004**	**1.8000e-004**	**1.8400e-003**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4569**	**0.4569**	**1.0000e-005**	**0.0000**	**0.4573**

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					0.0142	0.0000	0.0142	7.8200e-003	0.0000	7.8200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4400e-003	0.0426	0.0804	1.3000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	11.9590	11.9590	3.7800e-003	0.0000	12.0536
Total	**2.4400e-003**	**0.0426**	**0.0804**	**1.3000e-004**	**0.0142**	**2.2000e-004**	**0.0145**	**7.8200e-003**	**2.2000e-004**	**8.0400e-003**	**0.0000**	**11.9590**	**11.9590**	**3.7800e-003**	**0.0000**	**12.0536**

3.3 Site Preparation - 2019

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	2.4000e-004	1.8000e-004	1.8400e-003	1.0000e-005	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4569	0.4569	1.0000e-005	0.0000	0.4573
Total	**2.4000e-004**	**1.8000e-004**	**1.8400e-003**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4569**	**0.4569**	**1.0000e-005**	**0.0000**	**0.4573**

3.4 Grading - 2019

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					0.0399	0.0000	0.0399	0.0203	0.0000	0.0203	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0155	0.1701	0.0978	1.8000e-004		8.3800e-003	8.3800e-003		7.7100e-003	7.7100e-003	0.0000	15.9854	15.9854	5.0600e-003	0.0000	16.1118
Total	**0.0155**	**0.1701**	**0.0978**	**1.8000e-004**	**0.0399**	**8.3800e-003**	**0.0483**	**0.0203**	**7.7100e-003**	**0.0281**	**0.0000**	**15.9854**	**15.9854**	**5.0600e-003**	**0.0000**	**16.1118**

3.4 Grading - 2019

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	0.0165	0.5633	0.0962	1.4600e-003	0.0307	2.0400e-003	0.0327	8.4500e-003	1.9500e-003	0.0104	0.0000	140.2545	140.2545	7.3000e-003	0.0000	140.4370
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	3.4000e-004	2.6000e-004	2.6200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6528	0.6528	2.0000e-005	0.0000	0.6532
Total	**0.0169**	**0.5635**	**0.0988**	**1.4700e-003**	**0.0314**	**2.0500e-003**	**0.0335**	**8.6400e-003**	**1.9500e-003**	**0.0106**	**0.0000**	**140.9073**	**140.9073**	**7.3200e-003**	**0.0000**	**141.0902**

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					8.9800e-003	0.0000	8.9800e-003	4.5800e-003	0.0000	4.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1200e-003	0.0620	0.1139	1.8000e-004		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	15.9853	15.9853	5.0600e-003	0.0000	16.1118
Total	**3.1200e-003**	**0.0620**	**0.1139**	**1.8000e-004**	**8.9800e-003**	**2.9000e-004**	**9.2700e-003**	**4.5800e-003**	**2.9000e-004**	**4.8700e-003**	**0.0000**	**15.9853**	**15.9853**	**5.0600e-003**	**0.0000**	**16.1118**

3.4 Grading - 2019

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	0.0165	0.5633	0.0962	1.4600e-003	0.0307	2.0400e-003	0.0327	8.4500e-003	1.9500e-003	0.0104	0.0000	140.2545	140.2545	7.3000e-003	0.0000	140.4370
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	3.4000e-004	2.6000e-004	2.6200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6528	0.6528	2.0000e-005	0.0000	0.6532
Total	**0.0169**	**0.5635**	**0.0988**	**1.4700e-003**	**0.0314**	**2.0500e-003**	**0.0335**	**8.6400e-003**	**1.9500e-003**	**0.0106**	**0.0000**	**140.9073**	**140.9073**	**7.3200e-003**	**0.0000**	**141.0902**

3.5 Building Construction - 2019

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	0.2243	2.0025	1.6306	2.5600e-003		0.1225	0.1225		0.1152	0.1152	0.0000	223.3490	223.3490	0.0544	0.0000	224.7092
Total	**0.2243**	**2.0025**	**1.6306**	**2.5600e-003**		**0.1225**	**0.1225**		**0.1152**	**0.1152**	**0.0000**	**223.3490**	**223.3490**	**0.0544**	**0.0000**	**224.7092**

3.5 Building Construction - 2019

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	0.0184	0.5224	0.1156	1.1400e-003	0.0268	3.3400e-003	0.0302	7.7600e-003	3.1900e-003	0.0110	0.0000	108.8142	108.8142	6.7100e-003	0.0000	108.9818
Worker	0.0651	0.0497	0.5015	1.3800e-003	0.1360	9.7000e-004	0.1369	0.0362	8.9000e-004	0.0371	0.0000	124.7139	124.7139	3.5600e-003	0.0000	124.8029
Total	**0.0835**	**0.5721**	**0.6170**	**2.5200e-003**	**0.1628**	**4.3100e-003**	**0.1671**	**0.0439**	**4.0800e-003**	**0.0480**	**0.0000**	**233.5281**	**233.5281**	**0.0103**	**0.0000**	**233.7846**

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	0.0507	1.0367	1.6980	2.5600e-003		8.0400e-003	8.0400e-003		8.0400e-003	8.0400e-003	0.0000	223.3487	223.3487	0.0544	0.0000	224.7090
Total	**0.0507**	**1.0367**	**1.6980**	**2.5600e-003**		**8.0400e-003**	**8.0400e-003**		**8.0400e-003**	**8.0400e-003**	**0.0000**	**223.3487**	**223.3487**	**0.0544**	**0.0000**	**224.7090**

3.5 Building Construction - 2019

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	0.0184	0.5224	0.1156	1.1400e-003	0.0268	3.3400e-003	0.0302	7.7600e-003	3.1900e-003	0.0110	0.0000	108.8142	108.8142	6.7100e-003	0.0000	108.9818
Worker	0.0651	0.0497	0.5015	1.3800e-003	0.1360	9.7000e-004	0.1369	0.0362	8.9000e-004	0.0371	0.0000	124.7139	124.7139	3.5600e-003	0.0000	124.8029
Total	**0.0835**	**0.5721**	**0.6170**	**2.5200e-003**	**0.1628**	**4.3100e-003**	**0.1671**	**0.0439**	**4.0800e-003**	**0.0480**	**0.0000**	**233.5281**	**233.5281**	**0.0103**	**0.0000**	**233.7846**

3.5 Building Construction - 2020

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	0.1526	1.3814	1.2131	1.9400e-003		0.0804	0.0804		0.0756	0.0756	0.0000	166.7592	166.7592	0.0407	0.0000	167.7763
Total	**0.1526**	**1.3814**	**1.2131**	**1.9400e-003**		**0.0804**	**0.0804**		**0.0756**	**0.0756**	**0.0000**	**166.7592**	**166.7592**	**0.0407**	**0.0000**	**167.7763**

3.5 Building Construction - 2020

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	0.0116	0.3639	0.0784	8.6000e-004	0.0203	1.6900e-003	0.0220	5.8800e-003	1.6100e-003	7.5000e-003	0.0000	81.8924	81.8924	4.7100e-003	0.0000	82.0101
Worker	0.0451	0.0333	0.3410	1.0100e-003	0.1030	7.1000e-004	0.1038	0.0274	6.6000e-004	0.0281	0.0000	91.5961	91.5961	2.3600e-003	0.0000	91.6552
Total	**0.0567**	**0.3972**	**0.4194**	**1.8700e-003**	**0.1234**	**2.4000e-003**	**0.1258**	**0.0333**	**2.2700e-003**	**0.0356**	**0.0000**	**173.4885**	**173.4885**	**7.0700e-003**	**0.0000**	**173.6654**

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	0.0384	0.7857	1.2869	1.9400e-003		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	166.7590	166.7590	0.0407	0.0000	167.7761
Total	**0.0384**	**0.7857**	**1.2869**	**1.9400e-003**		**6.0900e-003**	**6.0900e-003**		**6.0900e-003**	**6.0900e-003**	**0.0000**	**166.7590**	**166.7590**	**0.0407**	**0.0000**	**167.7761**

3.5 Building Construction - 2020

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	0.0116	0.3639	0.0784	8.6000e-004	0.0203	1.6900e-003	0.0220	5.8800e-003	1.6100e-003	7.5000e-003	0.0000	81.8924	81.8924	4.7100e-003	0.0000	82.0101
Worker	0.0451	0.0333	0.3410	1.0100e-003	0.1030	7.1000e-004	0.1038	0.0274	6.6000e-004	0.0281	0.0000	91.5961	91.5961	2.3600e-003	0.0000	91.6552
Total	**0.0567**	**0.3972**	**0.4194**	**1.8700e-003**	**0.1234**	**2.4000e-003**	**0.1258**	**0.0333**	**2.2700e-003**	**0.0356**	**0.0000**	**173.4885**	**173.4885**	**7.0700e-003**	**0.0000**	**173.6654**

3.6 Paving - 2020

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	0.0154	0.1534	0.1597	2.5000e-004		8.4600e-003	8.4600e-003		7.8100e-003	7.8100e-003	0.0000	21.2836	21.2836	6.6900e-003	0.0000	21.4508
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0154**	**0.1534**	**0.1597**	**2.5000e-004**		**8.4600e-003**	**8.4600e-003**		**7.8100e-003**	**7.8100e-003**	**0.0000**	**21.2836**	**21.2836**	**6.6900e-003**	**0.0000**	**21.4508**

3.6 Paving - 2020

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-004	6.6000e-004	6.8000e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8274	1.8274	5.0000e-005	0.0000	1.8286
Total	**9.0000e-004**	**6.6000e-004**	**6.8000e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8274**	**1.8274**	**5.0000e-005**	**0.0000**	**1.8286**

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	4.9300e-003	0.1092	0.1819	2.5000e-004		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004	0.0000	21.2836	21.2836	6.6900e-003	0.0000	21.4508
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.9300e-003**	**0.1092**	**0.1819**	**2.5000e-004**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**21.2836**	**21.2836**	**6.6900e-003**	**0.0000**	**21.4508**

3.6 Paving - 2020

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-004	6.6000e-004	6.8000e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8274	1.8274	5.0000e-005	0.0000	1.8286
Total	**9.0000e-004**	**6.6000e-004**	**6.8000e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8274**	**1.8274**	**5.0000e-005**	**0.0000**	**1.8286**

3.7 Architectural Coating - 2020

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	1.3237					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0219	0.0238	4.0000e-005		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003	0.0000	3.3192	3.3192	2.6000e-004	0.0000	3.3257
Total	**1.3268**	**0.0219**	**0.0238**	**4.0000e-005**		**1.4400e-003**	**1.4400e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**3.3192**	**3.3192**	**2.6000e-004**	**0.0000**	**3.3257**

3.7 Architectural Coating - 2020

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	1.6200e-003	1.1900e-003	0.0122	4.0000e-005	3.7000e-003	3.0000e-005	3.7300e-003	9.8000e-004	2.0000e-005	1.0100e-003	0.0000	3.2894	3.2894	8.0000e-005	0.0000	3.2915
Total	**1.6200e-003**	**1.1900e-003**	**0.0122**	**4.0000e-005**	**3.7000e-003**	**3.0000e-005**	**3.7300e-003**	**9.8000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**3.2894**	**3.2894**	**8.0000e-005**	**0.0000**	**3.2915**

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	1.3237					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	0.0138	0.0238	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.3192	3.3192	2.6000e-004	0.0000	3.3257
Total	**1.3244**	**0.0138**	**0.0238**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.3192**	**3.3192**	**2.6000e-004**	**0.0000**	**3.3257**

3.7 Architectural Coating - 2020

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	1.6200e-003	1.1900e-003	0.0122	4.0000e-005	3.7000e-003	3.0000e-005	3.7300e-003	9.8000e-004	2.0000e-005	1.0100e-003	0.0000	3.2894	3.2894	8.0000e-005	0.0000	3.2915
Total	**1.6200e-003**	**1.1900e-003**	**0.0122**	**4.0000e-005**	**3.7000e-003**	**3.0000e-005**	**3.7300e-003**	**9.8000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**3.2894**	**3.2894**	**8.0000e-005**	**0.0000**	**3.2915**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.6608	4.2532	7.2547	0.0245	1.8080	0.0297	1.8377	0.4861	0.0280	0.5141	0.0000	2,255.8424	2,255.8424	0.1034	0.0000	2,258.4276
Unmitigated	0.6608	4.2532	7.2547	0.0245	1.8080	0.0297	1.8377	0.4861	0.0280	0.5141	0.0000	2,255.8424	2,255.8424	0.1034	0.0000	2,258.4276

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	0.00	0.00	0.00		
Condo/Townhouse	2,092.97	2,092.97	2092.97	4,833,934	4,833,934
Enclosed Parking with Elevator	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Total	2,092.97	2,092.97	2,092.97	4,833,934	4,833,934

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
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Condo/Townhouse	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Enclosed Parking with Elevator	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759
Regional Shopping Center	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759

5.0 Energy Detail

Historical Energy Use: N

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	233.1402	233.1402	0.0233	4.8200e-003	235.1605
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	233.1402	233.1402	0.0233	4.8200e-003	235.1605
NaturalGas Mitigated	0.0197	0.1684	0.0741	1.0700e-003		0.0136	0.0136		0.0136	0.0136	0.0000	194.6651	194.6651	3.7300e-003	3.5700e-003	195.8219
NaturalGas Unmitigated	0.0197	0.1684	0.0741	1.0700e-003		0.0136	0.0136		0.0136	0.0136	0.0000	194.6651	194.6651	3.7300e-003	3.5700e-003	195.8219

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					
Apartments Low Rise	1.8925e+006	0.0102	0.0872	0.0371	5.6000e-004		7.0500e-003	7.0500e-003		7.0500e-003	7.0500e-003	0.0000	100.9912	100.9912	1.9400e-003	1.8500e-003	101.5913
Condo/Townhouse	1.63578e+006	8.8200e-003	0.0754	0.0321	4.8000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	87.2916	87.2916	1.6700e-003	1.6000e-003	87.8103
Enclosed Parking with Elevator	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
Regional Shopping Center	119600	6.4000e-004	5.8600e-003	4.9200e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3823	6.3823	1.2000e-004	1.2000e-004	6.4202
Total		**0.0197**	**0.1684**	**0.0741**	**1.0800e-003**		**0.0136**	**0.0136**		**0.0136**	**0.0136**	**0.0000**	**194.6651**	**194.6651**	**3.7300e-003**	**3.5700e-003**	**195.8219**

5.2 Energy by Land Use - NaturalGas

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					
Apartments Low Rise	1.8925e+006	0.0102	0.0872	0.0371	5.6000e-004		7.0500e-003	7.0500e-003		7.0500e-003	7.0500e-003	0.0000	100.9912	100.9912	1.9400e-003	1.8500e-003	101.5913
Condo/Townhouse	1.63578e+006	8.8200e-003	0.0754	0.0321	4.8000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	87.2916	87.2916	1.6700e-003	1.6000e-003	87.8103
Enclosed Parking with Elevator	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
Regional Shopping Center	119600	6.4000e-004	5.8600e-003	4.9200e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3823	6.3823	1.2000e-004	1.2000e-004	6.4202
Total		**0.0197**	**0.1684**	**0.0741**	**1.0800e-003**		**0.0136**	**0.0136**		**0.0136**	**0.0136**	**0.0000**	**194.6651**	**194.6651**	**3.7300e-003**	**3.5700e-003**	**195.8219**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	392105	51.5782	5.1600e-003	1.0700e-003	52.0251
Condo/Townhouse	360045	47.3610	4.7400e-003	9.8000e-004	47.7714
Enclosed Parking with Elevator	747736	98.3585	9.8400e-003	2.0400e-003	99.2109
Regional Shopping Center	272480	35.8425	3.5800e-003	7.4000e-004	36.1531
Total		**233.1402**	**0.0233**	**4.8300e-003**	**235.1605**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	392105	51.5782	5.1600e-003	1.0700e-003	52.0251
Condo/Townhouse	360045	47.3610	4.7400e-003	9.8000e-004	47.7714
Enclosed Parking with Elevator	747736	98.3585	9.8400e-003	2.0400e-003	99.2109
Regional Shopping Center	272480	35.8425	3.5800e-003	7.4000e-004	36.1531
Total		**233.1402**	**0.0233**	**4.8300e-003**	**235.1605**

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	0.9250	0.0199	1.2348	1.0000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	8.5989	8.5989	2.0900e-003	1.2000e-004	8.6873
Unmitigated	0.9250	0.0199	1.2348	1.0000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	8.5989	8.5989	2.0900e-003	1.2000e-004	8.6873

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7542					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.7000e-004	5.6900e-003	2.4200e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	6.5915	6.5915	1.3000e-004	1.2000e-004	6.6307
Landscaping	0.0377	0.0143	1.2324	6.0000e-005		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	2.0074	2.0074	1.9700e-003	0.0000	2.0566
Total	**0.9250**	**0.0199**	**1.2348**	**1.0000e-004**		**7.2300e-003**	**7.2300e-003**		**7.2300e-003**	**7.2300e-003**	**0.0000**	**8.5989**	**8.5989**	**2.1000e-003**	**1.2000e-004**	**8.6873**

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7542					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.7000e-004	5.6900e-003	2.4200e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	6.5915	6.5915	1.3000e-004	1.2000e-004	6.6307
Landscaping	0.0377	0.0143	1.2324	6.0000e-005		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	2.0074	2.0074	1.9700e-003	0.0000	2.0566
Total	**0.9250**	**0.0199**	**1.2348**	**1.0000e-004**		**7.2300e-003**	**7.2300e-003**		**7.2300e-003**	**7.2300e-003**	**0.0000**	**8.5989**	**8.5989**	**2.1000e-003**	**1.2000e-004**	**8.6873**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.7080	0.4143	0.0100	30.0508
Unmitigated	16.7080	0.4143	0.0100	30.0508

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	6.05932 / 3.82001	7.9939	0.1981	4.7900e-003	14.3719
Condo/Townhouse	4.69109 / 2.95743	6.1888	0.1533	3.7100e-003	11.1266
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.92589 / 1.18038	2.5252	0.0630	1.5200e-003	4.5523
Total		**16.7080**	**0.4143**	**0.0100**	**30.0508**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	6.05932 / 3.82001	7.9939	0.1981	4.7900e-003	14.3719
Condo/Townhouse	4.69109 / 2.95743	6.1888	0.1533	3.7100e-003	11.1266
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.92589 / 1.18038	2.5252	0.0630	1.5200e-003	4.5523
Total		**16.7080**	**0.4143**	**0.0100**	**30.0508**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.9487	1.2380	0.0000	51.8994
Unmitigated	20.9487	1.2380	0.0000	51.8994

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	42.78	8.6840	0.5132	0.0000	21.5141
Condo/Townhouse	33.12	6.7231	0.3973	0.0000	16.6561
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	27.3	5.5417	0.3275	0.0000	13.7292
Total		**20.9487**	**1.2380**	**0.0000**	**51.8994**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	42.78	8.6840	0.5132	0.0000	21.5141
Condo/Townhouse	33.12	6.7231	0.3973	0.0000	16.6561
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	27.3	5.5417	0.3275	0.0000	13.7292
Total		**20.9487**	**1.2380**	**0.0000**	**51.8994**

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

Appendix B-1: Environmental Noise Assessment

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Fremont Boulevard Mixed Use

Fremont, California

Environmental Noise Assessment

10 April 2018

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Salter Project Number: 17-0504

INTRODUCTION

This report summarizes our environmental noise assessment for the Fremont Boulevard Mixed-Use project in Fremont, California. The project will consist of approximately 72 three-story townhomes, 64 residential apartment units, and approximately 25,000 square feet of retail space along Fremont Boulevard. A proposed project variant would consist of increase the apartment count to 90, extending the building along Fremont Boulevard. Outdoor use space is expected to consist of community gardens in the western portion of the site and a pool, BBQ area, and a Tot Lot near the center of the site. The site is located at 37358 – 37494 Fremont Boulevard, and is currently occupied by several businesses and a vacant fire station. It is approximately 300 feet south and east of active railroad tracks used by Amtrak, ACE, and freight trains, with an at-grade crossing at Fremont Boulevard.

Following is a summary of our findings:

1. Estimated future noise levels at the planned residences fall into the City's *normally acceptable* and *conditionally acceptable* category for land use compatibility.
2. Preliminary estimates indicate that it will not be feasible to meet the City's maximum instantaneous noise level goal in bedrooms, due to train horns. Incorporating the window and door sound insulation ratings shown in Figures 2 and 3, attached, will reduce estimated future transportation noise to the Code requirement, and attempt to achieve the maximum instantaneous noise level goal with commercially available residential style windows.
3. Incorporating the window and exterior door sound insulation ratings shown in Figure 4, attached, will reduce estimated traffic noise to the CalGreen criterion in commercial spaces.
4. Incorporating a solid noise barrier at the community garden will reduce estimated future transportation noise to the City's DNL 65 dB goal at common outdoor use spaces. Reducing traffic noise to DNL 60 dB would also require a noise barrier along the western edge of the Club House for the base project design. However, if the variant is pursued then the space would meet the outdoor noise goal without this second barrier.
5. Exterior-to-interior sound isolation, and outdoor noise barrier design, will need to be refined as the design continues.

ACOUSTICAL CRITERIA

City of Fremont General Plan

The Noise section of the Fremont General Plan (adopted December 2011) includes land use compatibility guidelines for community exterior noise environments. Noise levels are characterized in terms of Day/Night Average Sound Levels[1] (DNL). The guidelines for multi-family residential and commercial land uses are summarized in Table 1 below.

---

[1] DNL (Day-Night Average Sound Level) – A descriptor for a 24-hour A-weighted average noise level. DNL accounts for the increased acoustical sensitivity of people to noise during the nighttime hours. DNL penalizes sound levels by 10 dB during the hours from 10 PM to 7 AM. DNL is sometimes written as Ldn.

Table 1: Summary of Table 10-4: Land Use Compatibility for Community Noise Environments

Exterior DNL		Land-Use Compatibility Level
Multi-Family Residential	Commercial	
less than 60 dB[2]	70 dB or less	*Normally Acceptable* – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements
60 to 75 dB	70 to 80 dB	*Conditionally Acceptable* – Specified land use may be permitted only after a detailed analysis of the noise reduction requirements and needed noise insulation features included in the design
greater than 75 dB	80 dB or greater	*Unacceptable* – New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies

In addition, the General Plan includes the following acoustic goals and policies:

- Implementation Policy 10-8.1.A states the following:
  - The interior noise goal is DNL 45 dB or lower in residences. Typical maximum instantaneous noise levels in bedrooms at night should not exceed 50 dB. Typical maximum instantaneous noise levels in bedrooms and other rooms during the day should not exceed 55 dB.[3]
  - The outdoor noise goal is DNL 60 dB, and is applied where outdoor use is a major consideration. If the outdoor noise goal cannot be achieved with feasible mitigation, the City Council may permit outdoor noise levels up to DNL 65 dB. This standard is not normally applied to small decks associated with apartments and condominiums.
  - The policy states, "Railroad noise sources may create instances when outdoor noise exposure criteria can exceed DNL 65 up to DNL 70 for future development, recognizing that train noise is characterized by relatively few loud events. Railroad noise shall be evaluated independent of other noise sources. Indoor noise level shall not exceed a DNL of 45 dB in new housing units."
- Implementation Policy 10-8.3 requires the evaluation of mitigation measures for projects under the following circumstances:
  - The project would cause the DNL to increase by 5 dB or more, but would remain below 60 dB; or
  - The project would cause the DNL to increase by 3 dB or more, and exceed 60 dB; or
  - The project has the potential to generate significant adverse community response, due to the unusual character of the noise
- Implementation Policy 10-8.5.B requires best practices to limit noise in sensitive areas and long-term construction projects, such as maintaining construction equipment in good condition and use of mufflers on internal combustion engines, installation of temporary noise barriers, prohibiting idling time of internal combustion engines, locating staging areas away from sensitive receptors and other feasible best management practices.

City of Fremont Municipal Code

Section 18.160.010 of the City of Fremont Municipal Code states that construction activity within 500 feet of residences, lodging facilities, nursing homes or inpatient hospitals shall be limited to the weekday hours of 7:00 AM to 7:00 PM and the Saturday or holiday hours of 9:00 AM to 6:00 PM. Sunday construction is not allowed.

---

[2] A-Weighted Sound Level (dB) — The sound level is obtained by use of a standard sound level meter and is expressed in decibels.

[3] The policy defines typical maximum instantaneous noise levels as "the maximum level that is exceeded during 30 percent of the measured passbys, based on the measurement of at least 10 events during the daytime and the nighttime." This assessment considers nighttime hours to be from 10:00 PM to 7:00 AM.

California Building Code (CBC)

The California Building Code limits indoor noise from outdoor sources to DNL 45 dB in habitable rooms of attached housing.[4]

Section 5.507.4 of the 2016 CALGreen Code provides both prescriptive and performance-based criteria for interior noise levels in non-residential spaces where day/night or hourly average sound levels exceed DNL or L_{eq}(h)[5] 65 dB, which are summarized as follows:[6]

- Prescriptive method: Wall and roof-ceiling assemblies exposed to the noise source shall have a composite STC rating of at least 50, with exterior windows having a minimum STC rating of 40
- Performance method: Wall and roof-ceiling assemblies shall reduce average hourly noise levels to L_{eq}(h) 50 dB, or lower, in occupied areas during any hour of operation

This analysis uses the CALGreen performance method to determine the necessary sound insulation at non-residential spaces.

NOISE ENVIRONMENT

Existing Noise Environment

Environmental noise levels at the site are most influenced by train horns and vehicle traffic on local roadways including Fremont and Peralta Boulevards. To quantify the existing noise environment, three multi-day monitors continuously measured noise levels at the site between 9 and 14 August 2017. In addition, short-term "spot" measurements were conducted at additional locations and compared with corresponding time periods of the multi-day monitors to determine how noise levels vary with location and elevation. Table 2, below, summarizes measured noise levels. Figure 1, attached, shows the approximate measurement locations.

Table 2: Existing Noise Environment

Site	Location	Date / Time	DNL	L_{eq}(h)
L1	Peralta Boulevard Monitor Approximately 30' east of Peralta centerline, 12' above grade	9 – 14 August 2017	72 dB*	76 dB
L2	Fremont Boulevard Monitor Approximately 30' north of Fremont centerline, 12' above grade		74 dB*	74 dB
L3	Parish Avenue Monitor Approximately 20' west of Parish centerline, 12' above grade		66 dB	70 dB
S1	Fremont and Peralta Corner Spot Approximately 45' north of Fremont centerline, 45' east of Peralta centerline, 5' above grade	1:20 – 1:35 PM 20 June 2017	73 dB	n/a
S2	Fremont Boulevard Spot Approximately 50' north of Fremont centerline, 5' and 16' above grade	1:50 – 2:05 PM 20 June 2017	69 dB	n/a

* Siren noise events excluded from the data during the 17:00 and 22:00 hours on 10 August 2017

Following is additional information on noise from trains passing the site, based on the measurement data:

- Approximately 84 passenger trains were scheduled to pass by the site during the measurement period

---

[4] California Code of Regulations, Title 24, Part 2: 2016 California Building Code, Chapter 12, Section 1207: Sound Transmission.

[5] L_{eq} (Time-Average Sound Level) – The average sound level for a specified measurement period (in this case, one hour), as described in ASTM 1686 and ANSI S1.1.

[6] California Code of Regulations, Title 24, Part 11: 2016 California Green Building Standards Code, Chapter 5, Section 5.507.4: Acoustical Control.

- Measurement data suggest that 3 to 4 unscheduled freight trains passed the site each night
- Observed noise levels from train horns were 83 to 89 dB at measurement location S1 (while on-site)
- Typical maximum instantaneous noise levels from train horns during day and nighttime hours were 88 and 93 dB, respectively, at monitor location L1

Future Noise Environment

A report by Hexagon Transportation Consultants, Inc. titled "Silicon Sage Mixed-Use Development Transportation Impact Analysis", dated 20 March 2018, provides existing year 2017 and cumulative with project year 2035 peak hour traffic volumes for Fremont Boulevard, Peralta Boulevard, and Parish Avenue adjacent to the project. In summary, peak hour traffic volumes are expected to increase from 1,709 to 2,448 vehicles along Fremont Boulevard, from 915 to 1,394 vehicles along Peralta Boulevard, and from 357 to 463 vehicles along Parish Avenue. This corresponds with an increase in DNL of approximately 2 dB due to traffic on Fremont Boulevard and Peralta Boulevard, and 1 dB due to traffic on Parish Avenue. The estimated future noise levels outlined below assume these increases in environmental noise (and assumes train noise will not change significantly in the future).

The proposed project variant would generate fewer peak hour trips than the (baseline) project, as described in the Transportation Impact Analysis. However, these project variant-generated traffic volumes do not differ enough from the project-generated traffic volumes to affect the increase in DNL estimated at the site. Therefore, the estimated future traffic noise increases apply to both the project and the project variant scenarios.

ANALYSIS AND RECOMMENDATIONS

Land Use Compatibility

Estimated future noise levels at the site range from below DNL 60 dB to 75 dB, depending on location and exposure to noise sources. This falls into the City's *normally acceptable* and *conditionally acceptable* land use compatibility category for multi-family residential and commercial usages. Exterior building assemblies will need to be sound-rated to reduce environmental noise to the criteria outlined above.

Exterior to Interior Noise

Residential Units

As outlined above, the interior noise goals for residences are DNL 45 dB, and to reduce typical maximum instantaneous noise from trains to 50 dB in bedrooms at night and 55 dB in other habitable rooms and in bedrooms during the day.

For reference, standard construction grade dual-pane windows and sliding glass doors typically have sound insulation ratings of STC 26 to 28. Dual pane windows with laminated glass can achieve sound insulation ratings up to approximately STC 36. Windows with higher sound insulation ratings, generally up to approximately STC 44 to 46, are available from some specialty window manufacturers and typically use a dual-sash system with three or four panes of glass.

Preliminary estimates suggest that window and exterior door sound insulation ratings of up to approximately STC[7] 43 will be needed to meet City and State goals in habitable rooms other than

---

[7] STC (Sound Transmission Class) – A single-number rating defined in ASTM E90 that quantifies the airborne sound insulating performance of a partition under laboratory conditions. Increasing STC ratings correspond to improved airborne sound insulation.

bedrooms, but that bedroom windows would need to have sound insulation ratings up to approximately STC 55 to meet the instantaneous noise goal from train horns at night. This exceeds the level of sound isolation provided by commercially available residential windows. Therefore, it will not be feasible to reduce maximum instantaneous train noise to the City's goal in bedrooms.

Figures 2 and 3, attached, provide initial window and exterior door sound insulation ratings intended to meet the Code requirement of DNL 45 dB indoors, and to attempt to meet the City's maximum instantaneous noise from trains, with a cap at STC 44 windows. They will need to be updated as the design progresses, and are based on the following assumptions:

- Site plan, elevations, and townhome residential plans dated 25 July 2017
- An assumed room size for flats in the mixed-use building of 12 by 15 feet in living rooms, and 10 by 12 feet in bedrooms, with 9-foot ceilings
- Standard exterior walls will be equivalent to 7/8-inch thick stucco over wood sheeting with batt insulation in stud cavities and 1 layer of gypsum board on the unit interior
- Where upgraded walls are noted on Figures 2 and 3, a second layer of gypsum board should be added to unit interiors, and walls will either be staggered stud assemblies or interior gypsum board will be attached with resilient clips (e.g., Pliteq GenieClip RST)

Sound insulation ratings should be for the complete assembly, including glass and frame, and should be based on laboratory test reports of similar sized samples from an NVLAP accredited lab.

Ventilation systems, exhaust fans, vents, and similar elements must not compromise sound insulation of the exterior wall assemblies. This will need to be coordinated with the mechanical design as the project progresses.

Non-Residential Space

Commercial space is planned along Fremont Boulevard on the first floor, and residential amenity spaces are planned on the second and third floors of the eastern mixed-use building, and in the clubhouse at the pool area. The following preliminary estimates are intended to reduce transportation noise to the $L_{eq}(h)$ 50 dB indoor criterion, based on the site plan dated 25 July 2017. Consider the following:

- The estimated future outdoor $L_{eq}(h)$ during the louder hours at the clubhouse is approximately 69 dB. Preliminary estimates show that windows and exterior doors of STC 32 will be needed on the southern facade. Preliminary estimates assume approximately 90-percent of the exterior façade will be window.
- The estimated future outdoor $L_{eq}(h)$ during the louder hours at the proposed setback of the commercial and amenity spaces in the mixed-use building ranges from 76 to 79 dB. Preliminary estimates of sound insulation ratings needed to meet the CalGreen criteria are shown in Figure 4.

Outdoor Use Spaces

As outlined above, the City's noise goal for outdoor use spaces is DNL 60 dB, due to traffic, and DNL 70 dB due to trains. Where it is not feasible to reduce traffic noise to DNL 60 dB, the General Plan allows traffic noise to be DNL 65 dB. The 25 July 2017 plans show outdoor use space in the form of community gardens in the western portion of the site and a pool, BBQ area, and Tot Lot near the center of the site.

- Community Gardens – Estimated future noise levels at the community gardens are approximately DNL 68 to 70 dB due to vehicular traffic, and DNL 68 dB due to trains. Therefore, a noise barrier will be needed to reduce traffic noise to an appropriate level. Consider the following:

  - Incorporating an 11-foot tall noise barrier at the location indicated in Figure 2, attached, will reduce estimated future traffic noise to approximately DNL 60 dB
  - Alternatively, the planned 8-foot tall noise barrier in the same location would reduce estimated future traffic noise to approximately DNL 65 dB

- Pool Area – Estimated future traffic noise at the pool, BBQ, and Tot Lot areas is DNL 65 dB. For reference, incorporating approximately a 6-foot tall noise barrier extending past the west side of the Club House would reduce estimated future traffic noise to approximately DNL 60 dB or below for the base project design. However, if the project variant design is pursued then the pool area would meet the outdoor noise goal without a solid barrier.

Estimates are based on the grading plan in the drawing set dated 20 February 2018 and will need to be reviewed when grading plans are finalized. Effective noise barriers may be comprised of various materials including CMU, plaster, wood (enhanced fencing), glass, plastic, and earthen berm. They should be solid from bottom to top with no cracks or gaps and should have a minimum surface density of approximately three pounds per square foot.

Mechanical Equipment Noise (Associated with the Project)

Project buildings are expected to include garage exhaust fans, rooftop air-handling units, condensing units, and building exhaust fans. An acoustical consultant should review manufacturer's noise level data for the proposed units during the design phase to determine if noise reduction measures should be recommended. If recommended, these may include a combination of selecting quiet units, maintaining minimum distances to property lines, physical barriers and/or enclosures.

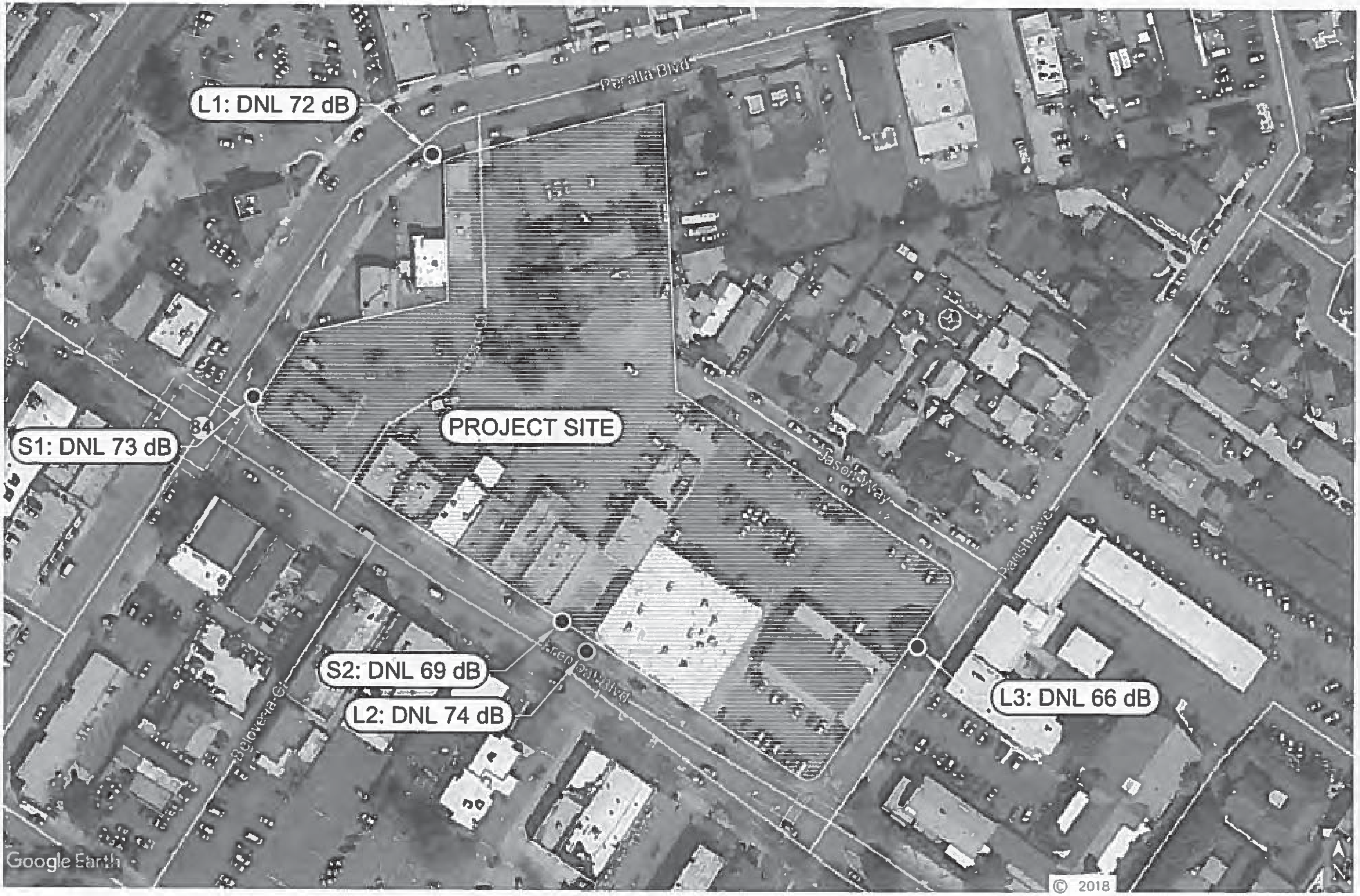
Traffic Noise (Associated with the Project)

The "Silicon Sage Mixed-Use Development Transportation Impact Analysis", dated 20 March 2018, provides project-generated peak hour traffic volumes. In summary, buildout of the project or the project variant will increase peak hour traffic volumes at study intersections in the project vicinity by less than 25-percent. This corresponds with an increase in environmental noise of less than 1 dB, which does not trigger the evaluation of mitigation measures as outlined in General Plan Implementation Policy 10-8.3.

Construction Noise

The project shall comply with limitations on hours of construction and the best practices listed in the Acoustical Criteria section above, as outlined in General Plan Implementation Policy 10-8.5B. This includes items such as using mufflers on internal combustion engines, prohibiting idling times, locating staging areas as far as feasible from acoustically sensitive receivers, etc.

* * *

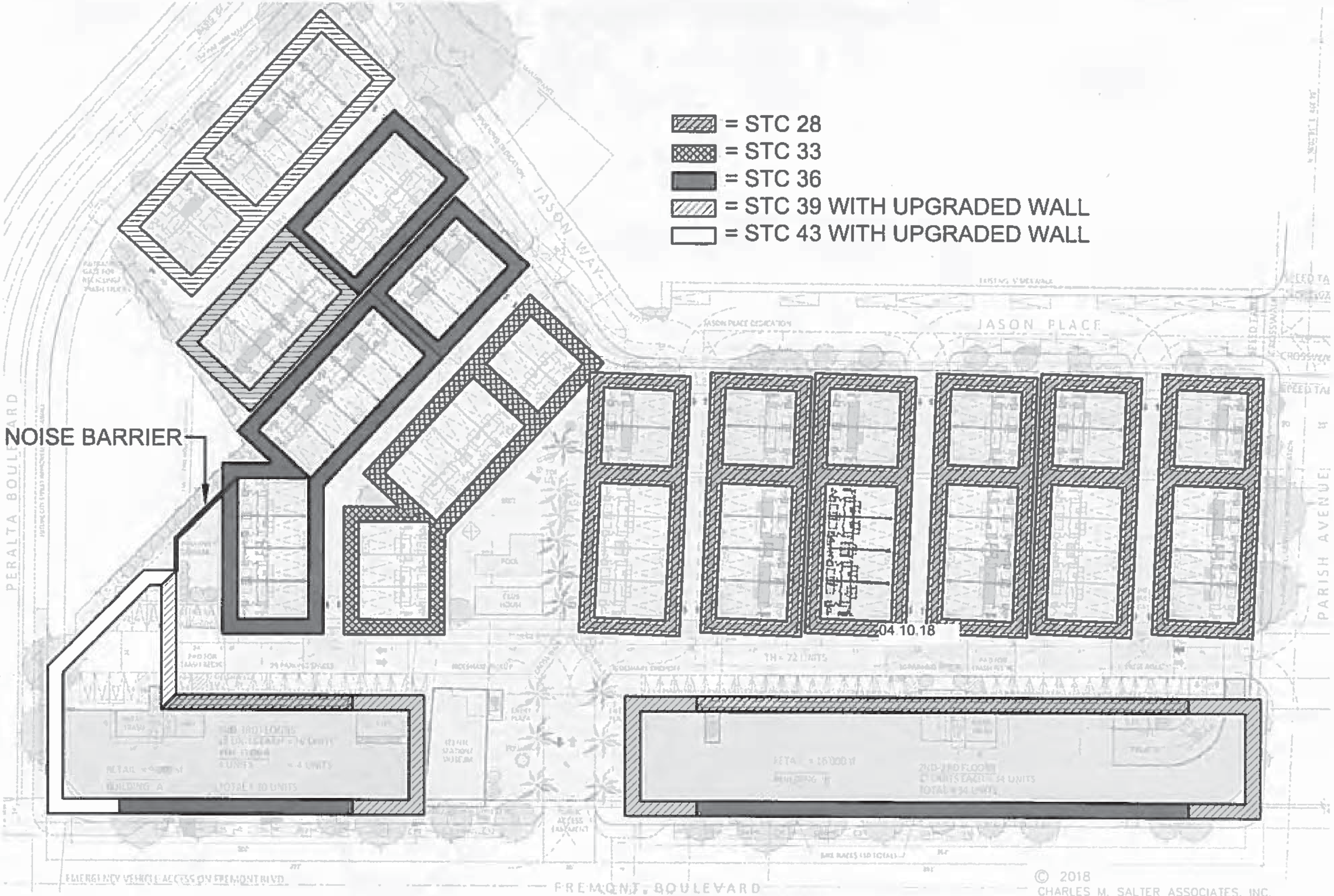


FREMONT BUILDING MIXED-USE
MEASUREMENT LOCATIONS AND MEASURED DNL

FIGURE 1

Salter #
17-0504

JFR/JMR
04 10 18



NOT FOR CONSTRUCTION

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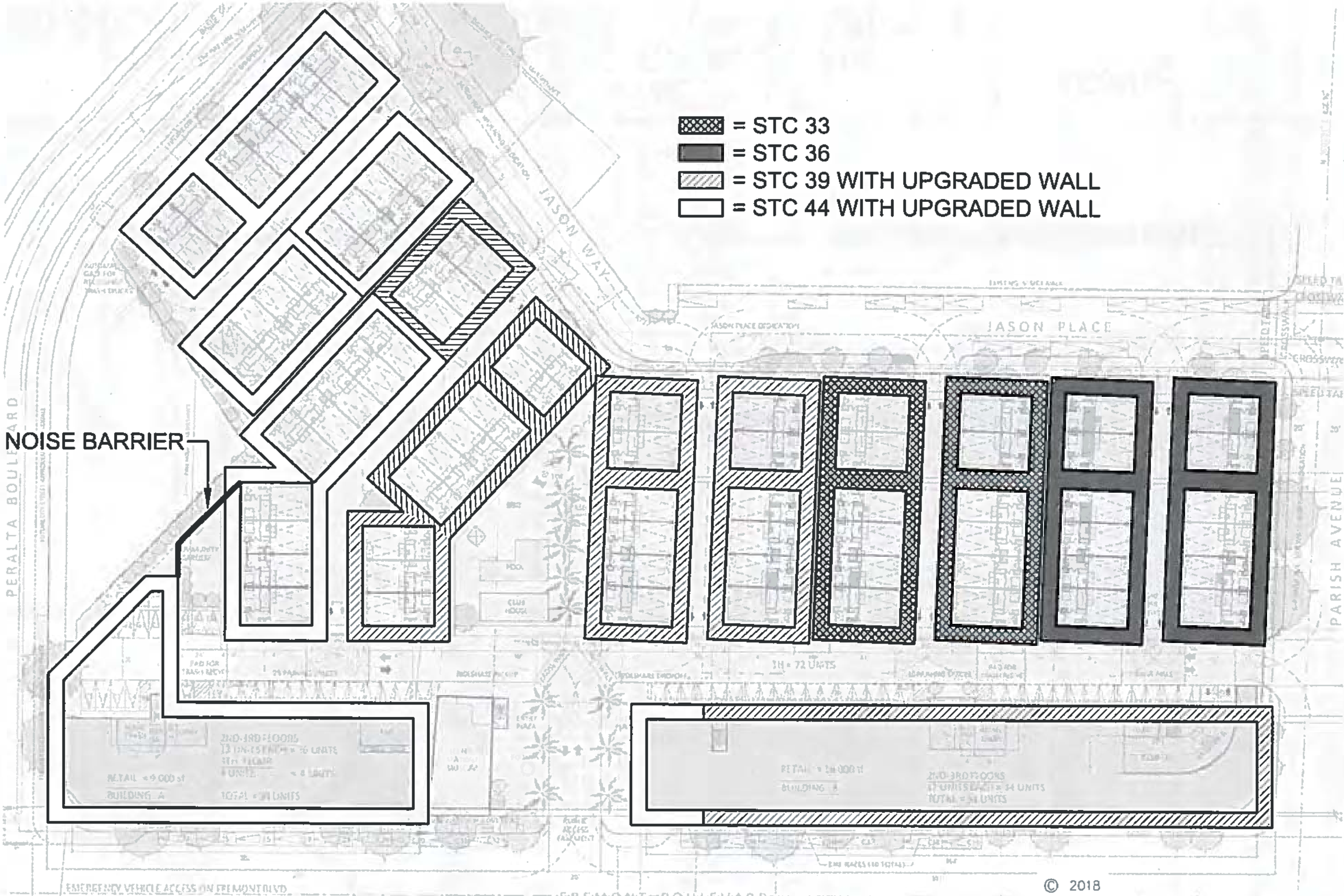
FREMONT BOULEVARD MIXED–USE PRELIMINARY MINIMUM STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (NON–BEDROOMS)

FIGURE 2

Salter #
17–0504

JPR/JMR
04.10.18



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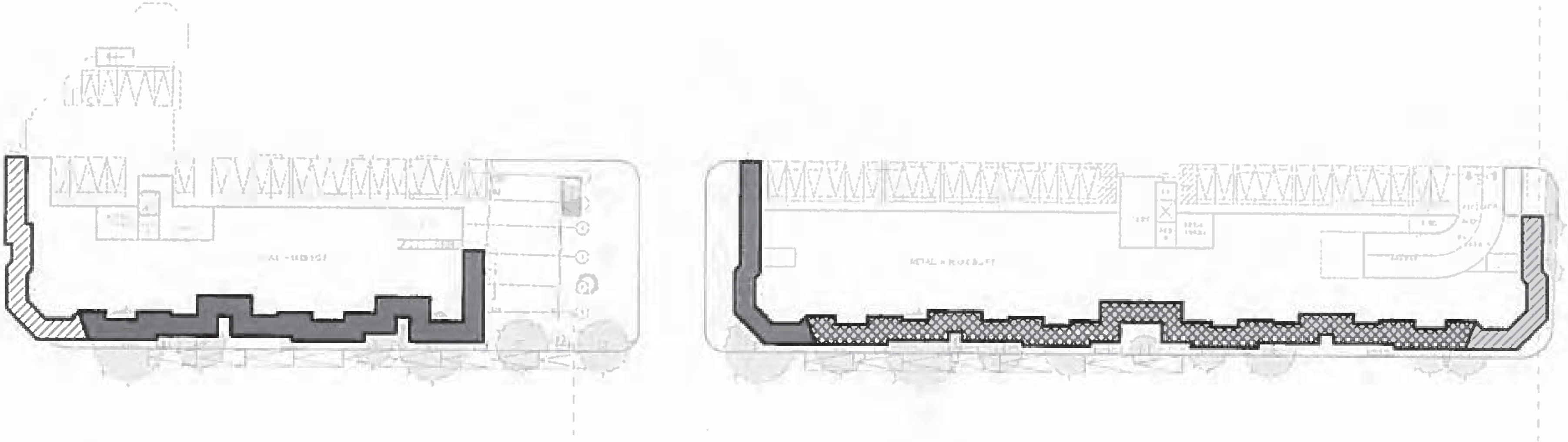
FREMONT BOULEVARD MIXED-USE PRELIMINARY MINIMUM STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (BEDROOMS)

FIGURE 3

Salter #
17-0504

JPR/JMR
04.10.18



▩ = STC 33
■ = STC 36
▨ = STC 39

NOT FOR CONSTRUCTION

FREMONT BOULEVARD MIXED–USE
MINIMUM RECOMMENDED STC RATINGS FOR WINDOWS AND EXTERIOR DOORS (COMMERCIAL)

FIGURE 4

Salter #
17–0504

JPR/JMR
04.10.18

Appendix B-2: Construction and Mechanical Noise Assessment

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Preliminary Construction Noise Calculations - Silicon Sage Centerville Mixed Use Project - 37358 to 37494 Fremont Boulevard, Fremont, Californi

Phase 1						Phase 2		Phase 3	
Client-listed Equipment	FHWA RCNM UG comparable equipment*	Qty	Lmax*	AUF*	hourly dBA	Qty	hourly dBA	Qty	hourly dBA
Air Compressors	same	2	78	40%	67.5	0	0.0	1	64.5
Backhoes	same	1	78	40%	64.5	2	67.5	2	67.5
Concrete/Industrial Saws	same	3	90	20%	78.2	0	0.0	2	76.5
Compactor	same	0	83	20%	0.0	2	69.5	0	0.0
Cranes	same	0	81	16%	0.0	0	0.0	4	69.5
Crawler Tractors	used "tractor" from Table 1	0	84	40%	0.0	1	70.5	0	0.0
Dozer	same	1	82	40%	68.5	1	68.5	0	0.0
Excavator	same	2	81	40%	70.5	0	0.0	3	72.2
Forklifts, Rough Terrain	used "man lift" from Table 1	0	75	20%	0.0	0	0.0	4	64.5
Pavers	same	0	77	50%	0.0	0	0.0	2	67.5
Paving Equipment***	assumed "all other equipment > 5hp"	0	85	50%	0.0	0	0.0	2	75.5
Rollers	same	0	80	20%	0.0	2	66.5	0	0.0
Scraper	same	0	84	40%	0.0	1	70.5	0	0.0
Signal Boards**	assumed this is "<25kVA generator"	4	73	50%	66.5	6	68.2	4	66.5
Skid Steer Loaders****	"front end loader" but less by 3 dB due to size	0	76	40%	0.0	1	62.5	3	67.2
Surfacing Equipment***	assumed "all other equipment > 5hp"	0	85	50%	0.0	0	0.0	1	72.4
Trenchers	"slurry trenching machine"	0	80	50%	0.0	0	0.0	3	72.2
Total					79.9		77.5		82.2

*based on FHWA RCNM User's Guide Table 1 "Actual Measured Lmax @ 50ft" (or Spec 721, if Act. Meas. n/a, and AUF [%])

user enters distance between geog. center of project and noise-sensitive receiver location: 150 feet

Preliminary Mechanical Noise Calculations - Silicon Sage Centerville Mixed Use Project - 37358 to 37494 Fremont Boulevard, Fremont, California

Project Option	Building(s)	Length (ft)	Width (ft)	Estimated Area (total square feet [SF])	Minimum req'd airflow (CFM per garage SF) [A]	est. CFM needed	est. m^3/sec needed	Est. fan TSP (Pa) [B]	Estimated Fan Noise Level (1-meter SPL, dBA) at 1kHz [C]	Distance (feet) from Fan Intake or Discharge Opening to Nearest Community Receiver	calc'd SPL	criteria [D]	calc'd SPL - criteria	w/ mitigation	Estimated Sound Pressure Level (SPL) at the Nearest Receiver (hourly L_{eq}, dBA)
1	Parking Garage	443	62	27466	0.75	20600	9.7	750	88	150	55.2	45	10.2	12	43.2
2	Parking Garage	691	62	42842	0.75	32132	15.2	750	90	150	57.1	45	12.1	12	45.1

[A] specified by the International Mechanical Code (IMC) and adopted by industry (INTEC Controls 2015).

[B] assumes 3 inches water gauge of total static pressure per fan, to handle duct losses, etc.; 1 iwg ~ 250 Pascals (Pa)

[C] per Bies & Hansen, Engineering Noise Control, 2nd ed., 1996, eq. 11.1 and Table 11.4. Assume tubeaxial fans, < 1m diameter.

[D] Leq, per City's GP Noise Element Table 10-2, nighttime

user enters a value for sound atttenuation (dBA) here: **12** dBA of mitigation (e.g., acoustical louver, silencer, etc.)

Preliminary Mechanical Noise Calculations - Silicon Sage Centerville Mixed Use Project - 37358 to 37494 Fremont Boulevard, Fremont, California

Project Option	Building(s)	Occupancy (people per 1000 SF) [A, E]	Outdoor Air Req'd (CFM per person) [A, E]	Estimated Area (total square feet [SF])	est. CFM needed	est. m^3/sec needed	Est. fan TSP (Pa) [B]	Estimated Fan Noise Level (1-meter SPL, dBA) at 1kHz [C]	Distance (feet) from Fan Intake or Discharge Opening to Nearest Community Receiver	calc'd SPL [F]	criteria [D]	calc'd SPL - criteria	w/ mitigation	Estimated Sound Pressure Level (SPL) at the Nearest Receiver (hourly L_{eq}, dBA)
1	Retail Space (Bldg. A)	15	7.5	9000	1013	0.5	1000	67	50	43.1	50	-6.9	0	43.1
1	Retail Space (Bldg. B)	15	7.5	16000	1800	0.8	1000	69	50	45.6	50	-4.4	0	45.6
2	Retail Space (Bldg. A)	15	7.5	10000	1125	0.5	1000	67	50	43.6	50	-6.4	0	43.6
2	Retail Space (Bldg. B)	15	7.5	16000	1800	0.8	1000	69	50	45.6	50	-4.4	0	45.6
either	Sample Residential	20	5	2000	200	0.1	500	54	50	41.9	50	-8.1	0	41.9

[A] per ASHRAE Standard 62.1-2012 (Ventilation Rates for Acceptable Indoor Air Quality) for Retail space

[B] assumes 4 inches water gauge of total static pressure per Retail fan, to handle duct losses, etc.; 2 iwg for residential unit; 1 iwg ~ 250 Pa

[C] per Bies & Hansen, Engineering Noise Control, 2nd ed., 1996, eq. 11.1 and Table 11.4. Assume airfoil-bladed centrifugal fans, under 0.9m diameter

[D] Leq, per City's GP Noise Element Table 10-2, daytime

[E] per ASHRAE Standard 62.1-2012 (Ventilation Rates for Acceptable Indoor Air Quality) for Sleeping space

[F] assumes point source for the Retail AHU, line source for multiple residential unit fans

user enters a value for sound atttenuation (dBA) here: **0** dBA of mitigation (e.g., acoustical louver, silencer, etc.)

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Appendix C: Transportation Impact Analysis

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HEXAGON TRANSPORTATION CONSULTANTS, INC.

Silicon Sage Mixed-Use Development

Transportation Impact Analysis

Prepared for:

City of Fremont

April 9, 2018

Hexagon Office: 7901 Stoneridge Drive, Suite 202
Pleasanton, CA 94566
Hexagon Job Number: 18BW01
Phone: 925.225.1439

Table of Contents

Appendices

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Executive Summary

This report presents the results of the transportation impact analysis conducted for the proposed Silicon Sage mixed-use project at 37358-37494 Fremont Boulevard, in Fremont, California. The purpose of the analysis is to compare the traffic conditions for the proposed land use entitlement to the existing land use entitlement.

The project, as proposed, would include 72 townhomes, 64 apartments, a 23,450 square-foot shopping center, a 1,550 square-foot café, and a 2,610 square-foot daycare center at the southeast corner of the intersection at Fremont Boulevard and Peralta Boulevard. Existing land uses include a 43,468 square-foot shopping center, 7,843 square feet of restaurant uses, a 970 square-foot mini-warehouse, a single-family dwelling, and a vacant City fire station. The analysis also includes a separate evaluation of a project variant consisting of 72 townhomes, 90 apartments, and 24,450 square feet of retail space (including a 1,550 square foot café).

The potential impacts of the project were evaluated relative to the level of service policies and methodologies applicable in the City of Fremont. The analysis also was conducted in accordance with the requirements of the Alameda County Congestion Management Agency (CMA), the administering agency for the Congestion Management Program (CMP) of Alameda County. Because the project is projected to generate fewer than 100 net PM peak-hour trips, the project is not required to conduct a CMA roadway segment analysis.

The traffic analysis evaluated AM peak-hour traffic conditions at several intersections in the vicinity of the project site. The study intersections were selected in consultation with City staff. The study also includes an analysis of site access, on-site circulation and neighborhood issues.

Project Trip Generation

Trip generation for the project was estimated by applying to the project use and size the rates applicable to the proposed residential, retail and daycare uses. The site was given credit for the trip generating capacity of the existing approved uses (entitlement) on site. The trip generation for both the proposed and existing uses on site was estimated by applying the applicable Institute of Transportation Engineers' (ITE) trip generation rates to the uses. The trip generation estimates for both the proposed project and the existing site uses were adjusted using trip reductions for internal trips, retail pass-by trips, and transit trips.

After subtracting from the project trips the trips generated by the existing uses on site, and applying the aforementioned trip reductions for internal trips, pass-by trips and transit trips, the project is estimated to generate 125 net new trips in the AM peak hour and 12 net new trips in the PM peak hour. The project trip distribution was determined based on a select zone analysis using the City of Fremont Travel Demand Forecast Model. This was the model used to produce the city's forecasts for its most recent General Plan Update.

Because the project would cause a negligible increase in PM peak-hour traffic, PM peak-hour conditions were not evaluated off-site. Analysis of PM peak-hour conditions immediately around the project site were included in a focused site operations analysis.

Signalized Intersection Level of Service Analysis

Table ES-1 summarizes the results of the intersection level of service (LOS) analysis under existing, background, and cumulative conditions with and without the proposed project. The proposed project would not result in any significant impacts to the signalized study intersections. Under existing and background conditions with the proposed project, all signalized study intersections would operate at LOS D or better. Under cumulative conditions with and without the project, the signalized intersection of Paseo Padre Parkway and Peralta Boulevard would operate at LOS F in the AM peak hour. However, there would be no impact at this intersection because the addition of project traffic does not cause the intersection average delay to increase by more than 4 seconds.

At the intersection of Fremont Boulevard & Thornton Avenue level of service improves under cumulative conditions. This is attributed to the fact that the intersection has planned improvements whose positive effects more than offset the negative effects of the increases in future traffic.

Unsignalized Intersection Level of Service Analysis

The City of Fremont does not have formal impact criteria to apply to unsignalized intersections. This is common for many jurisdictions because it is generally not the unsignalized intersections that limit the overall capacity of a roadway. The analysis of unsignalized intersections is typically evaluated by considering overall level of service, approach delay and movement delay, availability of alternate routes, intersection spacing, and an analysis of traffic signal warrants. The results of the unsignalized intersection level of service analysis under all study scenarios are summarized in Table ES-2.

The results show that, at the intersection of Fremont Boulevard and Parish Avenue, the westbound approach on Parish Avenue currently operates at LOS F under existing conditions and would continue to under all study scenarios. A peak-hour volume signal warrant analysis was conducted for the intersection of Fremont Boulevard & Parish Avenue and it was shown to meet the warrant under existing plus project, background plus project, and cumulative plus project conditions during the AM peak hour.

Pedestrian, Bicycle, & Transit Facilities

The proposed consolidation of site driveways along Fremont Boulevard from five driveways to one driveway would reduce the number of potential vehicle-pedestrian and vehicle-bicycle conflict points and would be beneficial for pedestrian safety. The project would provide a new sidewalk on the west side of Jason Way, extending from Peralta Boulevard 350 feet south to just south of the bend in the street, thereby providing a continuous sidewalk from Peralta Boulevard to Parish Avenue. The project will also dedicate right-of-way along the north side of Parish Avenue, between Fremont Boulevard and Jason Way, to allow widening of the existing sidewalk.

While the project would not create a significant impact to transit operations, there is an existing bus stop along the project frontage on Fremont Boulevard just north of Parish Avenue that does not currently provide a bench or shelter. AC Transit staff requested that the project install a bench and bike rack at the bus stop and ensure that there is an unimpeded ADA accessible path to the bus stop. These upgrades to the bus stop would encourage transit ridership.

Recommendation 1: Prior to final design, the project applicant shall work with City of Fremont and AC transit staff to consider the desirability of upgrades to the existing bus stop along the project frontage.

The project would not generate pedestrian, bicycle or transit trips that exceed the capacity of the transportation system elements to which they apply, nor would the project cause an increase in any mode of non-motorized vehicular trips that would require new off-site transportation facilites or services. The project would not conflict with the Alameda County CMP Transportation Impact Analysis Technical Guidelines as they pertain to potential pedestrian, bicycle and transit impacts to the transportation system. Accordingly, the project would have no significant impact on pedestrian or bicycle facilities, or on transit service.

Site Access, Circulation and Parking Layout

The site plan was reviewed in accordance with traffic engineering principals and guidelines. The following recommendations derive from the review:

Recommendation 2: The project applicant shall install a traffic signal at the intersection of Fremont Boulevard and Parish Avenue. Because of the close proximity of this traffic signal to the existing traffic signals on Fremont Boulevard at Peralta Boulevard and Central Avenue, the recommended traffic signal at this location should be interconnected and coordinated with the existing signal equipment at these locations. These improvements should include installation of high-visibility crosswalks and other treatments, as needed, to maximize pedestrian accessibility.

Recommendation 3: Parking should be prohibited on the south side of Peralta Boulevard over a distance of 240 feet west, and 60 feet east, of the Jason Way driveway. In addition, landscaping near the driveway would need to be maintained such that adequate sight distance is provided.

Recommendation 4: Restrict access to right-turn in and out only at the proposed intersection of Fremont Boulevard and the Main Site Driveway. This may require installation of a channelization island at the driveway, signage, and/or a median treatment. In addition, to enhance pedestrian safety in the proposed crosswalk, design features to improve crosswalk visibility and shorten the pedestrian crossing distance should be considered. These could include installation of: an additional bulb-out on the opposite side of Fremont Boulevard, high visibility striping, a raised median pedestrian refuge, and/or a rapid flash beacon. The final configuration of the driveway and crosswalk will be determined by City of Fremont staff.

Recommendation 5: A 50-foot clear throat is recommended for the South Site Driveway. This will require relocating the parking garage entrance/exit as well as some 90 degree parking. It is also recommended that a “KEEP CLEAR” marking be placed in the westbound lane of Parish Avenue at the South Site Driveway.

Recommendation 6: A turnaround is recommended at the dead-end at the north end of the main street. This could be accomplished by marking as a no-parking area the end stall on the west side of the aisle.

Recommendation 7: The garage ramp design and entrance will likely require modification. Prior to final design, the garage ramp should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality, including sight distance, location, and the ability of two vehicles to pass each other simultanously.

Neighborhood Traffic Issues

The existing traffic volumes on Parish Avenue, east of Jason Way, are on the order of 400 vehicles in the AM peak hour and 260 in the PM peak hour in both directions combined. The project would add to Parish Avenue east of Jason Way approximately 13 net new trips in the AM peak hour and add about 5 net new trips in the PM peak hour. This corresponds to the project adding to Parish Avenue one vehicle approximately every 5 minutes in the AM peak hour and one vehicle every 12 minutes in the PM peak hour.

Because Parish Avenue is used as a cut-through street, installation of a traffic signal at Fremont Boulevard and Parish Avenue may potentially attract more ambient traffic to Parish Avenue. It was estimated that the traffic volumes on westbound Parish Avenue, as a result of the traffic signal, could increase between zero and 50 vehicles in each of the AM and PM peak hours.

The City of Fremont does not have significance criteria to determine when a project would materially contribute to an existing speeding or cut-through traffic problem. The city’s traffic calming policy considers a wide range of applicable criteria, from speed limit and basic street design, to support by residents. The project site plan shows a potential speed table and crosswalks on all three approaches to the intersection of Jason Way and Parish Avenue. As an alternative to a potential speed table, the applicant could consider a speed lump west of Jason Way on Parish Avenue. There are also proposed plans (through a different development project) to install one or more other traffic calming devices on Parish Avenue east of Jason Way. The combination of these devices would likely reduce speeds on Parish Avenue and potentially discourage cut-through traffic.

Project Variant

The project variant, located on the project site, would include 72 townhomes, 90 apartments, and 24,450 square feet of retail space (including 1,550 square feet of café space).

Project Trip Generation

The project variant is estimated to generate 109 net new trips in the AM peak hour and 0 net new trips in the PM peak hour. Relative to the project, the project variant would generate 16 fewer AM peak hour trips and 12 fewer PM peak-hour trips. This is attributed to the fact that, although the project variant includes more residential, the project variant does not have a daycare center.

Signalized Intersection Level of Service Analysis

The results of the signalized intersection level of service (LOS) analysis under existing plus project, background plus project, and cumulative plus project conditions with the project variant are summarized in Table ES-3. The results show that the project variant would cause no material changes to delays or level of service at the signalized intersections. All intersections previously reported as operating at acceptable conditions, or conversely, under unacceptable conditions, and the scenarios and time periods during which they occurred, would continue to operate the same. The project variant would not result in any significant intersection level of service impacts.

Unsignalized Intersection Level of Service Analysis

Table ES-4 summarizes the results of the unsignalized intersection level of service (LOS) analysis under existing plus project, background plus project, and cumulative plus project conditions with the project variant. The results show that the project variant would cause no material changes to delays or level of service at the signalized intersections. All intersections previously reported as operating at acceptable conditions, or conversely, under unacceptable conditions, and the scenarios and time periods during which they occurred, would continue to operate the same.

Pedestrian, Bicycle, & Transit Facilities

The project variant is expected to cause neither an increase nor decrease in pedestrian or bicycle demand, and would not change the off-site pedestrian or bicycle circulation or infrastructure relative to those changes already described previously for the project. Relative to the project, the project variant is estimated to create up to two additional transit trips in each of the AM and PM peak hours. The project variant does not propose any system or service changes to the existing transit system relative to those changes already described previously for the project. Based on applicable criteria, the project variant would not cause a significant impact to transit operations. The recommendation for possible improvements to the existing bus stop along the site frontage, per Recommendation 1, are applicable to the project variant.

Site Access, Circulation and Parking Layout

The project variant site plan was reviewed in accordance with traffic engineering principals and guidelines. Relative to the recommendations already identified previously for the project, the following additional recommendations follow from the review of the project variant site plan:

Recommendation 8: The gate control at the south garage entrance should be designed using a control system that will provide access to both residents and non-residents, at a service rate of at least 300 vehicles per hour, and should provide a vehicle storage reservoir for at least one vehicle inbound between the main street on site and the gate. Prior to final design, the gate access and control system should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality.

Recommendation 9: It is recommended that one or more speed humps be installed in the drive aisle of the parking garage in order to reduce speeds in the parking aisle. Prior to final design, the speed hump design should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality.

Recommendation 10: Prior to final design, sight distance at the south garage entrance/exit should be reviewed by City staff to ensure that it meets basic requirements for safety.

The project variant site plan satisfactorily addresses two problematic issues identied with the project site plan: (a) the south garage entrance/exit proximity to Parish Avenue, and (b) the main street dead-end at the north end. Accordingly, for the Project Variant, the previously identifed Recommendation 5 and Recommendation 6 are not applicable.

Neighborhood Traffic Issues

The project variant, when evaluated in relation to the project, would result in no material changes to traffic volumes or traffic patterns on Parish Avenue. Relative to the project, the project variant will, in some directions and time periods add one or two peak-hour trips, and in other cases subtract one or two peak-hour trips, the net effect being negligible. The findings for the project, as reported previously, remain applicable to the project variant.

Table ES 1
Signalized Intersection Level of Service Summary Under Project Conditions

			Existing					Background					Cumulative				
			No Project		With Project			No Project		With Project			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay
1	Fremont Blvd & Thornton Ave	E	37.9	D	38.0	D	0.1	38.1	D	38.2	D	0.1	28.6	C	29.4	C	0.8
2	Fremont Blvd & Peralta Blvd	E	27.0	C	27.2	C	0.2	27.3	C	27.5	C	0.2	32.7	C	32.9	C	0.2
3	Fremont Blvd & Central Ave	E	34.8	C	34.8	C	0.0	35.1	D	35.5	D	0.4	71.3	E	75.5	E	4.2
4	Paseo Padre Pkwy & Peralta Bl	E	46.4	D	46.7	D	0.3	46.8	D	47.5	D	0.7	81.9	F	83.3	F	1.4

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

Table ES 2
Unsignalized Intersection Level of Service Summary Under Project Conditions

		Existing				Background				Buildout			
		No Project		With Project		No Project		With Project		No Project		With Project	
No.	Intersection	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]
5	Fremont Blvd & Parish Ave	4.2/54.9	A/F	14.8/152.2	B/F	6.1/77.7	A/F	21.0/sat[2]	C/F	15.7/sat[2]	C/F	44.2/sat[2]	E/F
6	Jason Way & Peralta Blvd	0.1/13.8	A/B	0.4/16.1	A/C	0.1/14.0	A/B	0.4/16.3	A/C	0.1/14.1	A/B	0.3/17.0	A/C
7	Parish Avenue & Peralta Bl	4.5/33.0	A/D	4.8/35.2	A/E	4.7/35.4	A/E	5.0/38.0	A/E	2.7/32.2	A/D	2.8/33.4	A/D
8	Jason Way & Parish Ave	0.3/10.3	A/B	0.7/10.3	A/B	0.3/10.4	A/B	0.7/10.4	A/B	0.3/10.5	A/B	0.7/10.5	A/B

Note: all intersections were counted in May 2017.

[1] unsignalized intersections were analyzed based on Highway Capacity Manual (HCM) methodology using TRAFFIX analysis software. All unsignalized study intersections are Side Street Stop Control (SSSC). SSSC intersection levels of service and delays are reported for both the overall average delay / the approach with highest delay.

[2] "sat" designates *oversaturated* conditions. Delay value is not meaningful or reflective of actual conditions.

Table ES 3
Signalized Intersection Level of Service Summary Project Variant Conditions

			Existing					Background					Cumulative				
			No Project		With Project			No Project		With Project			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay
1	Fremont Blvd & Thornton Ave	E	37.9	D	38.0	D	0.1	38.1	D	38.2	D	0.1	28.6	C	29.2	C	0.6
2	Fremont Blvd & Peralta Blvd	E	27.0	C	27.3	C	0.3	27.3	C	27.5	C	0.2	32.7	C	32.9	C	0.2
3	Fremont Blvd & Central Ave	E	34.8	C	34.8	C	0.0	35.1	D	35.5	D	0.4	71.3	E	75.3	E	4.0
4	Paseo Padre Pkwy & Peralta Bl	E	46.4	D	46.6	D	0.2	46.8	D	47.3	D	0.5	81.9	F	83.0	F	1.1

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

Table ES 4
Unsignalized Intersection Level of Service Summary Project Variant Conditions

		Existing				Background				Buildout			
		No Project		With Project		No Project		With Project		No Project		With Project	
No.	Intersection	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]
5	Fremont Blvd & Parish Ave	4.2/54.9	A/F	15.5/156.6	C/F	6.1/77.7	A/F	21.7/sat[2]	C/F	15.7/sat[2]	C/F	45.6/sat[2]	E/F
6	Jason Way & Peralta Blvd	0.1/13.8	A/B	0.5/16.4	A/C	0.1/14.0	A/B	0.5/16.6	A/C	0.1/14.1	A/B	0.3/17.4	A/C
7	Parish Avenue & Peralta Bl	4.5/33.0	A/D	4.7/34.6	A/D	4.7/35.4	A/E	5.0/37.3	A/E	2.7/32.2	A/D	2.8/33.1	A/D
8	Jason Way & Parish Ave	0.3/10.3	A/B	0.8/10.2	A/B	0.3/10.4	A/B	0.8/10.2	A/B	0.3/10.5	A/B	0.8/10.3	A/B

Note: all intersections were counted in May 2017.

[1] unsignalized intersections were analyzed based on Highway Capacity Manual (HCM) methodology using TRAFFIX analysis software. All unsignalized study intersections are Side Street Stop Control (SSSC). SSSC intersection levels of service and delays are reported for both the overall average delay / the approach with highest delay.

[2] "sat" designates *oversaturated* conditions. Delay value is not meaningful or reflective of actual conditions.

1.
Introduction

This report presents the results of the transportation impact analysis conducted for the proposed Silicon Sage mixed-use project at 37358-37494 Fremont Boulevard, in Fremont, California. The purpose of the analysis is to compare the traffic conditions for the proposed land use entitlement to the existing land use entitlement.

The project, as proposed, would include 72 townhomes, 64 apartments, a 23,450 square-foot shopping center, a 1,550 square-foot café, and a 2,610 square-foot daycare center at the southeast corner of the intersection at Fremont Boulevard and Peralta Boulevard. Existing land uses include a 43,468 square-foot shopping center, 7,843 square feet of restaurant uses, a 970 square-foot mini-warehouse, a single-family dwelling, and a vacant City fire station. The site location is shown on Figure 1. The analysis also includes a separate evaluation of a project variant consisting of 72 townhomes, 90 apartments, and 24,450 square feet of retail space (including a 1,550 square foot café).

Access to the project site would be provided via dedicated driveways on Fremont Boulevard and Parish Avenue, and a gated trash and recycling truck access driveway on Peralta Boulevard. In addition, the project proposes to extend Jason Way from Parish Avenue to Peralta Boulevard. The project would thereby also provide access to each of Parish Avenue and Peralta Boulevard via intersections at Jason Way. The project would provide access to Jason Way via several driveways. These are shown on the site plan on Figure 2.

Scope of Study

The potential impacts of the project were evaluated relative to the level of service policies and methodologies applicable in the City of Fremont. The analysis also was conducted in accordance with the requirements of the Alameda County Congestion Management Agency (CMA), the administering agency for the Congestion Management Program (CMP) of Alameda County. Because the project is projected to generate fewer than 100 net PM peak-hour trips, the project is not required to conduct a CMA roadway segment analysis.

The traffic analysis evaluated peak-hour traffic conditions at several intersections in the vicinity of the project site. The study intersections were selected in consultation with City staff.

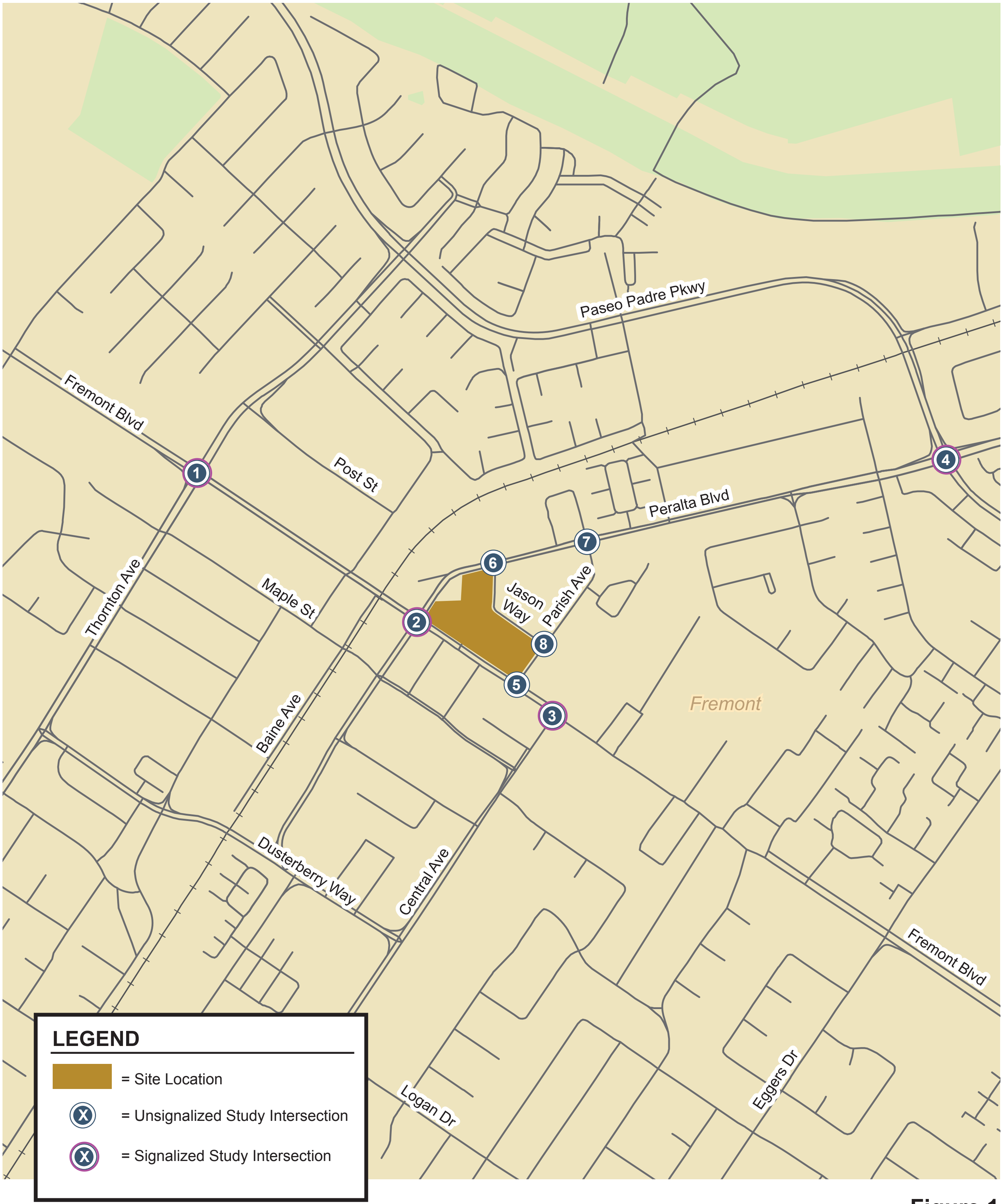


Figure 1
Site Location and Study Intersections

NORTH
Not to Scale

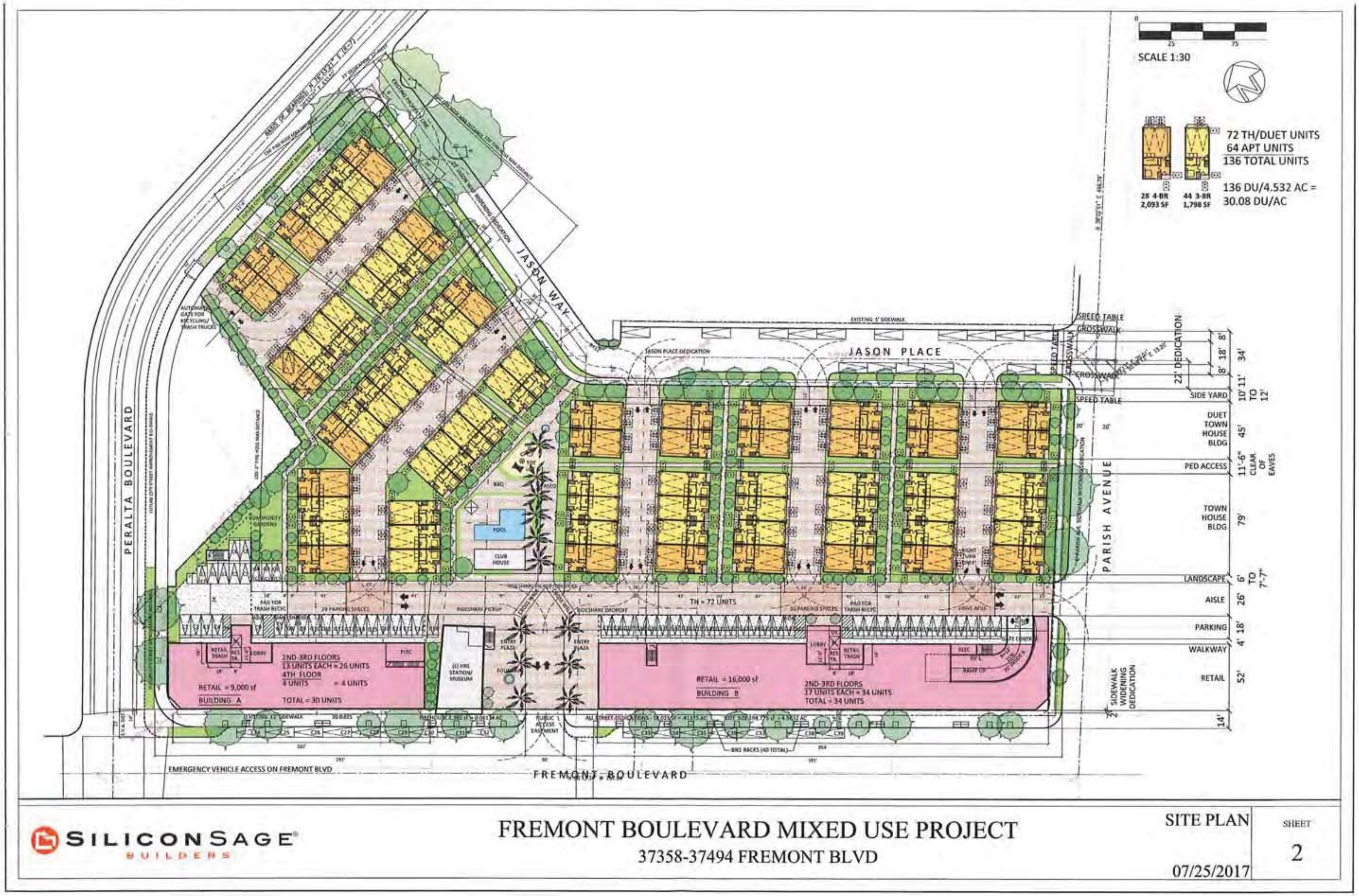


Figure 2
Site Plan

The study intersections are:

1. Fremont Boulevard and Thornton Avenue (signalized)*
2. Fremont Boulevard and Peralta Boulevard (signalized)*
3. Fremont Boulevard and Central Avenue (signalized)*
4. Paseo Padre Parkway and Peralta Boulevard (signalized)*
5. Fremont Boulevard and Parish Avenue (unsignalized)
6. Jason Way and Peralta Boulevard (unsignalized)
7. Peralta Boulevard and Parish Avenue (unsignalized)
8. Jason Way and Parish Avenue (unsignalized)

*denotes signalized intersections on the CMP/MTS roadway network

Because the project would cause a negligible increase in PM peak-hour traffic, the traffic analysis did not include an evaluation of PM peak-hour conditions. This is described further in Chapter 4. Traffic conditions at the study locations were analyzed for the weekday AM peak hour. The AM peak hour of traffic is typically between 7:00 AM and 9:00 AM. This period represents the most congested traffic conditions on the surrounding street network during a typical weekday morning.

Traffic conditions were evaluated for the following scenarios:

Scenario 1: ***Existing Conditions***. Existing conditions are represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from recent traffic counts.

Scenario 2: ***Existing Plus Project Conditions***. Existing plus Project conditions are represented by existing peak-hour traffic volumes, with the addition of project traffic associated with the proposed residential, retail and daycare uses, less the traffic that is generated by existing uses. Existing plus project conditions were evaluated relative to Existing conditions in order to identify potential impacts associated with the proposed project.

Scenario 3: ***Background Conditions***. Background conditions are represented by existing peak-hour traffic volumes plus the addition of traffic associated with approved developments in the vicinity of the project site on the existing transportation network.

Scenario 4: ***Background Plus Project Conditions***. Background plus Project conditions are represented by background peak-hour traffic volumes, with the addition of project traffic associated with the proposed residential, retail and daycare uses, less the traffic generated by existing site uses. Background plus project conditions were evaluated relative to Background conditions in order to identify potential impacts associated with the proposed project.

Scenario 5: ***Cumulative No Project Conditions***. Cumulative (No Project) traffic volumes were obtained from the City of Fremont General Plan EIR Year 2035 traffic forecasts. Cumulative No Project conditions were evaluated based on the Cumulative (No Project) traffic volumes on the planned roadway network under the 2035 General Plan.

Scenario 6: ***Cumulative with Project Conditions***. Cumulative with project traffic volumes were estimated by adding to the Cumulative (No Project) traffic volumes the project traffic associated with the proposed residential, retail and daycare uses, less the traffic generated by existing site uses. Cumulative with Project conditions were evaluated relative to Cumulative (No Project) conditions in order to determine potential cumulative project impacts.

Methodology

This section presents the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from traffic counts, previous traffic studies, field observations, and public agency websites. The following data were collected from these sources:

- existing traffic volumes
- existing railroad operations
- lane configurations
- signal timing and phasing
- existing bicycle facilities
- existing transit service
- approved land use development projects
- cumulative traffic volumes

Level of Service Standards and Analysis Methodologies

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The various analysis methods are described below.

Signalized Intersections

The City of Fremont utilizes TRAFFIX software and the *Highway Capacity Manual* (HCM) methodology to evaluate intersection operations. The HCM method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Control delay is the amount of delay that is attributed to the particular traffic control device at the intersection, and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The correlation between average delay and level of service is shown in Table 1.

The City of Fremont’s level of service standard for signalized intersections is generally LOS D. However, for signalized intersections on CMA routes of regional significance and those located within the City Center, Town Centers, and Warm Springs/South Fremont BART Station, the level of service standard for signalized intersections is LOS E. All four of the signalized intersections evaluated in this study are CMA intersections. The intersections of Fremont Boulevard and Thornton Avenue, and Fremont Boulevard and Peralta Boulevard are also located within a Town Center.

Significance criteria are used to establish what constitutes an impact. According to City of Fremont standards, a project is said to create a significant adverse impact on traffic conditions at a signalized intersection if for either peak hour:

1. The level of service at the intersection degrades from its LOS standard or better under no project conditions to an unacceptable LOS under project conditions, or
2. If the intersection is already operating below its LOS standard under no project conditions, the addition of the project causes the intersection average control delay to increase by more than 4 seconds per vehicle.

A significant impact at a signalized intersection is said to be satisfactorily mitigated when measures are implemented that would restore intersection levels of service to an acceptable LOS or restore the intersection to operating levels that are better than no project conditions.

Table 1
Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though some vehicles may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual* .

Unsignalized Intersections

Unlike signalized intersections, which typically represent constraint points for the roadway network, unsignalized intersections rarely limit the potential capacity of a roadway. The determination of appropriate improvements to unsignalized intersections typically includes a qualitative and quantitative analysis of movement delay and approach delay, traffic signal warrants, movement traffic volumes, availability of alternate routes, and intersection safety. For this reason, improvements to unsignalized intersections are frequently determined on the basis of professional engineering judgment. The City of Fremont does not have a significance threshold for acceptable or unacceptable operations for unsignalized intersections.

Level of service at unsignalized intersections also is based on the Highway Capacity Manual (HCM) method. TRAFFIX software is used to apply the HCM operations method for evaluation of conditions at unsignalized intersections. This method is applicable for one-way, two-way, and all-way stop-controlled intersections. The delay and corresponding level of service at unsignalized, stop-controlled intersections is presented in Table 2. For side-street stop-controlled intersections, the LOS is reported for the overall intersection average delay and the average delay at the worst approach.

Table 2
Unsignalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, *Highway Capacity Manual* (HCM).

Signal Warrant Methodology

For any unsignalized intersections operating or projected to operate at unacceptable levels of service, the analysis of traffic conditions is supplemented with an assessment of the need for signalization of the intersection. For this study, the need for signalization is assessed on the basis of the peak-hour volume signal warrant – warrant #3 – described in the *California Manual on Uniform Traffic Control Devices* (MUTCD). This method provides an indication of whether traffic conditions and peak-hour traffic levels are, or would be, sufficient to justify installation of a traffic signal.

Report Organization

The remainder of this report is divided into six chapters. Chapter 2 describes the existing roadway network, transit service, existing bicycle and pedestrian facilities, and existing traffic conditions. Chapter 3 identifies approved developments in the vicinity of the project and reports background traffic conditions. Chapter 4 explains the method used to estimate project traffic. Chapter 5 describes the potential near-term project impacts on the transportation system under Existing plus Project and Background plus Project conditions. Chapter 6 reports Cumulative conditions without and with project traffic. Chapter 7 describes the analysis of other transportation related issues, including site access and circulation. Chapter 8 describes the project variant and its potential effects on traffic conditions in the study area relative to the project.

2.
Existing Conditions

This chapter describes the existing conditions for all of the major transportation facilities in the vicinity of the site, including the roadway network, bicycle and pedestrian facilities, and transit service, as well as existing levels of service at the intersections.

Existing Roadway Network

Regional access to the project site is provided via Interstate 880 (I-880) and Mission Boulevard (State Route 238). Local access to the site is provided via Fremont Boulevard, Thornton Avenue, Peralta Boulevard, Paseo Parkway, Central Avenue, Parish Avenue and Jason Way.

I-880 is a north-south freeway providing regional access from East Bay cities to San Jose, where it becomes SR 17 and extends into Santa Cruz. I-880 is primarily a six-lane freeway, with additional HOV lanes along much of its length, as is the case through Fremont. The closest access to the project site is provided by the interchange at Thornton Avenue.

Mission Boulevard is a four- to six-lane, north-south, major arterial that extends from I-238 in Hayward to I-880 in south Fremont. It provides access to the site via Mowry Avenue and Peralta Boulevard.

Fremont Boulevard is a four- to six-lane, north-south, major arterial street that extends from I-880 in the north to Dixon Landing Road in the south. It is four-lanes wide fronting the site and within the study area. North of I-880, Fremont Boulevard becomes Alvarado Boulevard in Union City. South of Dixon Landing Road, Fremont Boulevard becomes McCarthy Road and continues south of Milpitas. Fremont Boulevard has parking on both sides fronting the site and in the project vicinity. It provides direct access to the project site. It is also designated as State Route 84 between Peralta Boulevard and Thorndon Avenue.

Thornton Avenue is a four lane, east-west major arterial street west of Fremont Boulevard and a minor arterial east of Fremont Boulevard. It extends from Paseo Padre Parkway in the east to Union City in the west. Between I-880 and Fremont Boulevard, Thornton Avenue is designated as State Route 84. Thornton Avenue provides access I-880.

Peralta Boulevard is a three- to four-lane, east-west arterial street that extends from Mowry Avenue in the east to Glenmoor Drive in the west. It has parking on both sides in the project vicinity. It provides access to the project site via Jason Way and Fremont Boulevard. It is also designated as State Route 84 between Fremont Boulevard and Mowry Avenue.

Paseo Parkway Boulevard is a four- to six-lane, major arterial street that extends from west Fremont near the Dumbarton Bridge to Mission Boulevard near I-680 in the south. The section south of Driscoll Road is designated as a minor arterial.

Central Avenue is generally a four-lane, east-west minor arterial street that extends from Fremont Boulevard in the east to Willow Street in Newark in the west. In the vicinity of the project site, Central Avenue is four lanes wide with a two-way center left-turn lane.

Parish Avenue is a two-lane local street extending from Peralta Boulevard in the north to Fremont Boulevard in the south. It provides direct access to the project site.

Jason Way is a two-lane, north-south, local street with parking on both sides. It provides direct access to the project site.

Existing Bicycle and Pedestrian Facilities

Existing bicycle access to the project site is provided primarily via a network of nearby Class II bike lanes and Class III bike routes which are shared with vehicular traffic. According to the *City of Fremont Draft Bicycle Master Plan* (2017), in the project vicinity there are existing Class II bike lanes on Fremont Boulevard south of Peralta Boulevard, and on Central Avenue in the vicinity of the project site. Peralta Boulevard is designated as an existing Class III bike route. There are future upgraded Class II buffered bike lanes proposed on Peralta Boulevard south of Fremont Boulevard and on Central Avenue. The plan also shows Class IV separated bikeways on Peralta Boulevard east of Fremont Boulevard, including along the site frontage, and along the entire length of Fremont Boulevard, including the site frontage. The existing and planned bicycle facilities are shown on Figure 3.

Pedestrian access to the site is provided by sidewalks along the site frontage on Fremont Boulevard, Parish Avenue, Peralta Boulevard and Jason Way. Sidewalks are generally found along all previously-described roadways in the study area and in the immediate vicinity of the site. All signalized study intersections have pedestrian crosswalks, curb ramps, and pedestrian-actuated pedestrian-crossing phases.

Existing Transit Service

Existing transit service in the project vicinity is provided by the Alameda Contra Costa Transit District (AC Transit), Altamont Corridor Express (ACE) and the Amtrak Capitol Corridor. The nearest bus routes are Lines 99, 210, 801, and Line U. They are described in detail below.

AC Transit

Line 99 connects the Fremont BART station with the Hayward BART station via Walnut Avenue, Fremont Boulevard, Decoto Road, Union City BART, South Hayward BART and Mission Boulevard. The bus operates between 5:00 AM and 1:00 AM on weekdays, with 20-minute headways throughout the day. On weekends, the bus provides service between 6:00 AM and 1:00 AM, with 20-minute headways. Line 99 has a bus stop located on Fremont Boulevard on the project frontage 100 feet north of Parish Avenue.

Line 210 connects Ohlone College with the Union Landing Shopping Center in Union City, via Washington Boulevard, Fremont Boulevard, Alvarado Boulevard and Dyer Street. The bus operates between 5:00 AM and 11:25 PM on weekdays, with 30-minute headways throughout the day. The 210 line provides service between 7:00 AM and 8:45 PM, with 30-minute headways, on weekends. The closest bus stop is located on Fremont Boulevard on the project frontage.

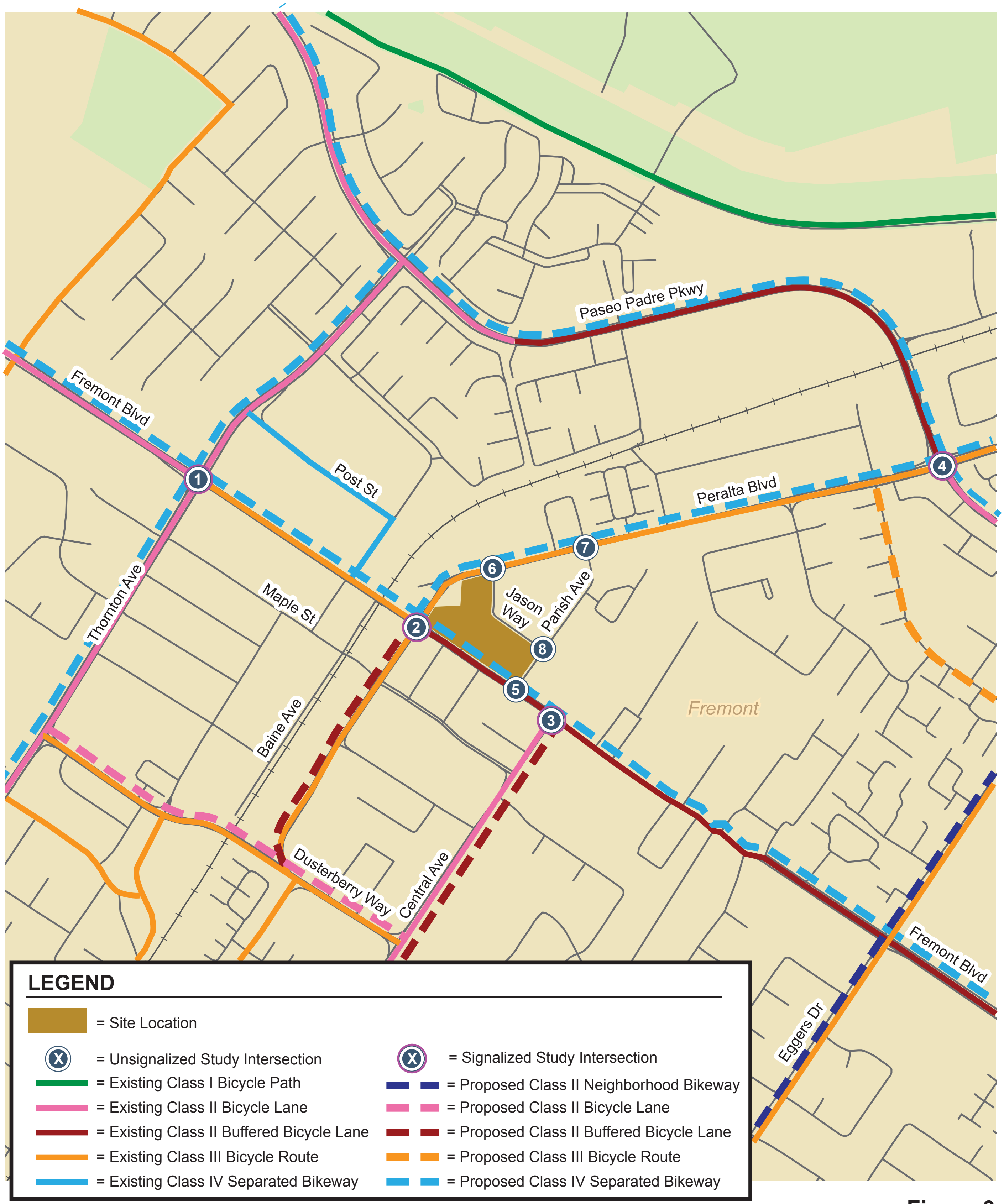


Figure 3
Existing and Planned Bicycle Facilities

Line 801 is a night service bus which connects the Fremont BART station with Downtown Oakland via Fremont Boulevard, Decoto Road, Union City BART, Mission Boulevard, E. 14th Street and International Boulevard. The bus operates between 11:40 PM and 6:20 AM on weekdays with 60-minute headways. On weekends, the bus provides service between 11:45 PM and 9:20 AM, with 60-minute headways, between the Fremont BART and Downtown Oakland, and between 12:45 AM and 8:25 AM, with 20-minute headways, between the Bayfair BART and Fremont BART. The closest bus stop is located on Fremont Boulevard on the project frontage.

Line U is a weekday Transbay line which connects the Fremont BART station with Stanford University via Centerville Depot, Ardenwood Park & Ride, and the Dumbarton Bridge. The bus operates on weekdays westbound in the morning from Fremont BART to Stanford University from 5:55 AM to 9:25 AM with 30- to 40-minute headways and eastbound in the afternoon from Stanford University to Fremont BART from 2:45 PM to 7:05 PM with 30- to 60-minute headways. The closest bus stop is on Fremont Boulevard at the Centerville Amtrak station, located just north of Peralta Boulevard approximately 275 feet north of the project site.

Altamont Corridor Express (ACE)

The Altamont Corridor Express (ACE) is a commuter rail that provides service between Stockton and San Jose. The train operates on weekdays between Stockton and San Jose during morning commute hours from 4:20 AM to 9:25 AM with 25- to 75-minute headways, and between San Jose and Stockton during evening commute hours from 3:35 PM to 8:50 PM with 60-min headways. There are four trains westbound in the morning and four trains eastbound in the evening.

The Fremont ACE station, also known as the Centerville Depot, is located approximately 400 feet north of the project site. The station is staffed during train operating hours. Bicycles are permitted on ACE. There are bicycle racks and lockers available at the station. ACE forward is a phased improvement plan proposed to increase service reliability and frequency, enhance passenger facilities, reduce travel times along the existing ACE service corridor from San Jose to Stockton and extend ACE service to Manteca, Modesto, Ceres, Turlock and Merced.

Amtrak Capitol Corridor

The Amtrak Capitol Corridor train is a commuter rail that provides service between Auburn and San Jose. The train operates on weekdays and weekends. The station is co-located with the ACE station, but on the south side of the railroad tracks. During the morning peak period, between 7:00 and 9:30 AM, there are four westbound Capitol Corridor trains with one-hour headways, and one eastbound train. During the evening peak period, between approximately 3:30 and 8:00 PM, there is one westbound train and four eastbound trains. On weekends, the Amtrak Capitol Corridor train provides 7 trains daily in each of the westbound and eastbound directions between 8:35 AM and 9:40 PM, with headways varying from one to three hours.

The existing transit service is shown on Figure 4.

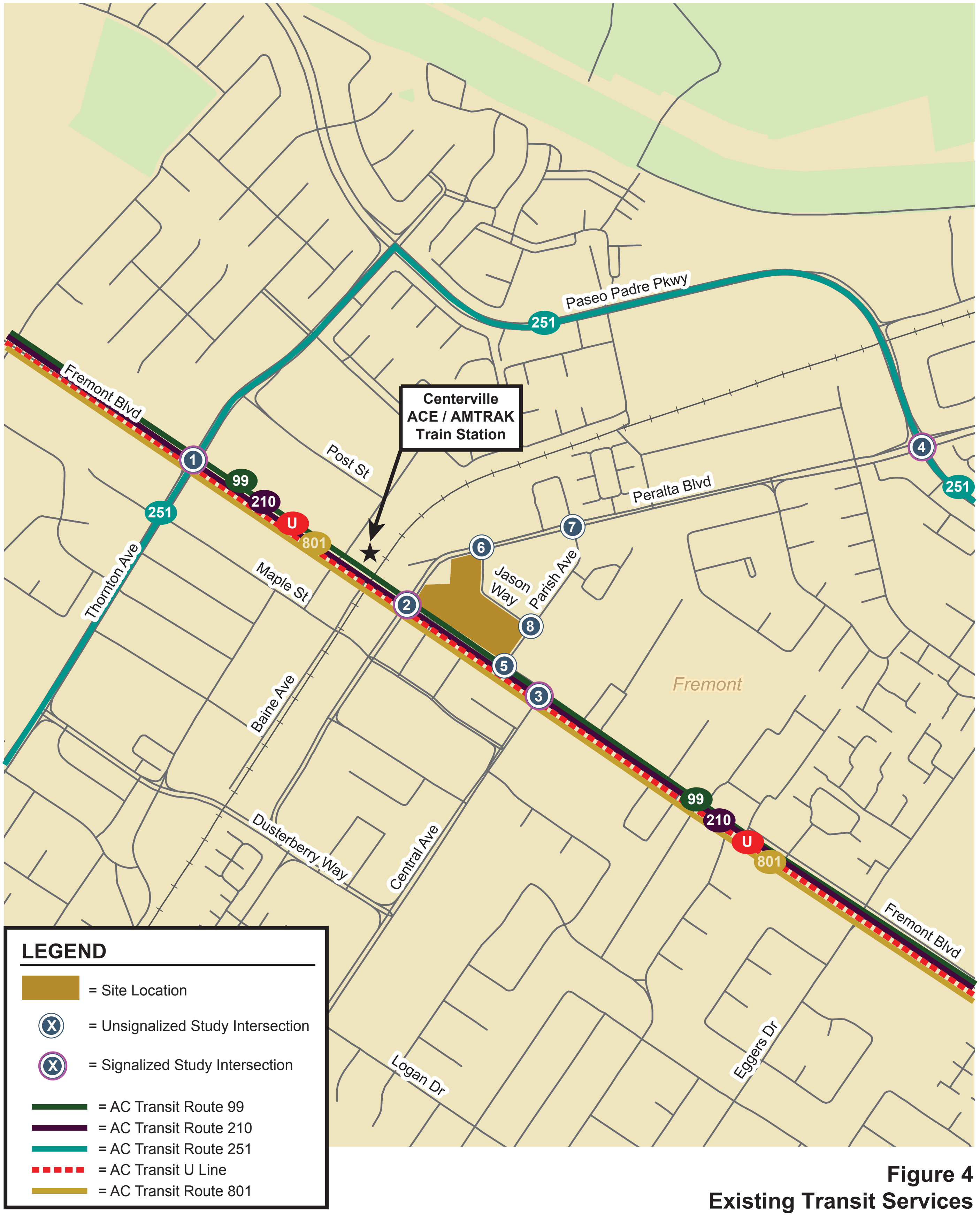


Figure 4
Existing Transit Services

Existing Intersection Lane Configurations and Traffic Volumes

The existing lane configurations at the study intersections were obtained from field observations. The existing intersection lane configurations are shown on Figure 5. The existing peak-hour traffic volumes were obtained from turning movement counts at the study intersections in May 2017. The existing peak-hour traffic volumes are shown on Figure 6. The intersection traffic count data are included in Appendix A.

Existing Signalized Intersection Levels of Service

The results of the signalized intersection level of service analysis under existing conditions are summarized in Table 3. The results indicate that all signalized intersections currently operate at LOS D or better during the AM peak hour. The level of service calculation sheets are included in Appendix B.

Table 3
Existing Intersection Levels of Service

No.	Intersection	LOS Standard	Avg. Delay[1]	LOS[1]
1	Fremont Blvd & Thornton Ave	E	37.9	D
2	Fremont Blvd & Peralta Blvd	E	27.0	C
3	Fremont Blvd & Central Ave	E	34.8	C
4	Paseo Padre Pkwy & Peralta Bl	E	46.4	D

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

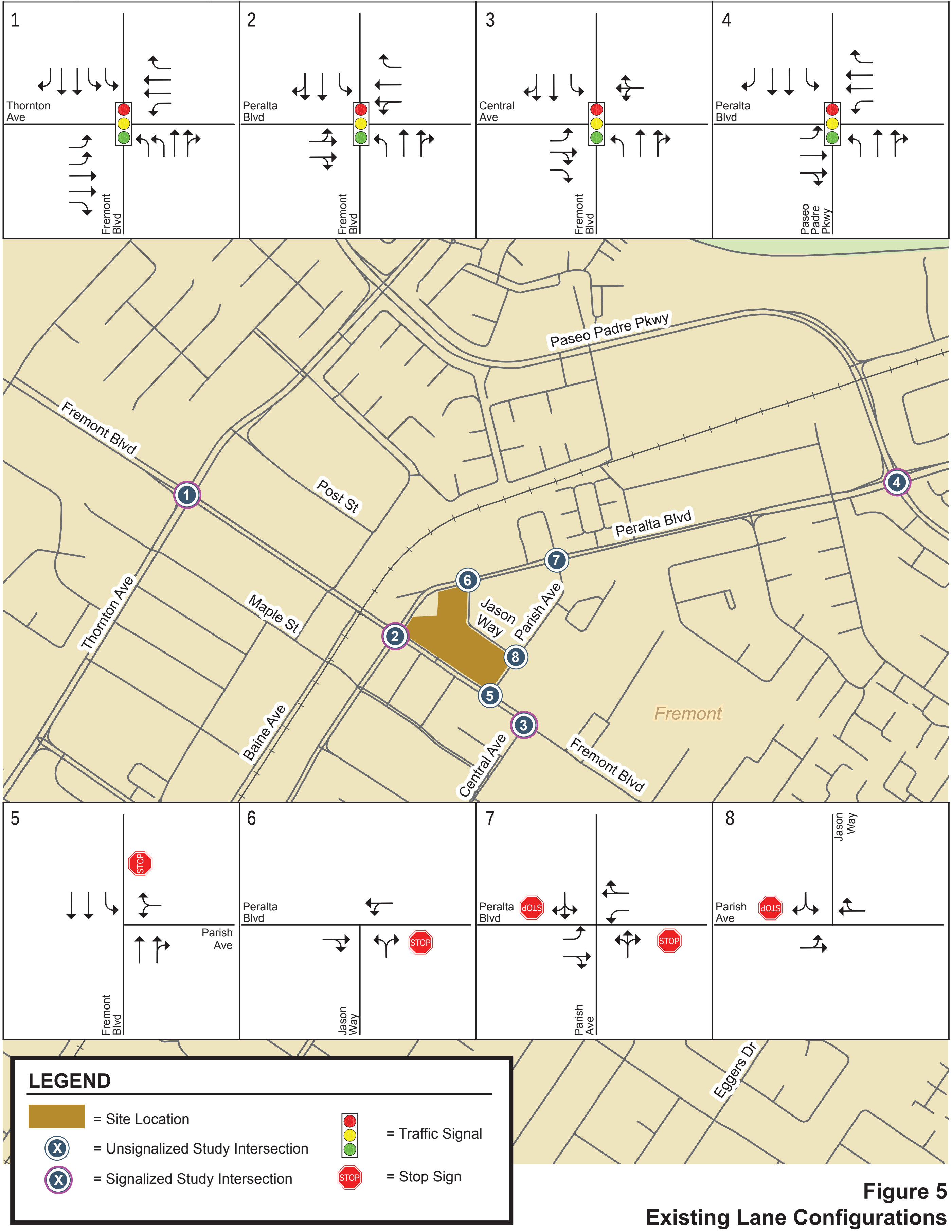


Figure 5
Existing Lane Configurations

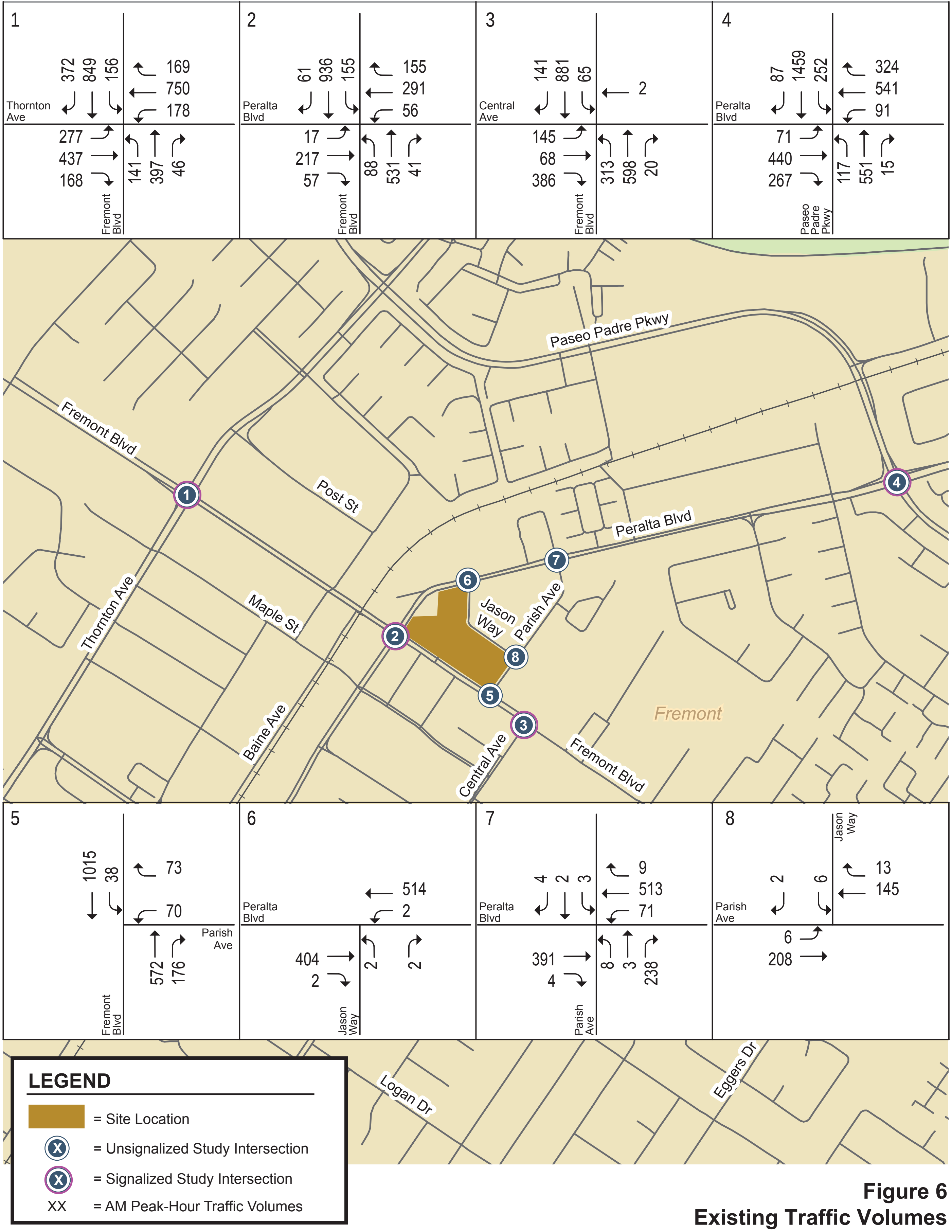


Figure 6
Existing Traffic Volumes

HEXAGON

NORTH
Not to Scale

Observed Existing Traffic Conditions

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to intersection level of service, and (2) to identify any locations where the level of service calculation does not accurately reflect level of service in the field. Overall, the level of service analysis appears to accurately reflect actual existing traffic conditions. Field observations showed that operational problems currently occur at some of the study intersections. These are described below.

Fremont Boulevard and Peralta Boulevard. In the PM peak hour, the northbound vehicle queue on Fremont Boulevard frequently extends back to Parish Avenue- a distance of nearly 700 feet. Also in the PM peak hour, the southbound left-turn vehicles frequently extend out of the 150-foot striped left-turn pocket.

Fremont Boulevard and Parish Avenue. In the AM peak hour, the westbound left turns from Parish Avenue are frequently blocked by the queue of southbound vehicles extending from Central Avenue. In the PM peak hour, the westbound left turns from Parish Avenue are frequently blocked by the queue of northbound vehicles extending from Peralta Boulevard.

Fremont Boulevard and Central Avenue. In the AM peak hour, the southbound vehicle queues on Fremont Boulevard frequently extend back to and past Parish Avenue- a distance of 250 feet.

Paseo Padre Parkway and Peralta Boulevard. In the AM peak hour, the southbound vehicle queues regularly extend over 1,000 feet, with the observed maximum being about 1,500 feet. During the AM peak 15 minutes, in the southbound direction, it can take approximately five minutes to clear the intersection.

Railroad Operations

The Union Pacific railroad tracks cross Fremont Boulevard approximately 300 feet north of the project site. It is on these tracks that the ACE and Capitol Corridor trains run. Between the two train services, there occurs about seven crossings in the AM peak period and four crossings in the PM peak period. Therefore, on average, trains arrive and block traffic on Fremont Boulevard about every 20 minutes in the two-hour AM peak period and approximately every 30 to 40 minutes in the two-hour PM peak period.

Because the station is located immediately adjacent to Fremont Boulevard, the effect of the trains on the crossing gate is determined not just by the time it takes for the trains to cross the tracks at speed, as with most train crossings. The length of time that the crossing gates are down consists of the approach time, the time it takes for trains to decelerate to stop at the station, the dwell time (time to load and unload passengers), and the time it takes for the trains to accelerate during departure from the station. This is because the trains, particularly the eastbound trains, actually extend across Fremont Boulevard when stopped at the station, and the fact that the trains are significantly longer than the loading platforms.

During train arrivals, the maximum vehicle queues on Fremont Boulevard, both northbound and southbound, are extremely long. Multiple observations showed that the average length of time the crossing gates are down is about two-and-a-half to three minutes. For the reasons described above, this is much longer than the station dwell time, which is less than 45 seconds, except when handicap loading or unloading is required, which can add a minute. One observation showed a total time of 12 minutes that the gates were down. The station agent was consulted about this and the explanation was that it happens infrequently, and that it most likely was a result of the train's conductor being instructed by Union Pacific to delay departure. The involvement of Union Pacific, which owns the tracks, can be for any one of a number of reasons, but often is related to switching issues or track obstructions downstream of the station.

The vehicle queues during a typical train crossing, lasting two and a half to three minutes, are considerable. The queues are worse in the PM than in the AM, but they are significant during both periods. In the PM peak period, during typical train stops, vehicle queues on northbound Fremont Boulevard were observed to extend all the way back to Centerville Junior High School, which is more than 2,000 feet (0.4 miles). During extended train stops (multiple trains arriving at one time, during handicap loading, or during train switch periods) the queues extend as far as one-half mile. The vehicle queues on southbound Fremont Boulevard extend back to and beyond Thornton Avenue and, as an extension of this queue, queues develop on eastbound Thornton Avenue from Fremont Boulevard.

It is worth noting that when train delays become too long, some drivers divert to other streets. This is especially true during the longer delays such as the 12-minute delay described previously. With delays that long, drivers take alternate routes and many who are stuck in the queue eventually turn around, leaving the queue.

When the crossing gates are down, the signal control at the intersection of Fremont Boulevard and Peralta Boulevard changes from its normal operation to flashing red, with all-way stop control. Under all-way-stop control, the vehicle queues in the westbound shared through/left-turn lane on Peralta Boulevard are generally shorter than when the signal is operating under normal control. This is because, under normal signal operations, westbound (and eastbound) left-turn phasing is permissive, requiring vehicles to wait for gaps in on-coming traffic. For all other movements at the intersection, the all-way stop control neither worsens nor improves operations, since all other movements (except the eastbound right-turn) have to wait for the crossing gate either way. It is therefore concluded that the current use of all-way-stop control during train interruptions is the optimal signal control under these conditions.

3.
Background Conditions

This chapter describes background traffic conditions. Traffic volumes for background conditions comprise volumes from existing traffic counts plus traffic generated by approved developments in the vicinity of the site. Traffic volumes and roadway network assumptions are described below.

Background Roadway Network and Traffic Volumes

It was assumed for this analysis that roadway and intersection geometries would remain the same as under existing conditions. Background peak-hour traffic volumes were calculated by adding to existing volumes the traffic generated by approved but not yet constructed developments. The following approved developments were included:

3900 Thornton Avenue: 54 Multi-Family (MF) Units; 7,124 square feet (s.f.) of Commercial

Centerville Junction: -11 Single-Family (SF) Units; -7,672 s.f. hardware store; 52 MF Units

Central Commons: 30 MF Units

City Center Apartments: 60 MF Units

Littlesteps Childcare: 2,803 square feet

Montecito (Townhome Portion Only): 54 MF Units

Peralta Crossing Design Review: 43 MF Units

The traffic from each of these developments was estimated using standard trip generation rates and assigned to the roadway network using trip distribution patterns applicable to the land uses. Background traffic volumes are shown on Figure 7.

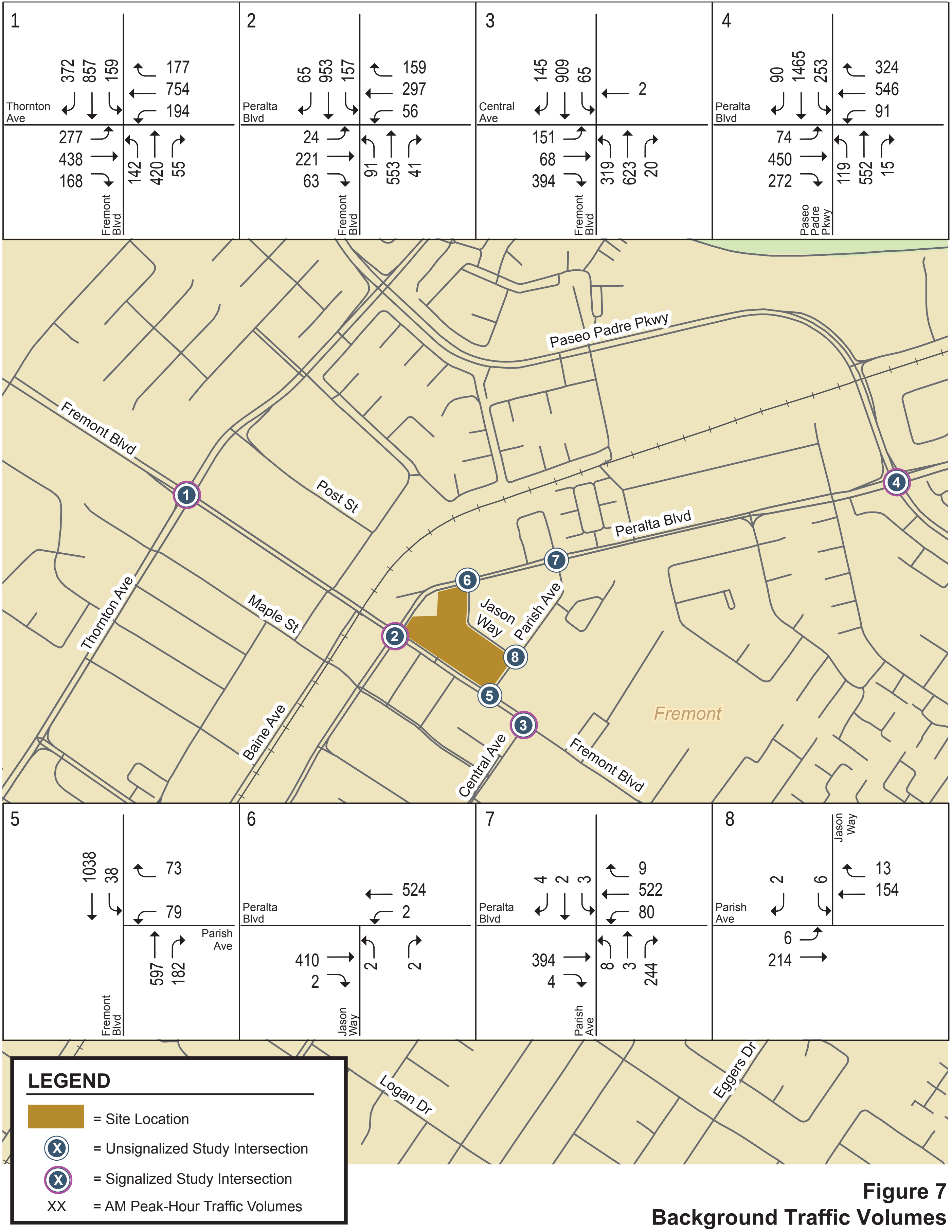


Figure 7
Background Traffic Volumes

Background Intersection Levels of Service

Intersection level of service calculations were conducted to evaluate the operating levels of the key signalized intersections under background conditions. Table 4 presents the results of the signalized intersection level of service calculations under background conditions. All signalized study intersections are projected to operate at LOS D or better during the AM peak hour. The level of service calculation sheets are included in Appendix B.

Table 4
Background Signalized Intersection Levels of Service

No.	Intersection	LOS Standard	Avg. Delay[1]	LOS[1]
1	Fremont Blvd & Thornton Ave	E	38.1	D
2	Fremont Blvd & Peralta Blvd	E	27.3	C
3	Fremont Blvd & Central Ave	E	35.1	D
4	Paseo Padre Pkwy & Peralta Bl	E	46.8	D

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

4.

Project Characteristics

This chapter describes the method by which project traffic is estimated and assigned to the roadway network. The project, as proposed, would include 72 townhomes, 64 apartments, a 23,450 square-foot shopping center, a 1,550 square-foot café, and a 2,610 square-foot daycare center at the northeast corner of the intersection at Fremont Boulevard and Peralta Boulevard. Existing land uses include a 43,468 square-foot shopping center, a 7,843 square-foot restaurant, a 970 square-foot mini-warehouse, a single-family dwelling, and a vacant City fire station.

Project Traffic Estimates

The amount of traffic associated with a development is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In the first step, the amount of traffic entering and exiting the site is estimated for the peak hours. In the second step, the directions of approach and departure of project traffic are estimated. In the third step, the trips are assigned to specific streets and intersections. This process is described in the following sections.

Trip Generation

The level of service analysis is based on the net trips generated by the project, where the site is given credit for the trip generating capacity of the existing approved uses (entitlement) on site. The trip generating capacity (entitlement) of the existing uses on site was estimated by applying Institute of Transportation Engineers' (ITE) trip generation rates to the currently approved uses on the site. The trip generation estimates for both the proposed project and the existing site uses were adjusted using the following adjustment factors:

- *Internal Trips Reduction*. Internal trips are trips that occur between complementary uses on-site, for example between apartments and the café or between the townhomes and the daycare center. These trips are assumed to either be pedestrian or bicycle trips, or vehicle trips that are confined within the site. The internal trip reduction factors used were based on the published values in the ITE *Trip Generation Handbook*, Second Edition.
- *Retail Pass-By Trips Reduction*. Retail pass-by trips are trips to and from a retail use that are already on the street system but turn into the site when passing by. These trips are therefore not new trips on the street system, but are assigned only at project access points. The

number of pass-by trips are determined using pass-by percentages published in the ITE *Trip Generation Handbook*, Second Edition.

- *Transit Trips Reduction*. Transit trips are project trips that use bus or rail. Because transit trips do not add vehicles to the street system, project trip generation is reduced by the transit mode share pertaining to the project uses. The transit trip reduction was determined using percentages published in the ITE *Trip Generation Handbook*, Second Edition.

After subtracting from the project trips the trips generated by the existing uses on site, and applying the aforementioned trip reductions for internal trips, pass-by trips and transit trips, the project is estimated to generate 125 net new trips in the AM peak hour and 12 net new trips in the PM peak hour. The project trip generation estimates and trips reductions are presented in Table 5.

Trip Distribution and Assignment

The project trip distribution was determined based on a select zone analysis using the City of Fremont Travel Demand Forecast Model. This was the model used to produce the City's forecasts for its most recent General Plan Update. Two different distributions were derived- one for residential and one for retail. The trip distributions thus determined are shown graphically on Figure 8. The trips generated by the proposed project were assigned to the roadway network and study intersections in accordance with this directional distribution. Pass-by trips were assigned only to and from the project's access points to Fremont Boulevard. Figure 9 shows the project trip assignment.

As shown on Figure 9, the proposed project would cause a negligible increase in PM peak-hour traffic. At signalized intersections, for a given movement, the proposed project is projected to contribute no more than one new PM peak hour trip every 15 minutes, which is insufficient to create an impact based on City of Fremont level of service impact thresholds. It is for this reason that the traffic analysis did not include an evaluation of offsite PM peak-hour conditions. Analysis of PM peak hour conditions immediately around the project is provided in Chapter 7.

Table 5
Project Trip Generation Estimates

				AM Peak Hour				PM Peak Hour			
Land Use	Size	Daily Rate	Daily Trips	Rate	Total Trips	In	Out	Rate	Total Trips	In	Out
Proposed Project											
Townhomes[1]	72 units	5.81	418	0.44	32	5	27	0.52	37	25	12
Apartments [2]	64 units	6.65	426	0.51	33	7	26	0.62	40	26	14
Total	136		844		65	12	53		77	51	26
Housing and Retail/ Café Shop Internal Reduction [3]			(190)		(15)	(4)	(11)		(19)	(11)	(8)
Subtotal			654		50	8	42		58	40	18
Shopping Center [4]	23,450 sq.ft.	42.70	1,001	0.96	23	14	9	3.71	87	42	45
Retail Pass-By Reduction (Daily, AM, PM)(17%,0%,34%) [5]			(170)						(29)	(14)	(15)
Cafe[6]	1,550 sq.ft.	745.65	1,156	108.38	168	86	82	40.75	63	32	31
Retail Pass-By Reduction (Daily, AM, PM)(50%,49%,50%) [7]			(578)		(82)	(42)	(40)		(32)	(16)	(16)
Daycare Center[13]	2,610 sq.ft.	74.06	193	12.18	32	17	15	12.34	33	16	17
Housing and Retail/ Café Shop Internal Reduction [3]			(190)		(15)	(11)	(4)		(19)	(8)	(11)
Subtotal			1,412		126	64	62		103	52	51
Transit Trip Reduction[9]	10%		(49)		(6)	(1)	(5)		(7)	(5)	(2)
Total Primary Project Trips			2,017		170	71	99		155	88	67
Trip generation for Existing Use based on ITE Rates											
Shopping Center [4]	43,468 sq.ft.	42.70	1,856	0.96	42	26	16	3.71	161	77	84
Restaurant [8]	7,843 sq.ft.	89.95	705	0.81	6	4	2	7.49	59	39	20
Total			2,561		48	30	18		220	116	104
Retail Pass-By Reduction (Daily, AM, PM)(17%,0%,34%) [5]			(435)						(74)	(39)	(35)
Subtotal			2,126		48	30	18		146	77	69
Mini Warehouse [10]	970 sq.ft.	2.50	2	0.14	1	1	0	0.26	1	1	0
Single family house [11]	1 units	9.52	10	0.75	1	0	1	1.00	1	1	0
Transit Trip Reduction[12]	10%		(25)		(5)	(3)	(2)		(5)	(2)	(3)
Total Primary Existing Trips			2,113		45	28	17		143	77	66
Net New Project Trips			**(96)**		**125**	**43**	**82**		**12**	**11**	**1**

[1] Rates based on ITE Trip Generation, 9th Edition: average rates for Townhomes (ITE 230).

[2] Rates based on ITE Trip Generation, 9th Edition: average rates for Apartments (ITE 220).

[3] Per ITE Trip Generation Handbook (Second Edition). Daily trips were estimated by averaging AM & PM peak hour percentages.

[4] Rates based on ITE Trip Generation, 9th Edition: average rates for Shopping Center (ITE 820).

[5] PM peak hour passer-by trips are based on ITE Trip Generation Handbook (Second Edition).

[6] Rates based on ITE Trip Generation, 9th Edition: average rates for Coffee / Donut Shop (ITE 936). Daily trips were estimated by assuming average of AM & PM peak hour trips rates to be 10% of daily trips.

[7] AM & PM peak hour passer-by trips are based on ITE Trip Generation Handbook (Second Edition) for Fast-Food Restaurant (ITE 934).

[8] Rates based on ITE Trip Generation, 9th Edition: average rates for Quality Restaurant (ITE 931).

[9] Based on ITE Trip Generation Handbook Trip Reduction Table B.2 (Development around bus transit corridors). PM transit reduction trips for shopping center was applied to employees only.

[10] Rates based on ITE Trip Generation, 9th Edition: average rates for Mini-warehouse (ITE 151).

[11] Rates based on ITE Trip Generation, 9th Edition: average rates for Single family detached house (ITE 210).

[12] Transit trip reduction to Shopping Center, Restaurants and Mini Warehouse were applied based on ITE Trip Generation Handbook Trip Reduction Table B.2 (Development around bus transit corridors). PM transit reduction trips were applied to employees only.

[13] Rates based on ITE Trip Generation, 9th Edition: average rates for Daycare Center (ITE 565).

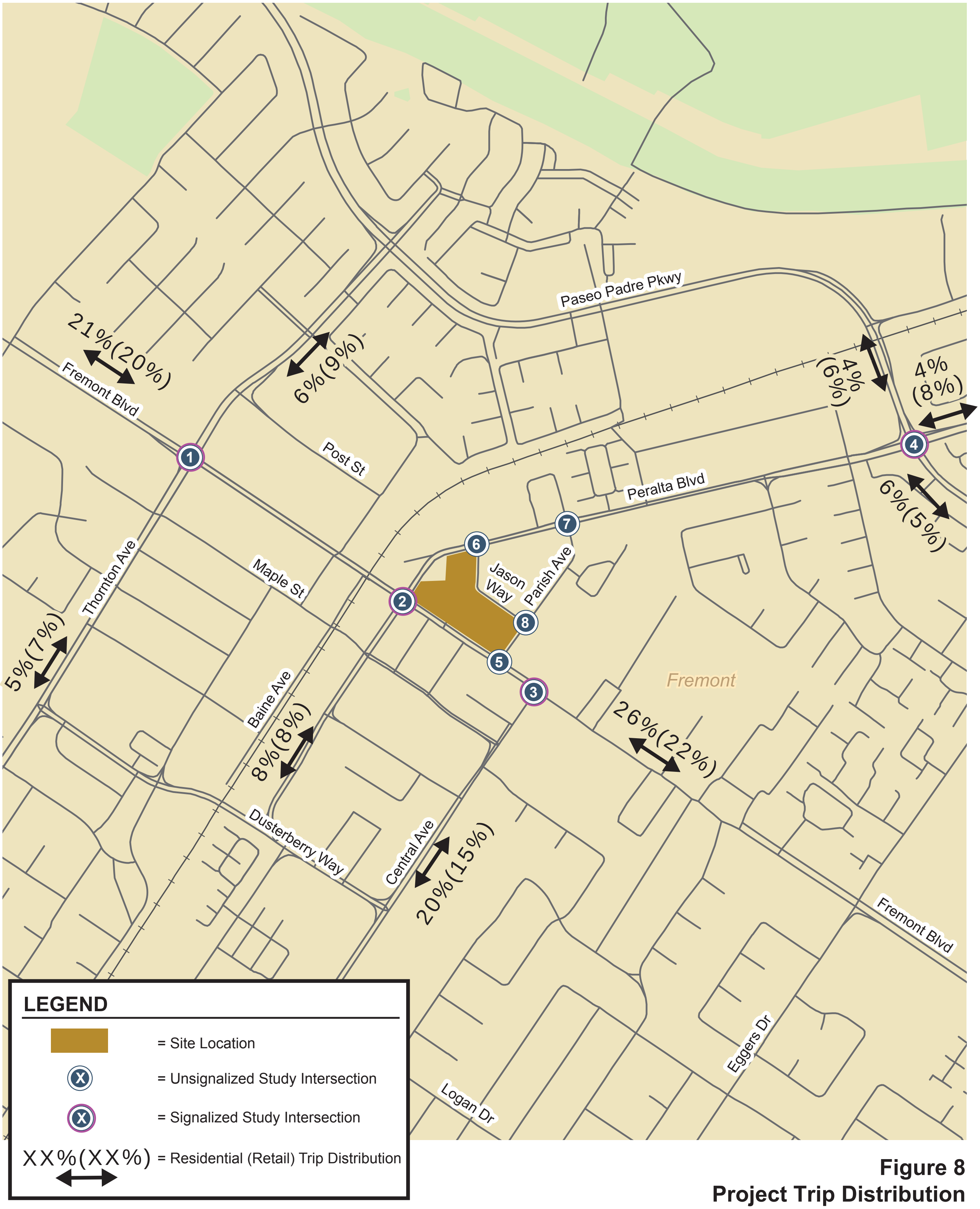


Figure 8
Project Trip Distribution

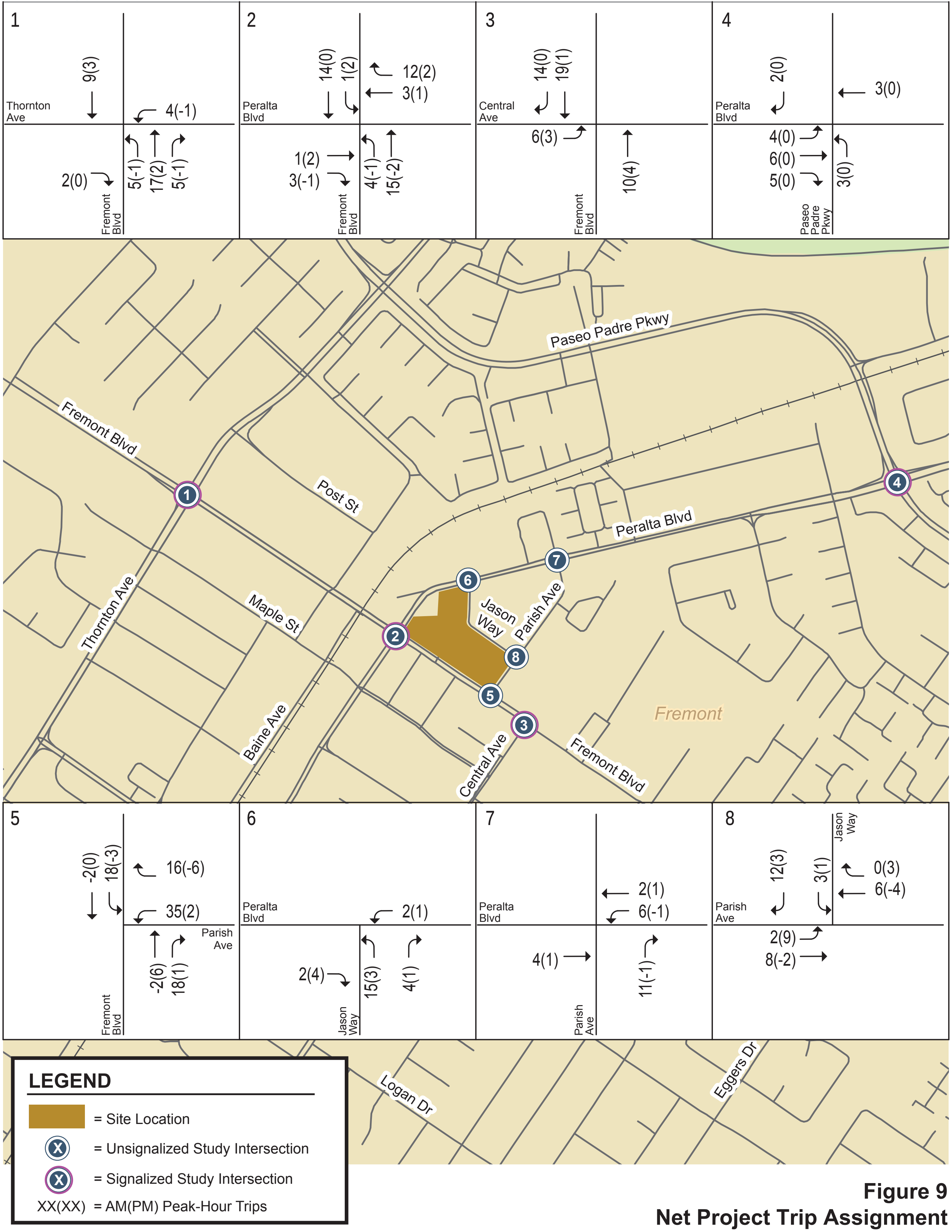


Figure 9
Net Project Trip Assignment

5.
Near-Term Project Conditions

This chapter describes existing plus project and background plus project traffic conditions. These scenarios are used to determine project-specific impacts.

Existing Plus Project Traffic Volumes

To estimate traffic for existing plus project conditions, the net project-generated traffic was added to existing traffic at each intersection movement. The existing plus project traffic volumes at the study intersections are shown graphically on Figure 10.

Existing Plus Project Signalized Intersection Levels of Service

It was assumed in this analysis that the roadway network and the study intersection lane configurations under existing plus project conditions would be the same as those described under existing conditions. The results of the intersection level of service analysis under existing plus project conditions are summarized in Table 6. The results show that all of the signalized study intersections would continue to operate at LOS D or better during the AM peak hour under existing plus project conditions. The level of service calculation sheets are included in Appendix B.

Background Plus Project Traffic Volumes

To estimate traffic for background plus project conditions, the net project-generated traffic was added to background traffic at each intersection movement. The background plus project traffic volumes at the study intersections are shown graphically on Figure 11.

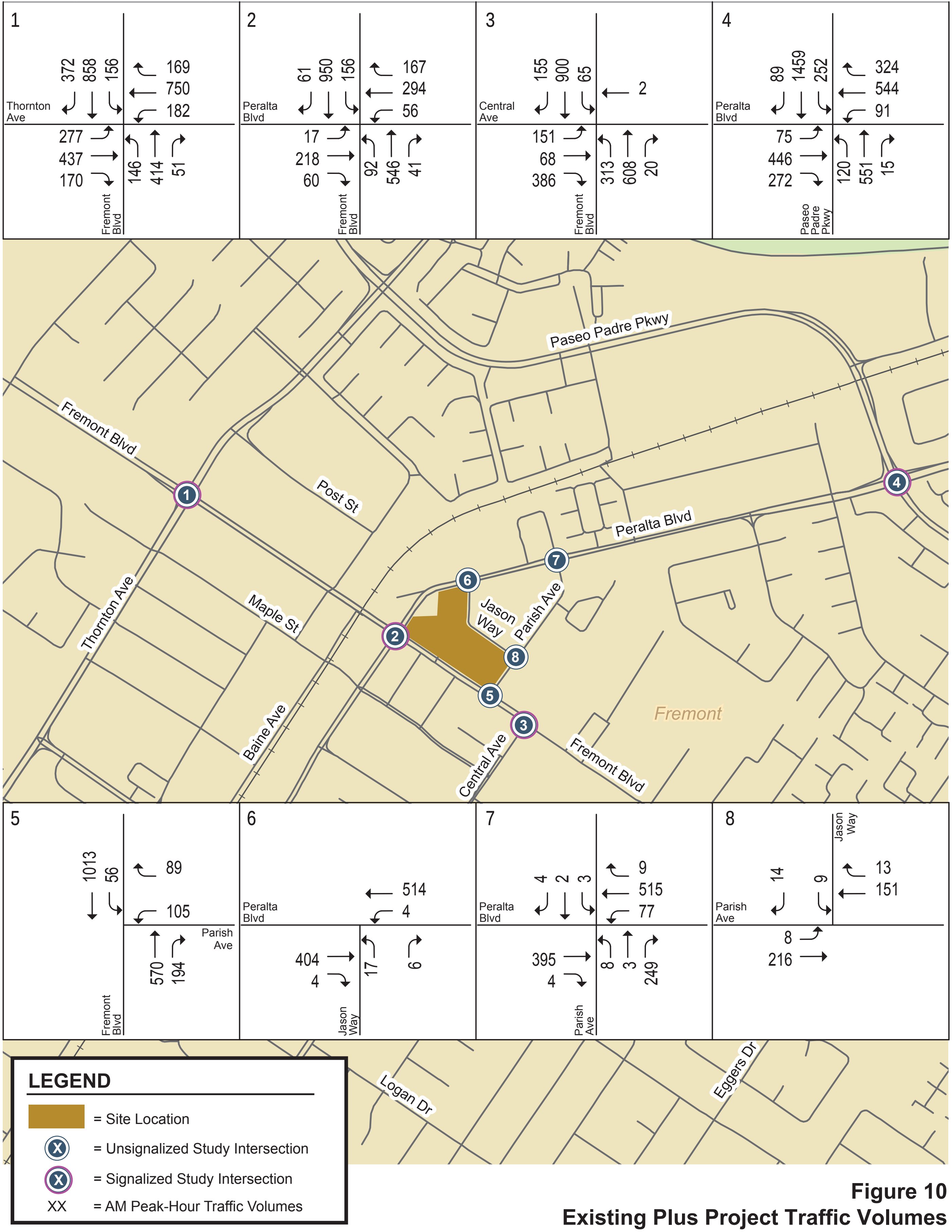


Figure 10
Existing Plus Project Traffic Volumes

NORTH
Not to Scale

Table 6
Existing Plus Project Signalized Intersection Levels of Service

			Existing				
			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg. Delay
1	Fremont Blvd & Thornton Ave	E	37.9	D	38.0	D	0.1
2	Fremont Blvd & Peralta Blvd	E	27.0	C	27.2	C	0.2
3	Fremont Blvd & Central Ave	E	34.8	C	34.8	C	0.0
4	Paseo Padre Pkwy & Peralta Bl	E	46.4	D	46.7	D	0.3

1 Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

Background Plus Project Signalized Intersection Levels of Service

It was assumed in this analysis that the roadway network and the study intersection lane configurations under background plus project conditions would be the same as those described under existing conditions. The results of the intersection level of service analysis under background plus project conditions are summarized in Table 7. The results show that all of the signalized study intersections would continue to operate at LOS D or better during the AM peak hour under background plus project conditions. The level of service calculation sheets are included in Appendix B.

Table 7
Background Plus Project Signalized Intersection Levels of Service

			Background				
			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg. Delay
1	Fremont Blvd & Thornton Ave	E	38.1	D	38.2	D	0.1
2	Fremont Blvd & Peralta Blvd	E	27.3	C	27.5	C	0.2
3	Fremont Blvd & Central Ave	E	35.1	D	35.5	D	0.4
4	Paseo Padre Pkwy & Peralta Bl	E	46.8	D	47.5	D	0.7

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

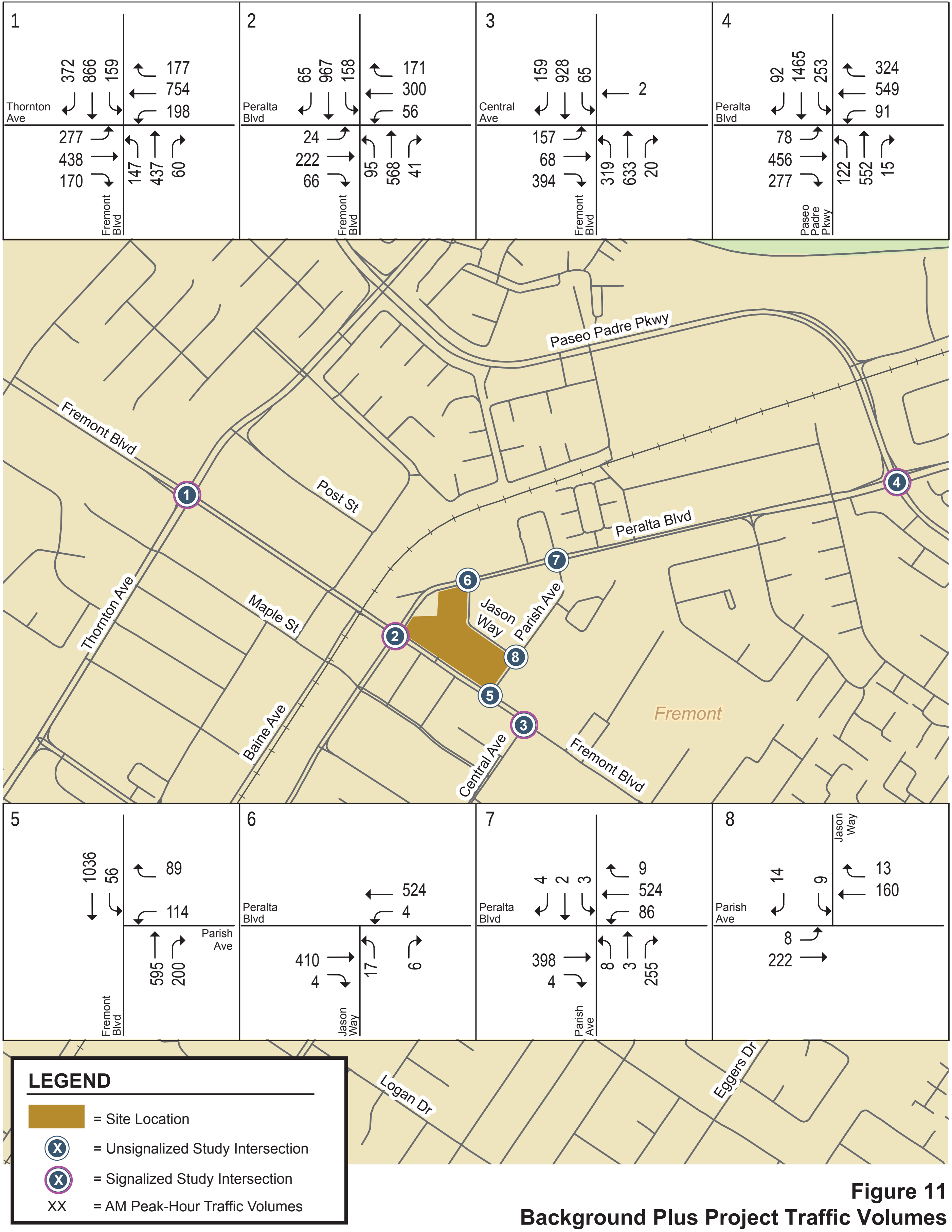


Figure 11
Background Plus Project Traffic Volumes

NORTH
Not to Scale

6.
Cumulative Conditions

This chapter presents a summary of the traffic conditions that would occur under cumulative conditions. For this analysis, cumulative conditions represent year 2035 traffic conditions under buildout of the City of Fremont General Plan. Cumulative (No Project) traffic volumes were obtained from the City of Fremont General Plan EIR traffic forecasts. This chapter presents an analysis of intersection levels of service under cumulative conditions with and without the project in order to identify any potential cumulative project impacts.

Cumulative Roadway Network and Traffic Volumes

It was assumed for this analysis that the transportation system, roadway network and all intersection geometries under cumulative conditions would remain the same as under existing conditions, with the exception of roadway and intersection improvements specified in the City's General Plan and noted as follows.

Fremont Boulevard and Thornton Avenue intersection: convert the existing southbound separate right-turn lane on Fremont Boulevard to a shared through-right-turn lane.

Peralta Boulevard: widen from two lanes to four lanes on the segment beginning just east of Fremont Boulevard and ending at Mowry Avenue.

Fremont Boulevard and Central Avenue intersection: add a second northbound left-turn lane on Fremont Boulevard.

Paseo Padre Parkway and Peralta Boulevard intersection: add a second southbound left-turn pocket and convert the existing southbound separate right-turn lane to a shared through-right-turn lane on Paseo Padre Parkway. Also, add a second northbound left-turn lane and add a third northbound through lane on Paseo Padre Parkway.

Cumulative conditions were evaluated for two scenarios: cumulative without the project and cumulative with the project. Traffic volumes under baseline (no project) cumulative conditions were obtained either directly or indirectly from the City of Fremont General Plan EIR Year 2035 traffic forecasts. All of the signalized study intersections were included in the General Plan EIR and therefore forecasts were available for use in this study. For the unsignalized study intersections, cumulative no project traffic volumes were estimated using interpolation or extrapolation. The net project-generated traffic was added to cumulative no project traffic at each intersection movement to obtain cumulative with project traffic volumes. The cumulative traffic volumes without and with the proposed project are shown on Figures 12 and 13, respectively.

Cumulative Signalized Intersection Levels of Service

The results of the signalized intersection level of service analysis for cumulative conditions without the project and cumulative conditions with the project are summarized in Table 8. According to the definitions provided in Chapter 1, the proposed project would not result in any significant impacts to the signalized study intersections. Although the intersection of Paseo Padre Parkway and Peralta Boulevard would operate at LOS F in the AM peak hour, there would be no impacts at the intersection because the addition of project traffic does not cause the intersection average delay to increase by more than 4 seconds. The level of service calculation sheets are included in Appendix B.

Table 8
Cumulative Signalized Intersection Levels of Service

			Cumulative				
			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg. Delay
1	Fremont Blvd & Thornton Ave	E	28.6	C	29.4	C	0.8
2	Fremont Blvd & Peralta Blvd	E	32.7	C	32.9	C	0.2
3	Fremont Blvd & Central Ave	E	71.3	E	75.5	E	4.2
4	Paseo Padre Pkwy & Peralta Bl	E	81.9	F	83.3	F	1.4

[1] Signalized intersection level of service is based on the Highw ay Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

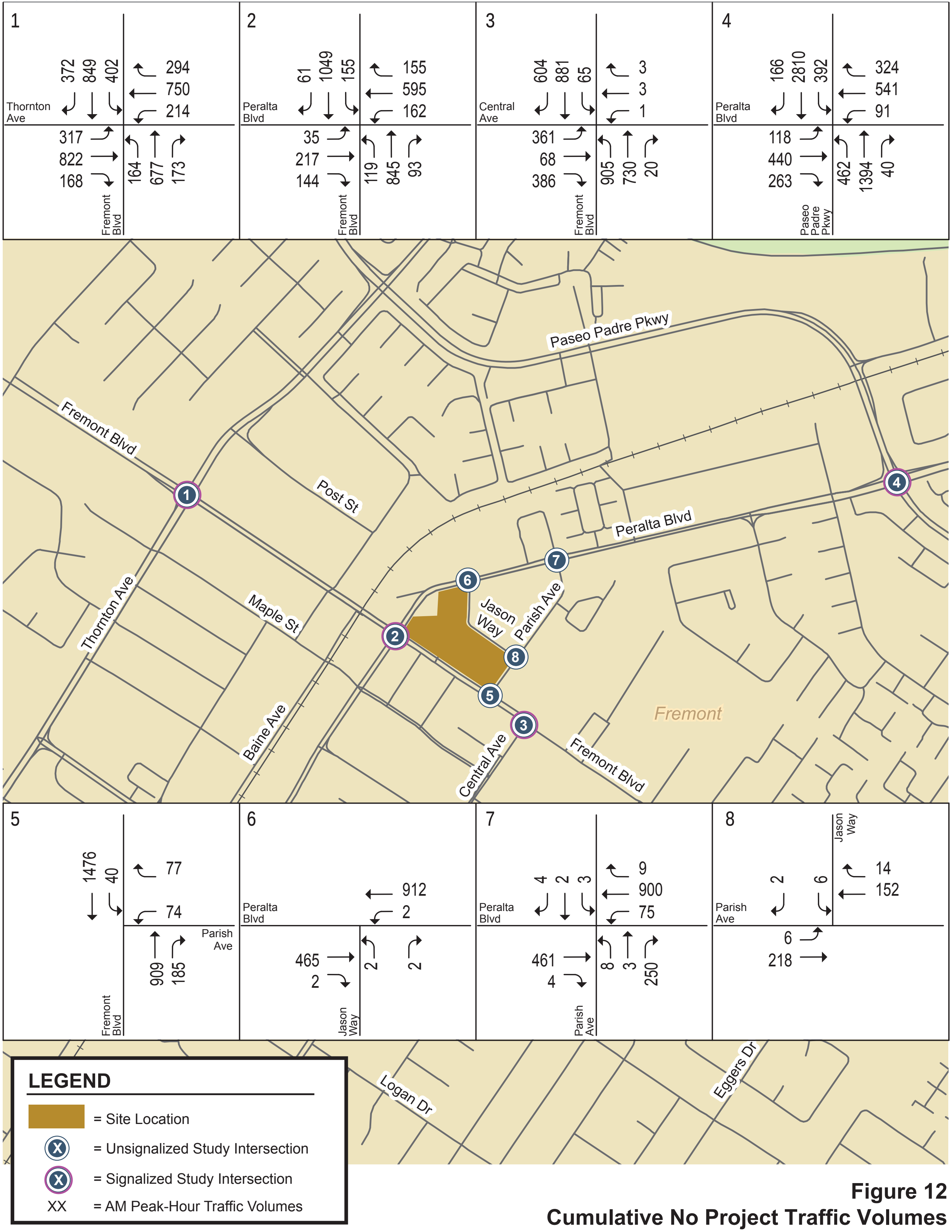
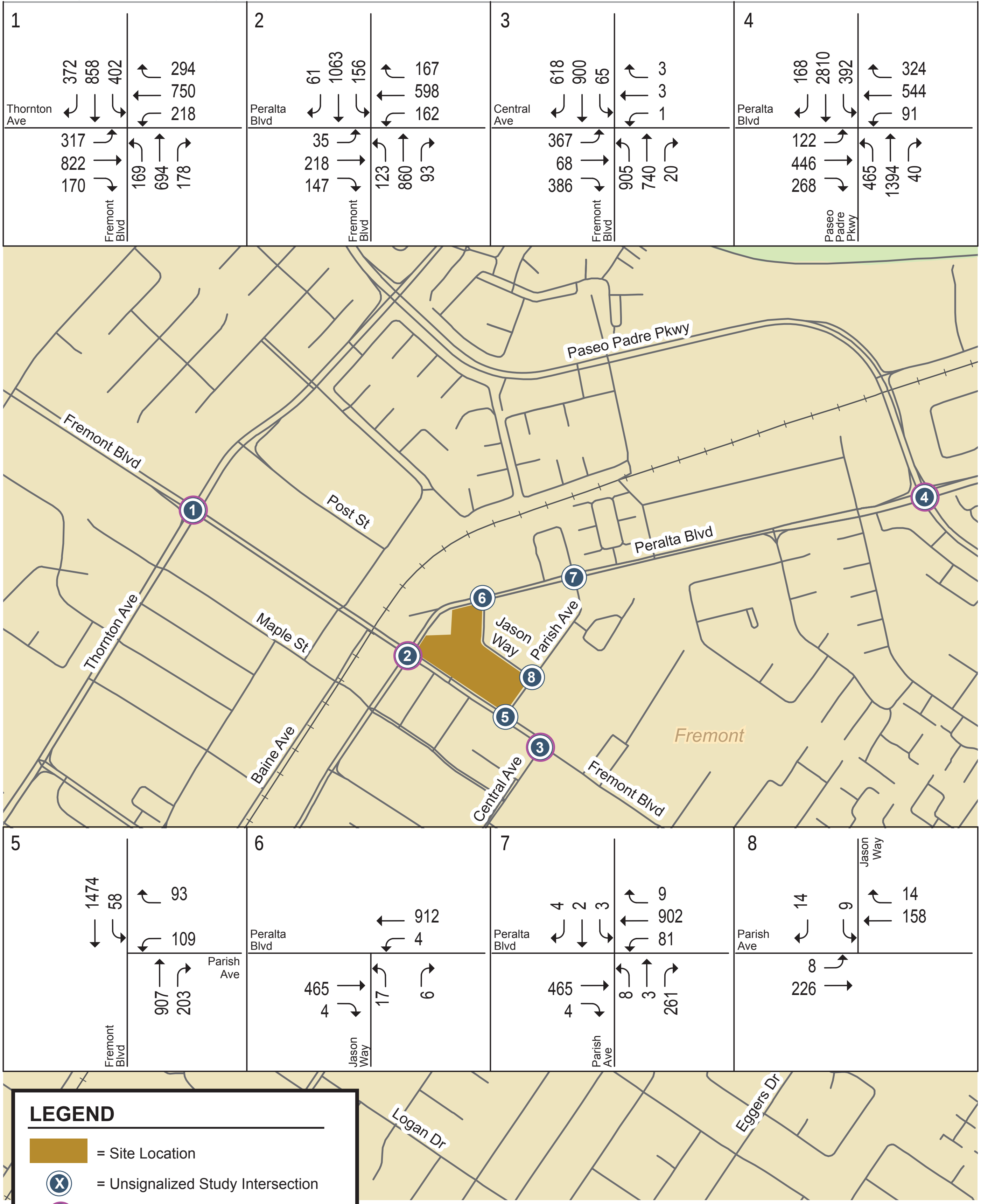


Figure 12
Cumulative No Project Traffic Volumes



LEGEND

🟫 = Site Location

ⓧ = Unsignalized Study Intersection

ⓧ = Signalized Study Intersection

XX = AM Peak-Hour Traffic Volumes

Figure 13
Cumulative With Project Traffic Volumes

NORTH
Not to Scale

7.

Other Transportation Issues

This chapter presents an analysis of other transportation issues both on-site and in the vicinity of the project site, including:

- Unsignalized Intersections
- Railroad Impacts
- Pedestrian, Bicycles and Transit Analysis
- Site Access Operations
- On-Site Circulation
- Parking
- Neighborhood Traffic

Unlike the level of service impact methodology, which is adopted by the City Council, the analyses of non-LOS issues are based on professional judgment in accordance with the standards and methods employed by the traffic engineering community. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to describing the project

Unsignalized Intersections

The City of Fremont does not have formal impact criteria to apply to unsignalized intersections. This is common for many jurisdictions because it is generally not the unsignalized intersections that limit the overall capacity of a roadway. The analysis of unsignalized intersections is typically evaluated by considering overall level of service, approach delay and movement delay, availability of alternate routes, intersection spacing, and an analysis of traffic signal warrants.

The results of the unsignalized intersection level of service analysis under all study scenarios are summarized in Table 9. The results show that, at the intersection of Fremont Boulevard and Parish Avenue, the westbound approach on Parish Avenue currently operates at LOS F under existing conditions and would continue to under all study scenarios. Overall, the intersection of Fremont Boulevard and Parish Avenue operates at LOS C or better under all scenarios except cumulative conditions with the project, where it would operate at LOS E.

Table 9
Unsignalized Intersection Level of Service Summary

		Existing				Background				Buildout			
		No Project		With Project		No Project		With Project		No Project		With Project	
No.	Intersection	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]
5	Fremont Blvd & Parish Ave	4.2/54.9	A/F	14.8/152.2	B/F	6.1/77.7	A/F	21.0/sat[2]	C/F	15.7/sat[2]	C/F	44.2/sat[2]	E/F
6	Jason Way & Peralta Blvd	0.1/13.8	A/B	0.4/16.1	A/C	0.1/14.0	A/B	0.4/16.3	A/C	0.1/14.1	A/B	0.3/17.0	A/C
7	Parish Avenue & Peralta Bl	4.5/33.0	A/D	4.8/35.2	A/E	4.7/35.4	A/E	5.0/38.0	A/E	2.7/32.2	A/D	2.8/33.4	A/D
8	Jason Way & Parish Ave	0.3/10.3	A/B	0.7/10.3	A/B	0.3/10.4	A/B	0.7/10.4	A/B	0.3/10.5	A/B	0.7/10.5	A/B

Note: all intersections were counted in May 2017.

[1] unsignalized intersections were analyzed based on Highway Capacity Manual (HCM) methodology using TRAFFIX analysis software. All unsignalized study intersections are Side Street Stop Control (SSSC). SSSC intersection levels of service and delays are reported for both the overall average delay / the approach with highest delay.

[2] "sat" designates *oversaturated* conditions. Delay value is not meaningful or reflective of actual conditions.

The overall intersection operations at Parish Avenue and Peralta Boulevard are shown to be LOS A under all study scenarios, although the northbound approach on Parish Avenue currently operates at LOS D under existing conditions and would operate at LOS D or E under all other study scenarios. Operations on the northbound approach on Parish Avenue would improve from LOS E under background conditions to LOS D under cumulative conditions because, as described previously, Peralta Boulevard is planned to be widened from two to four lanes under the General Plan. This improvement would provide more gaps in cross-traffic and would allow vehicles to clear Parish Avenue more quickly.

A peak-hour volume signal warrant analysis was conducted for the intersections of Fremont Boulevard & Parish Avenue and Parish Avenue & Peralta Boulevard under existing, background, and cumulative conditions with and without the project for the AM peak hour. The results show that the intersection of Fremont Boulevard & Parish Avenue meets the peak-hour signal warrant under existing plus project, background plus project, and cumulative plus project conditions during the AM peak hour. The intersection of Parish Avenue & Peralta Boulevard does not meet warrants under the same scenarios in the AM peak hour.

Traffic signal warrant checks were conducted for additional intersections and the results are presented in the Site Access section of this report. Other considerations regarding the potential need for installation of a traffic signal at the intersection of Fremont Boulevard and Parish Avenue are described in that section.

Railroad Impacts

The vehicle queues during a typical train crossing are considerable. The queues are worse in the PM peak period than in the AM peak period, but they are significant during both periods. In the PM peak period, vehicle queues on northbound Fremont Boulevard generally extend all the way back to Centerville Junior High School, which is more than 2,000 feet, and not infrequently extends even further, with a queue of one-half mile.

The project is expected to add a net 27 peak-hour trips northbound and a net 15 trips southbound on Fremont Boulevard in the AM peak hour (the net addition of project PM peak hour traffic would be on the order of a few trips, which would be negligible). Of the 27 northbound trips, 15 would be from northbound Fremont Boulevard and 12 would be from westbound Peralta Boulevard. These volumes equate to about one additional directional trip every 2 to 4 minutes, on average. The project would therefore add to the vehicle queues, though the increase would be marginal. For comparison purposes, the existing northbound volume on Fremont Boulevard at the railroad tracks is approximately 700 vehicles, and the forecasted no project year 2035 northbound volume is over 1,000 vehicles. Overall, it is anticipated that project traffic will have a negligible effect on vehicle queues caused by the railroad crossing on Fremont Boulevard.

Traffic operations at the railroad crossing and adjacent Fremont Boulevard/Peralta Boulevard intersection were reviewed fairly extensively and no feasible improvements are apparent.

Pedestrian, Bicycle, & Transit Facilities

Most of the streets in the project vicinity have sidewalks and crosswalks at intersections. Existing observations on Fremont Boulevard near Peralta Boulevard showed a moderately high level of pedestrian activity in the area. Most of the pedestrian activity was due to the close proximity of the Centerville Depot, or Fremont Station serving the ACE and Capitol Corridor trains. The station not only draws users of the trains, but there’s a higher than average concentration of bus stops near the station because of transfers. The proposed project would generate pedestrian trips to/from transit stops, recreation areas, and employment centers. Overall, the volume of pedestrian trips generated by the project is expected to be relatively low and not exceed the carrying capacity of the sidewalks and crosswalks nearby.

According to the U.S. Census, approximately one percent of the proposed project's users could be expected to ride bikes to and from the project site. For the proposed project, this would equate to approximately 2 new bike trips during each of the AM and PM peak hours. The low volume of bicycle trips generated by the project would not exceed the bicycle-carrying capacity of streets surrounding the site, and the increase in bicycle trips would not by itself require new off-site bicycle facilities. In addition, the volume of vehicular traffic generated by the proposed project is very small relative to the existing traffic levels on Fremont Boulevard, and thus, would have an insignificant effect on area-wide bike and pedestrian activity.

According to the Alameda County Congestion Management Program (CMP) Transportation Impact Analysis Technical Guidelines, a project would create an impact on pedestrian and bike circulation if: (1) its vehicle trips would present a barrier to bikes/pedestrians safely crossing roadways, or (2) it would reduce or sever existing or planned bike/pedestrian circulation in the area. Construction of the proposed project would not cause either of these criteria to be met. In addition, the proposed consolidation of site driveways along Fremont Boulevard from five driveways to one driveway would reduce the number of potential vehicle-pedestrian conflict points and would be beneficial for pedestrian safety. Therefore, the proposed project would not create an adverse impact to bike/pedestrian circulation in the area.

AC Transit currently provides bus service in the project vicinity. The Altamont Corridor Express (ACE) and Amtrak Capitol Corridor provide train service in the vicinity of the site. According to the ITE Trip Generation Handbook, the project would generate approximately 6 new transit trips during the AM peak commute hour and 7 new transit trips during the PM peak commute hour. This volume of riders would not exceed the carrying capacity of the existing bus or train service near the project site. In addition, the volume of vehicular traffic generated by the proposed project is small relative to the existing traffic levels on Fremont Boulevard, and thus, would have an insignificant effect on transit operations in the corridor.

According to the Alameda County (CMP) Transportation Impact Analysis Technical Guidelines, a project would create an impact on transit service if it: (1) causes vehicular congestion that would significantly degrade transit operations, (2) causes a ridership increase that would exceed existing transit capacity, or (3) conflicts with existing transit service plans or preclude future transit service to the project area. Construction of the proposed project would not cause any of these criteria to be met. Therefore, the proposed project would not cause a significant impact to transit operations in the study area. While the project would not create a significant impact to transit operations, there is an existing bus stop along the project frontage on Fremont Boulevard that does not currently provide a bench or shelter.

AC Transit was contacted regarding planned or requested upgrades in conjunction with this project. AC Transit staff requested that the project (1) install a bench and bike rack at the bus stop and (2) ensure that the placement of trees and bike racks do not impinge on an ADA accessible path to the bus stop. AC Transit would also welcome installation of a bus shelter, if possible. Providing an upgrade to the bus stop, be it a bench or shelter, would encourage transit ridership.

Recommendation 1: Prior to final design, the project applicant shall work with City of Fremont and AC transit staff to consider the desirability of upgrades to the existing bus stop along the project frontage.

Site Access, Circulation and Parking Layout

Site access, on-site circulation, and the parking layout on-site are described below. The operations at each site driveway and at the intersection of Fremont Boulevard and Parish Way, which borders the site, are presented separately.

The project trips used in the evaluation of site access, on-site circulation, and parking are different than those used in the previous chapters. In this evaluation, the site is given credit for the actual trips generated by the existing uses on site, as opposed to the trips “entitled” by the existing uses. The actual trips generated by the existing uses on site were established by conducting counts at the site driveways.

Site Access Operations

Access to the site would be provided via dedicated driveways on Fremont Boulevard and Parish Avenue, and a gated trash and recycling truck access driveway on Peralta Boulevard. In addition, the project proposes to extend Jason Way from Parish Avenue to Peralta Boulevard. The project would thereby also provide access to both Parish Avenue and Peralta Boulevard via intersections at Jason Way. The site plan is shown on Figure 2.

Site access operations were evaluated for existing plus project and cumulative plus project conditions in both the AM and PM peak hours. The traffic analysis reported in all previous chapters pertained to the AM peak hour only, because, as previously described, the net PM peak-hour trips generated by the project were negligible and in many cases negative (corresponding to a decrease in traffic). For the site access analysis, however, the PM peak hour was analyzed because the reconfiguration of the site layout and driveway locations will shift a considerable number of PM peak hour trips immediately around the site. All discussion below pertains to analysis under existing plus project and cumulative plus project conditions during the AM and PM peak hours.

The following unsignalized intersections and driveways were evaluated: Fremont Boulevard and Parish Avenue, Jason Way and Peralta Boulevard, Jason Way and Parish Avenue, Fremont Boulevard and the Main Site Driveway, and the South Site Driveway and Parish Avenue. The signalized intersection at Fremont Boulevard and Peralta Boulevard was also evaluated. The gross project trips (i.e. excluding any trip credits attributed to existing traffic generated by the site) at the site driveways are shown on Figure 14.

Fremont Boulevard and Parish Avenue

A peak-hour volume signal warrant analysis was conducted for the intersection of Fremont Boulevard and Parish Avenue under existing plus project and cumulative plus project conditions in both the AM and PM peak hours. The results show that the intersection would meet the peak-hour signal warrant under both existing plus project and cumulative plus project conditions in the AM peak hour. Warrants would not be met in the PM peak hour under either scenario. The signal warrant sheet is included in Appendix C.

Level of service and vehicle queuing at the intersection of Fremont Boulevard and Parish Avenue were evaluated using TRAFFIX. The analysis showed the stop-controlled westbound approach on Parish Avenue would operate at LOS F, with delays in excess of two minutes, under project scenarios during both peak hours. Level of service for the southbound left-turn movement from Fremont Boulevard would be LOS C or better, with delays of less than 20 seconds under both project scenarios during both peak hours.

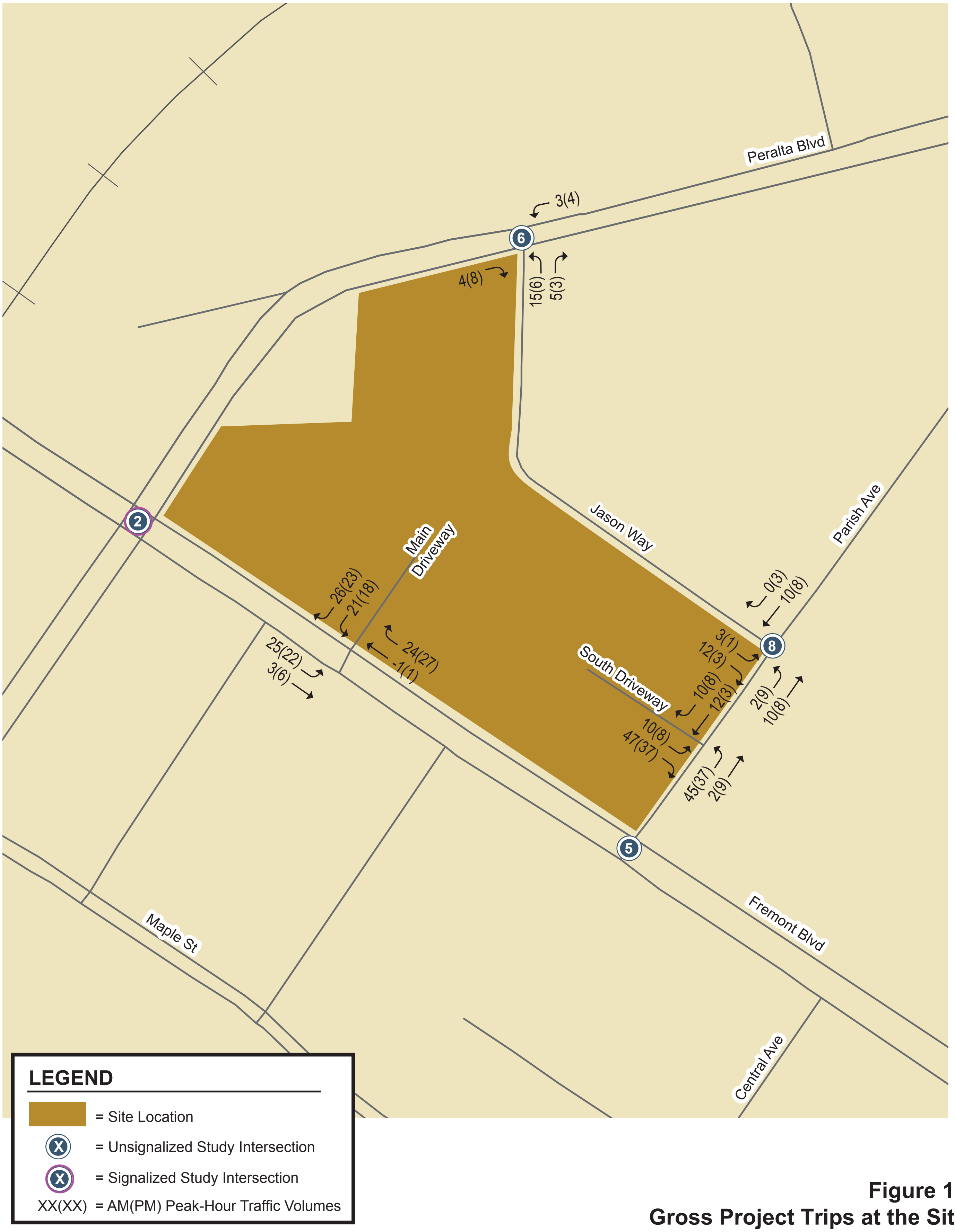


Figure 14
Gross Project Trips at the Site

NORTH
Not to Scale

Vehicle queues were estimated for both the westbound approach on Parish Avenue and the southbound left-turn from Fremont Boulevard. The westbound approach would have 75 feet of storage from Fremont Boulevard to the South Site Driveway on Parish Avenue (refer to Figure 2). The existing southbound left-turn pocket on Fremont Boulevard provides 50 feet of storage.

The results indicated that the 95th-percentile maximum vehicle queues for the westbound approach on Parish Avenue would extend well past the South Site Driveway with the proposed project during both peak hours. The estimated maximum vehicle queues would extend over 300 feet in the AM peak hour under both scenarios. This is because, under the existing side-street stop control, westbound left turns from Parish Avenue to southbound Fremont Boulevard would have to wait for gaps in both northbound and southbound traffic on Fremont Boulevard before turning left. The westbound queue on Parish Avenue would therefore obstruct vehicles trying to exit the site from the South Site Driveway. The existing storage in the southbound left-turn pocket on Fremont Boulevard is sufficient to accommodate the estimated maximum vehicle queues under all conditions analyzed.

For the following reasons, engineering judgment suggests that a traffic signal be installed at the intersection of Parish Avenue and Fremont Boulevard:

1. The intersection meets the peak-hour volume signal warrant;
2. The intersection operates at LOS F under existing and cumulative conditions during both the AM and PM peak hours;
3. The vehicle queues on Fremont Boulevard leave few gaps in traffic that would permit westbound left turns;
4. The westbound queues are excessive, blocking the South Site Driveway and occasionally blocking Jason Way; and
5. The installation of a traffic signal would provide another controlled pedestrian crossing in a core retail area, which would enhance pedestrian safety.

All of these operational deficiencies would be improved with installation of a traffic signal.

Recommendation 2: The project applicant shall install a traffic signal at the intersection of Fremont Boulevard and Parish Avenue. Because of the close proximity of this traffic signal to the existing traffic signals on Fremont Boulevard at Peralta Boulevard and Central Avenue, the recommended traffic signal at this location should be interconnected and coordinated with the existing signal equipment at these locations. These improvements should include installation of high-visibility crosswalks and other treatments, as needed, to maximize pedestrian accessibility.

Jason Way and Peralta Boulevard

An assessment was made of whether westbound vehicle queues on Peralta Boulevard would be likely to extend the 580 feet from Fremont Boulevard to the site driveway on Jason Way. The assessment was made by applying to observed existing maximum vehicle queues the percentage increases in traffic volumes on the westbound approach under existing plus project conditions and cumulative plus project conditions. The observed existing maximum vehicle queues on the westbound approach were 5 vehicles in the AM peak hour and 11 vehicles in the PM peak hour. This applies to normal operations, not operations during train interruptions.

The percentage increase in traffic under existing plus project conditions is negligible. The percentage increase in traffic under cumulative plus project conditions (relative to existing conditions) is projected to be approximately 85 percent in the AM peak hour and 100 percent (i.e. the volumes double) in the PM peak hour. Applying these factors to the observed maximum queues, it is estimated that the maximum vehicle queues on the westbound approach of the intersection would be 230 feet in the AM peak hour and 540 feet in the PM peak hour. The maximum vehicle queues are therefore not expected to extend as far back as Jason Way and block access to the driveway.

A peak-hour volume signal warrant analysis was conducted for the intersection of Jason Way and Peralta Boulevard under existing plus project and cumulative plus project conditions in both the AM and PM peak hours. The results show that the intersection would not meet the peak-hour signal warrant under either existing plus project or cumulative plus project conditions in the AM and PM peak hours. The signal warrant sheet is included in Appendix C.

Level of service and vehicle queuing were evaluated for the intersection of Jason Way and Peralta Boulevard. The section of Jason Way that intersects with Peralta Boulevard is currently a seldom used, poorly paved back alley, as reflected by the fact that just 2 or 3 cars were counted using it in the peak hours. As part of the project, however, Jason Way will be fully upgraded, serving as one of the access driveways to the site. In addition, Peralta Boulevard is to be widened from two lanes to four lanes as part of the City's General Plan.

The analysis showed the stop-controlled northbound approach on Jason Way would operate at LOS E, with a delay of 37 seconds, under cumulative plus project conditions in the PM peak hour. The stop-controlled northbound approach on Jason Way would operate at LOS C or better under existing plus project conditions during both peak hours and under cumulative plus project conditions in the AM peak hour. Level of service for the westbound left-turn movement from Peralta Boulevard would be LOS B or better, with delays of less than 12 seconds, under both project scenarios during both peak hours. Note that there currently is not a separate left-turn pocket for the westbound left-turn movement. For the purpose of this analysis, there was no separate left-turn pocket assumed under cumulative conditions, when Peralta Boulevard would be four lanes wide.

Vehicle queues were estimated for the northbound approach on Jason Way. The northbound approach would have 65 feet of storage from Peralta Boulevard to the first driveway on Jason Way. The results indicated that the 95th-percentile maximum vehicle queues for the northbound approach on Jason Way would extend just 25 feet under both project scenarios during both peak hours. The maximum vehicle queues on northbound Jason Way would therefore not extend to the first driveway.

Sight distance looking left from the driveway is affected by the bend in Peralta Boulevard located approximately 240 feet west of the driveway. There currently is parking on-street allowed on this section of Peralta Boulevard. It is at this bend that eastbound Peralta Boulevard currently narrows from two lanes to one. These conditions are assumed to remain during the near-term, until Peralta Boulevard is widened to four lanes. With the speed limit on this section being 30 miles per hour, the clear sight distance from the driveway on Jason Way would need to be at least 200 feet. With parking on street over this 240-foot section, there would be inadequate sight distance from the driveway.

The precise geometry at the driveway, relative to the adjacent existing property and building to the east of the driveway is not clear with sufficient detail to ascertain the line of sight looking right. However, it is estimated that parking on-street would need to be prohibited within 60 feet east of the driveway.

Recommendation 3: Parking should be prohibited on the south side of Peralta Boulevard over a distance of 240 feet west, and 60 feet east, of the Jason Way driveway. In addition, landscaping near the driveway would need to be maintained such that adequate sight distance is provided.

Jason Way and Parish Avenue

A peak-hour volume signal warrant analysis was conducted for the intersection of Jason Way and Parish Avenue under existing plus project and cumulative plus project conditions in both the AM and PM peak hours. The results showed that the intersection would not meet the peak-hour signal warrant under either existing plus project or cumulative plus project conditions in the AM and PM peak hours. The signal warrant sheet is included in Appendix C.

The site plan shows a site driveway accessing Jason Way at a location 50 feet north of Parish Avenue. A queue of more than two vehicles on southbound Jason Way would therefore obstruct the site driveway. In the future, the volume of traffic on Parish Avenue will continue to be relatively low such that there would be adequate gaps for turning traffic to and from Jason Way. At the intersection with Jason Way, neither the westbound nor eastbound approach on Parish Avenue has or is expected to have a volume greater than 230 vehicles in either peak hour under either project scenario. In addition, the traffic volumes on Jason Way are very low. The southbound approach on Jason Way has or is expected to have no more than 25 vehicles in either peak hour under any project scenario. With the very low volumes on Jason Way and adequate gaps in cross traffic on Parish Avenue, the delays to vehicles turning into and out Jason Way would be negligible and the maximum vehicle queues are not expected to exceed one or two vehicles.

Fremont Boulevard and Main Site Driveway

A peak-hour volume signal warrant analysis was conducted for the intersection of Fremont Boulevard and the Main Site Driveway under existing plus project and cumulative plus project conditions in both the AM and PM peak hours. The results show that the intersection would not meet the peak-hour signal warrant under either existing plus project or cumulative plus project conditions in the AM and PM peak hours. The signal warrant sheet is included in Appendix C.

As described previously, the northbound vehicle queue on Fremont Boulevard frequently extends back from Peralta Boulevard to Parish Avenue in the PM peak hour. In the AM peak hour, the northbound queue often extends at least half way down the block, which is past the location where the main site driveway is proposed. The northbound queues will increase marginally with the addition of project trips, and substantially with the addition of cumulative traffic. The northbound vehicle queues can therefore be expected to block the Main Site Driveway much of the time under existing plus project and cumulative plus project conditions in both the AM and PM peak hours.

Given the extensive northbound vehicle queues that consistently extend past the Main Site Driveway, it is not recommended to permit left turns into or out of the site. Sight distance would be limited for outbound left turns and gaps in traffic would likely be infrequent, causing backups on the driveway. With a single westbound (outbound) lane on the driveway, right-turning vehicles could be subject to the same delays as left-turn vehicles should they queue behind an outbound left-turning vehicle. Similarly, it is not feasible to permit southbound left turns into the Main Site Driveway from Fremont Boulevard. The blockage created by the northbound vehicle queues would cause long delays for the southbound left-turn movement which, in turn, would cause long backups southbound behind the waiting left-turning vehicle in the shared through-left-turn lane. In addition, because the driveway would often be blocked by queued vehicles, pedestrians on the sidewalk would be obscured from the view of drivers making a southbound left turn from Fremont Boulevard into the Main Site Driveway. Finally, with the implementation of Recommendation 2 (traffic signal at Parish Avenue/Fremont Boulevard), there would be a safer and more efficient alternative available for project traffic to access Fremont Boulevard.

At the Main Site Driveway, the project site plan includes the construction of an intersection bulb-out and a crosswalk across Fremont Boulevard, just south of the proposed driveway. The purpose of the proposed bulb-out and crosswalk is to increase pedestrian accessibility in the project vicinity. The installation of this crosswalk is consistent with the City's long-term plan to improve the pedestrian environment along Fremont Boulevard. To increase pedestrian safety, additional design features should be included in the crosswalk design per the recommendation below.

Recommendation 4: Restrict access to right-turn in and out only at the proposed intersection of Fremont Boulevard and the Main Site Driveway. This may require installation of a channelization island at the driveway, signage, and/or a median treatment. In addition, to enhance pedestrian safety in the proposed crosswalk, design features to improve crosswalk visibility and shorten the pedestrian crossing distance should be considered. These could include installation of: an additional bulb-out on the opposite side of Fremont Boulevard, high visibility striping, a raised median pedestrian refuge, and/or a rapid flash beacon. The final configuration of the driveway and crosswalk will be determined by City of Fremont staff.

Under existing conditions, parking is allowed on Fremont Boulevard along the project frontage. The driveway design and parking on-street as shown on the project site plan appears to restrict parking within 30 feet of the main driveway, and provides an intersection bulb-out, which would allow for adequate sight distance. In addition, the landscaping near the driveway would need to be maintained such that adequate sight distance is provided.

South Site Driveway and Parish Avenue

The site plan shows the South Site Driveway to be located on Parish Avenue, 75 feet east of Fremont Boulevard. The volume of traffic on Parish Avenue is relatively low and is forecast to remain low under cumulative conditions. At the intersection with the South Site Driveway, the westbound and eastbound approaches on Parish Avenue have, and are expected to continue to have, volumes less than 250 vehicles during the peak hours. The southbound traffic volumes on the South Site Driveway are expected to be relatively low, with no more than 60 vehicles in either peak hour under both project scenarios.

As described previously, under both project scenarios, without a traffic signal at Fremont Boulevard and Parish Avenue, westbound vehicle queues would back up past the South Site Driveway, thereby blocking the South Site Driveway. This is because, under the existing side-street stop control, westbound left turns from Parish Avenue to southbound Fremont Boulevard would have to wait for gaps in both northbound and southbound traffic on Fremont Boulevard before turning left.

Given the close proximity of this driveway to Fremont Boulevard (75 feet), there is considerable likelihood that eastbound vehicles on Parish Avenue could back up to Fremont Boulevard when waiting behind a car turning left into the South Site Driveway. It would take just three cars backed up from the South Site Driveway to block Parish Avenue back to Fremont Boulevard. In such a case, any vehicles on Fremont Boulevard wanting to turn into Parish Avenue would then start queuing back on Fremont Boulevard. It is therefore important that those left-turning vehicles into the driveway not be obstructed in any way.

The parking garage entrance is shown on the site plan to be only 15 feet from Parish Avenue. With this design, the garage entrance/exit will be blocked whenever a single southbound (outbound) vehicle on the driveway is stopped while waiting to turn onto Parish Avenue. In order to not block the garage entrance/exit or at least reduce the frequency of blockage, there would need to be a minimum of 50 feet of storage to accommodate outbound vehicles queued from Parish Avenue back onto the main street on site.

The location of the garage entrance/exit is problematic also because of its potential to create northbound vehicle queues from the garage entrance backing onto Parish Avenue. Vehicles turning left into the garage would need to wait for the garage entrance to become clear if it is blocked by vehicles in the southbound queue as described above. Any vehicles waiting behind that car will back up behind it and possibly back out onto Parish Avenue. As noted above, it is this obstruction that could cause queues on eastbound Parish Avenue to back up to Fremont Boulevard. The blockage on the east leg of Parish Avenue and Fremont Boulevard could, in turn, cause backups on northbound and/or southbound Fremont Boulevard.

With the recommended traffic signal at Fremont Boulevard and Parish Avenue, westbound left turns from Parish Avenue to southbound Fremont Boulevard would have a dedicated left-turn phase and would no longer have to wait for gaps in northbound and southbound traffic on Fremont Boulevard in order to turn left. As a result, with the signal at Fremont Boulevard and Parish Avenue, westbound queues on Parish Avenue would clear faster and thereby reduce the frequency and duration of the blockage of the South Site Driveway.

The site plan shows perpendicular parking spaces directly adjacent to the garage entrance, extending north along the retail/apartment building frontage on the main street on site. For the same reasons described above, there should be no parking spaces located within 50 feet of Parish Avenue. Any such parking spaces would be blocked by southbound (outbound) queues extending back from Parish Avenue, preventing vehicles from backing out of the spaces. In addition, parking maneuvers effectively take the entire drive aisle, and thus, would block inbound vehicles from entering the site (and could cause spill back to Parish Avenue).

The location of the garage entrance/exit would have a significant effect on traffic on the South Site Driveway, on Parish Avenue and potentially on Fremont Boulevard. It is also important to facilitate left turns into and out of the South Site Driveway in order to keep traffic flowing. In light of the queuing issues on Parish Avenue and the potential to block the South Site Driveway, it is recommended that a “KEEP CLEAR” marking be placed in the westbound lane of Parish Avenue at the South Site Driveway.

Recommendation 5: A 50-foot clear throat is recommended for the South Site Driveway. This will require relocating the parking garage entrance/exit as well as some 90-degree parking. It is also recommended that a “KEEP CLEAR” marking be placed in the westbound lane of Parish Avenue at the South Site Driveway.

Parking is currently prohibited on the north side of Parish Avenue over the entire 160-foot distance between Jason Way and Fremont Boulevard, and should remain so under project conditions to allow for adequate sight distance. In addition, landscaping near the driveway would need to be maintained such that adequate sight distance is provided.

On-Site Circulation

The on-site circulation system includes several streets on site that connect to the aforementioned driveways. The main street on site parallels Fremont Boulevard, extending from the South Site Driveway northward nearly the entire length of the site. Several side streets on site connect the main street to Jason Way and Jason Place. One other side street, located in the northeast corner near to, and paralleling, Peralta Boulevard, connects only to Jason Way. The Main Site Driveway connects the main street to Fremont Boulevard.

The apartments and retail are accessed from the main street on site, both via the parking garage and the surface parking along the building frontage on site. The townhomes are accessed from the side streets, all but one of which connects the main street on site to Jason Place/Jason Way. The main street therefore serves as an on-site collector for the residential side streets and provides access to the retail parking, the residential guest parking, and the parking garage.

The Main Site Driveway is shown to be 30 feet wide, the main street on-site is shown to be 26 feet wide and the side streets are shown to be 24 to 26 feet wide. The main street dead-ends at the north end of the site near Peralta Boulevard. The dead-end section is approximately 135 feet long. A turnaround should be provided at this dead-end to allow vehicles to turn around if they reach the end and can’t find a space.

Recommendation 6: A turnaround is recommended at the dead-end at the north end of the main street. This could be accomplished by marking as a no-parking area the end stall on the west side of the aisle.

The side street nearest to Peralta Boulevard accesses Jason Way only. The other end of the side street connects to Peralta Boulevard, but the driveway is gated and access is limited to trash and recycling trucks, which effectively makes the street a dead-end street. None of the other streets have dead-ends.

The curvatures of all the streets on site, and the radii of the corners and curbs, are adequate for trucks, garbage collection, and emergency vehicles, as established by AutoTurn (as shown on the site plan on Figure 2). The on-site circulation provides adequate connectivity between the residences on site and the site access points. The access and on-site circulation should adequately accommodate emergency vehicles because Jason Way and Jason Place provide continuous, unimpeded connectivity between Parish Avenue and Peralta Boulevard and it connects to all of the side streets. The main street on-site also provides satisfactory emergency access, as it connects to Fremont Boulevard and all but one of the side streets. The two dead-ends should not pose a problem for emergency vehicles since the dead-end on the main street is only 135 feet long, and the dead-end on the side street has a gate that could be opened in an emergency.

For those townhomes that border the main street, there is a landscaped area between the townhomes and the main street that varies in width from 6 feet to 7.5 feet. For vehicles turning from the side streets onto the main street on-site, the sight distance looking left would be approximately 110 feet and about 70 feet looking right. This assumes that vehicles pull up even with the curb line and not into the main street travel way. Vehicles from the side streets could pull into the main street travel way one or two feet, thereby increasing the sight distance. The volume and speeds of vehicles on site would be low enough that this would likely not cause collision issues.

There is no loading area shown on the site plan. Loading for the retail would likely occur on the main street on-site, fronting the retail. Loading in the aisle would block parking for a brief period. Though this is less than ideal, it is common in urban areas.

Pedestrian access to the site would be provided by sidewalks along the entire perimeter of the site: along Jason Place/Jason Way, Parish Avenue, Fremont Boulevard and Peralta Boulevard. The project would provide a new sidewalk on the west side of Jason Way, extending approximately 350 feet from Peralta Boulevard to just south of the bend in the street, thereby providing a continuous sidewalk from Peralta Boulevard to Parish Avenue. The project will dedicate right-of-way to allow widening of the existing sidewalk on Parish Avenue. The project site plan shows a potential speed table and crosswalks on all three approaches to the intersection of Parish Avenue and Jason Way/Jason Place. These would provide additional safety for pedestrians crossing Parish Avenue to and from the site. As an alternative to a potential speed table, the applicant could consider a speed lump west of Jason Way on Parish Avenue.

On-site pedestrian facilities would include a sidewalk along the back of the retail building between the buildings and the parking on the main street. The project would provide a pedestrian pathway through the center of the townhomes, parallel to Jason Way and Jason Place, connecting Peralta Boulevard to Parish Avenue. This same path would provide all townhomes with direct access to the pool and clubhouse. There would also be an east-west path connecting the townhomes on the northeastern part of the site directly to the retail buildings. Most, but not all, of the townhomes would have access to the main street via paths that parallel Parish Avenue and connect Jason Way and Jason Place to the main street. The site plan shows no crosswalks across the main street extending from those paths, although orthogonal crosswalks are provided across the main street from the pool/clubhouse area to the retail and apartments.

There are no sidewalks along the side streets which provide vehicle and bicycle access to the private townhome garages. The townhome units do have pedestrian access throughout the site from the front of the units, via the paths described above.

The aforementioned paths do not appear intended to serve bicycles. However, because of the low volume and speeds of vehicles on-site, bicycles can share the on-site side streets and main street with cars.

Parking garage

Some on-site parking will be provided in the basement of the south retail building. The garage will serve residents of the apartments above the retail, as well as accommodate some of the retail parking needs. The garage would be accessible via an L-shaped two-way ramp with inside radius of 12 feet and unspecified width. The basement garage would provide 70 parking spaces, which includes 5 handicap accessible spaces and 6 compact spaces.

The garage circulation would consist of a single dead-end drive aisle with perpendicular parking. Midway down the aisle is shown to be a security gate beyond which a secure parking area would be provided for residents. Inside the gated area are 36 spaces. In the unsecured area before the gate are 34 spaces for use by retail customers. With the two separate areas, there is effectively two dead-end aisles- one for the residents and one for the retail customers.

The dead-end in the secure (residential) parking area has no turnaround. The dead-end in the resident parking area would not necessarily need a turnaround since residents would presumably have assigned parking and therefore would have a parking space available to park in. The City municipal code states that “dead-end aisles shall be avoided to the greatest extent possible.” Given the dimensions of the garage, a dead-end aisle appears unavoidable. Because the garage plan provides only a conceptual level of detail, it cannot be ascertained whether the end stall meets city code. The code states that “the required stall widths shall be increased by one-half foot for any stall located immediately adjacent to a wall.” This will be reviewed when a more detailed site plan is available.

The dead-end in the unsecure (retail) parking area provides a turnaround space at the very end of the aisle, next to the gate. The turnaround consists of a parking stall striped for no parking that can be used to pull into and back out to facilitate maneuvering. As described above, the end stalls, including the turnaround area, need to provide the extra width specified in the city code. Were a changeable message sign to be provided at the entrance to the garage, drivers could be advised if the garage is full before entering. During those times when the retail portion of the garage is full, for those drivers heeding the warning, a turnaround maneuver inside the garage would not be needed. The sign would need to be located at the entrance but oriented such that drivers could read it before committing to entry into the garage. Installation of a changeable message sign at the entrance to the parking garage should be considered in order to minimize the disruption to parking activity caused by vehicles that are unable to find parking in the garage.

The garage ramp design is shown conceptually, and thus a detailed review is not possible. Prior to final design, the grade of the slope, ramp vertical clearance, ramp width and radius of the turn should be reviewed by City staff. The ramp width and radius will need to be designed such that two cars can pass simultaneously. A turn template should be shown on the plan to demonstrate this.

The garage entrance/exit and surrounding layout will need to be designed such that adequate sight distance is provided for outbound vehicles. As currently designed, vehicles exiting the garage have extremely limited sight distance and likely would not be able to see approaching traffic. In addition, as described previously, the proximity of the garage entrance to Parish Avenue, as shown on the site plan, does not allow sufficient space for vehicle queues at the driveway on Parish Avenue, or enough clear throat for easy ingress.

Recommendation 7: The garage ramp design and entrance will likely require modification. Prior to final design, the garage ramp should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality, including sight distance, location, and the ability of two vehicles to pass eachother simultanously.

Landscaping along all drive aisles needs to be maintained such that it doesn't create an obstruction to the driver's line of sight and thereby ensuring that adequate sight distance is provided.

Bicycle Parking

The city code requires that the project provide the following parking for bicycles: 7 short-term and 4 long-term for retail; 12 short-term and no long-term for townhomes (long-term parking would be available in the units); 11 short-term and 34 long-term for the apartments. The project site plan shows bicycle parking would be provided as follows: 16 short-term and 38 long-term in the southwest corner of the garage under the retail and apartments; 70 short-term in racks along the sidewalk on Fremont Boulevard fronting the site. The parking provided as shown on the site plan would meet the city code. All of the bicycle parking is located near the uses for which it is required, with the exception of the short-term bicycle parking for the townhomes, which is located as much as 500 feet from some townhomes and, on average, about 300 feet.

Neighborhood Traffic Issues

As described previously, Parish Avenue is a two-lane local street extending from Peralta Boulevard in the north to Fremont Boulevard in the south. It provides direct access to the project site via Jason Way (Jason Place) and would also provide access via the proposed South Site Driveway.
Parish Avenue serves the site and the church/school across the street from Jason Way, but principally it serves the residential neighborhood to the northeast. From field observations it appears that most peak-hour traffic currently using Parish Avenue are either going to the school or cutting through the neighborhood to bypass the intersection at Fremont Boulevard and Peralta Boulevard.

Residential streets are sensitive to traffic increases, and east of Jason Place, Parish Avenue provides direct access to single family homes. The existing traffic volumes on Parish Avenue, east of Jason Way, are on the order of 400 vehicles in the AM peak hour and 260 in the PM peak hour in both directions combined. The project would add to Parish Avenue east of Jason Way approximately 13 net new trips in the AM peak hour and add about 5 net new trips in the PM peak hour. This corresponds to the project adding to Parish Avenue one vehicle approximately every 5 minutes in the AM peak hour and one vehicle every 12 minutes in the PM peak hour.

Because Parish Avenue is used as a cut-through street, installation of a traffic signal at Fremont Boulevard and Parish Avenue may potentially attract more ambient traffic to Parish Avenue. This is because a traffic signal would facilitate left turns from westbound Parish Avenue to southbound Fremont Boulevard. The increase in volume of traffic that could result was estimated from the existing number of left turns being made from westbound Peralta Boulevard to southbound Fremont Boulevard. Accordingly, it is estimated that the traffic volumes on westbound Parish Avenue, as a result of the traffic signal, could increase between zero and 50 vehicles in each of the AM and PM peak hours.

The speed limit on Parish Avenue is 25 miles per hour, with an advisory speed of 15 miles per hour in both directions approaching the bend in the street. The City of Fremont does not have significance criteria to determine when a project would materially contribute to an existing speeding or cut-through traffic problem. The City of Fremont has a citizen-initiated traffic calming policy that determines under what conditions speed control measures should be used. Education and enforcement are typically considered the first steps when evaluating traffic calming devices. The city's traffic calming policy considers a wide range of applicable criteria, such as the posted speed limit, street design, percent grade, the 85th-percentile speed, presence of single family homes, street segment length, average daily traffic (ADT), and support by residents (both as a neighborhood and those directly adjacent to a planned traffic calming device). Traffic calming devices are typically installed only after a comprehensive study and neighborhood outreach process.

There are currently no crosswalks across any of the approaches of the intersection of Parish Avenue and Jason Way. The project site plan shows a potential speed table and crosswalks on all three approaches to the intersection of Jason Way and Parish Avenue. As an alternative to a potential speed table, the applicant could consider a speed lump west of Jason Way on Parish Avenue. There are also proposed plans (through a different development project) to install one or more other traffic calming devices on Parish Avenue east of Jason Way. The combination of these devices would likely reduce speeds on Parish Avenue and potentially discourage cut-through traffic.

8.
Project Variant Conditions

The project variant, located on the project site, would include 72 townhomes, 90 apartments, and 24,450 square feet of retail space, including a 1,550 square-foot café. This compares to the project, which proposes 72 townhomes, 64 apartments, and 23,450 square feet of retail space, including a 1,550 square-foot café, and a 2,610 square-foot daycare center in the former fire station. The project variant site plan is shown on Figure 15.

Project Traffic Estimates

The trip generation and assignment for the project variant were determined as described previously for the project. The trip generation estimates for both the proposed project variant and the existing site uses were adjusted using adjustment factors for internal trip reduction, retail pass-by reduction, and transit trip reduction. The project variant trip generation, and these trip reductions, are shown in Table 10.

The table shows that, after all of the adjustments and site credits, the project variant is estimated to generate 109 net new trips in the AM peak hour and 0 net new trips in the PM peak hour. Relative to the project, the project variant would generate 16 fewer AM peak hour trips and 12 fewer PM peak-hour trips. This is attributed to the fact that, although the project variant includes more residential, the project variant does not have a daycare center, as does the project.

The project trip distribution for the project variant was the same as that used for the project, with two different distributions- one for residential and one for retail. Figure 16 shows the net trip assignment for the project variant.

As shown on Figure 16, the proposed project variant would cause a negligible increase in PM peak-hour traffic. At signalized intersections, for a given movement, the proposed project is projected to contribute no more than one new PM peak hour trip every 15 minutes, which is insufficient to create an impact based on City of Fremont level of service impact thresholds. It is for this reason that the traffic analysis did not include an evaluation of offsite PM peak-hour conditions.

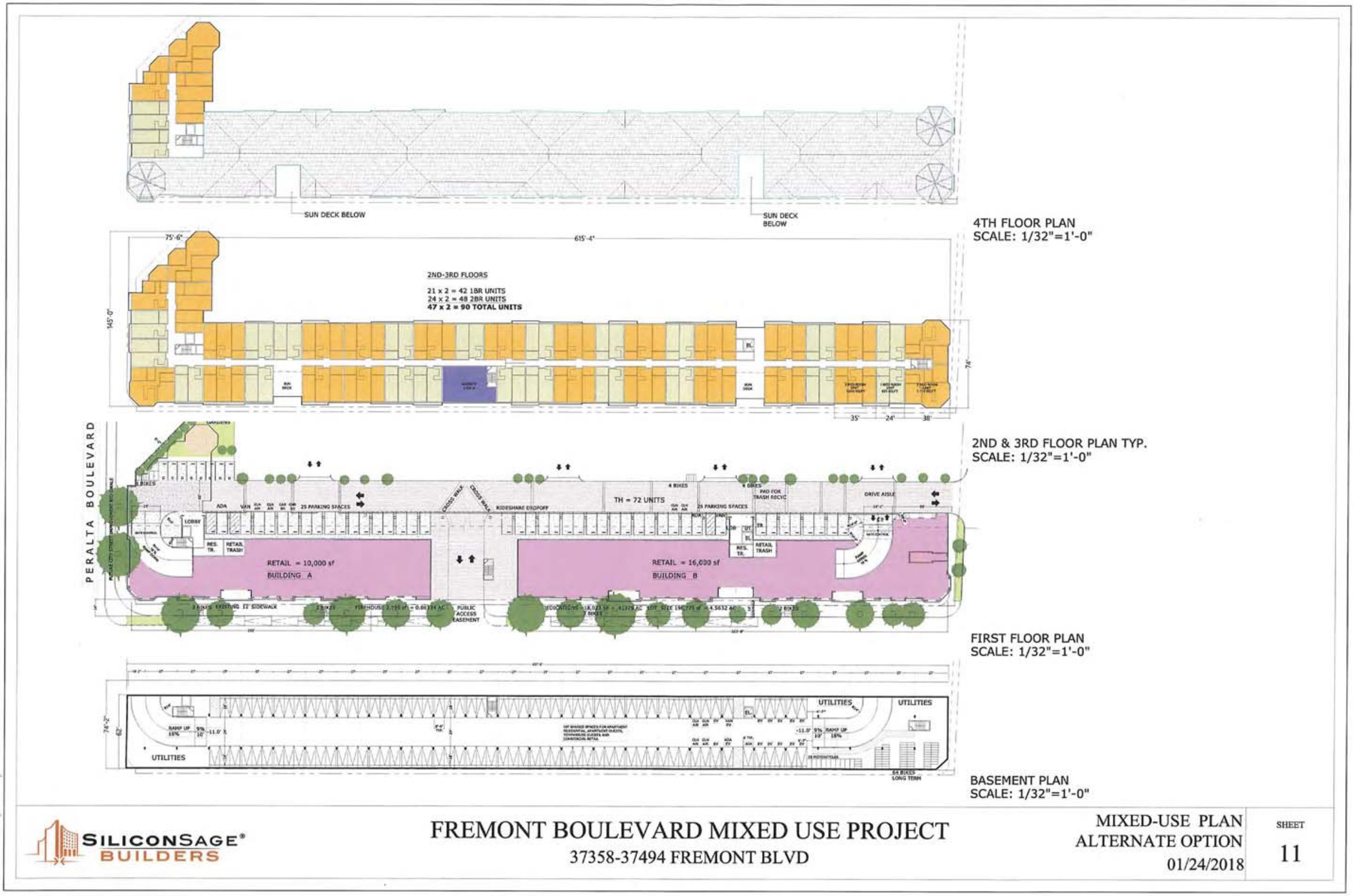


Figure 15
Project Variant Plan

Table 10
Project Variant Trip Generation

				AM Peak Hour				PM Peak Hour			
Land Use	Size	Daily Rate	Daily Trips	Rate	Total Trips	In	Out	Rate	Total Trips	In	Out
Proposed Project											
Townhomes[1]	72 units	5.81	418	0.44	32	5	27	0.52	37	25	12
Apartments [2]	90 units	6.65	599	0.51	46	9	37	0.62	56	36	20
Total	162		1,017		78	14	64		93	61	32
Housing and Retail/ Café Shop Internal Reduction [3]			(160)		(13)	(4)	(9)		(16)	(9)	(7)
Subtotal			857		65	10	55		77	52	25
Shopping Center [4]	24,450 sq.ft.	42.70	1,044	0.96	24	15	9	3.71	91	44	47
Retail Pass-By Reduction (Daily, AM, PM)(17%,0%,34%) [5]			(177)						(31)	(15)	(16)
Cafe[6]	1,550 sq.ft.	745.65	1,156	108.38	168	86	82	40.75	63	32	31
Retail Pass-By Reduction (Daily, AM, PM)(50%,49%,50%) [7]			(578)		(82)	(42)	(40)		(32)	(16)	(16)
Housing and Retail/ Café Shop Internal Reduction [3]			(160)		(13)	(9)	(4)		(16)	(7)	(9)
Subtotal			1,285		97	50	47		75	38	37
Transit Trip Reduction[9]	10%		(49)		(8)	(2)	(6)		(9)	(6)	(3)
Total Primary Project Trips			**2,093**		**154**	**58**	**96**		**143**	**84**	**59**
Trip generation for Existing Use based on ITE Rates											
Shopping Center [4]	43,468 sq.ft.	42.70	1,856	0.96	42	26	16	3.71	161	77	84
Restaurant [8]	7,843 sq.ft.	89.95	705	0.81	6	4	2	7.49	59	39	20
Total			2,561		48	30	18		220	116	104
Retail Pass-By Reduction (Daily, AM, PM)(17%,0%,34%) [5]			(435)						(74)	(39)	(35)
Subtotal			2,126		48	30	18		146	77	69
Mini Warehouse [10]	970 sq.ft.	2.50	2	0.14	1	1	0	0.26	1	1	0
Single family house [11]	1 units	9.52	10	0.75	1	0	1	1.00	1	1	0
Transit Trip Reduction[12]	10%		(25)		(5)	(3)	(2)		(5)	(2)	(3)
Total Primary Existing Trips			2,113		45	28	17		143	77	66
Net New Project Trips			**(20)**		**109**	**30**	**79**		**0**	**7**	**(7)**

[1] Rates based on ITE Trip Generation, 9th Edition: average rates for Townhomes (ITE 230).

[2] Rates based on ITE Trip Generation, 9th Edition: average rates for Apartments (ITE 220).

[3] Per ITE Trip Generation Handbook (Second Edition). Daily trips were estimated by averaging AM & PM peak hour percentages.

[4] Rates based on ITE Trip Generation, 9th Edition: average rates for Shopping Center (ITE 820).

[5] PM peak hour passer-by trips are based on ITE Trip Generation Handbook (Second Edition).

[6] Rates based on ITE Trip Generation, 9th Edition: average rates for Coffee / Donut Shop (ITE 936). Daily trips were estimated by assuming average of AM & PM peak hour trips rates to be 10% of daily trips.

[7] AM & PM peak hour passer-by trips are based on ITE Trip Generation Handbook (Second Edition) for Fast-Food Restaurant (ITE 934).

[8] Rates based on ITE Trip Generation, 9th Edition: average rates for Quality Restaurant (ITE 931).

[9] Based on ITE Trip Generation Handbook Trip Reduction Table B.2 (Development around bus transit corridors). PM transit reduction trips for shopping center was applied to employees only.

[10] Rates based on ITE Trip Generation, 9th Edition: average rates for Mini-warehouse (ITE 151).

[11] Rates based on ITE Trip Generation, 9th Edition: average rates for Single family detached house (ITE 210).

[12] Transit trip reduction to Shopping Center, Restaurants and Mini Warehouse were applied based on ITE Trip Generation Handbook Trip Reduction Table B.2 (Development around bus transit corridors). PM transit reduction trips were applied to employees only.

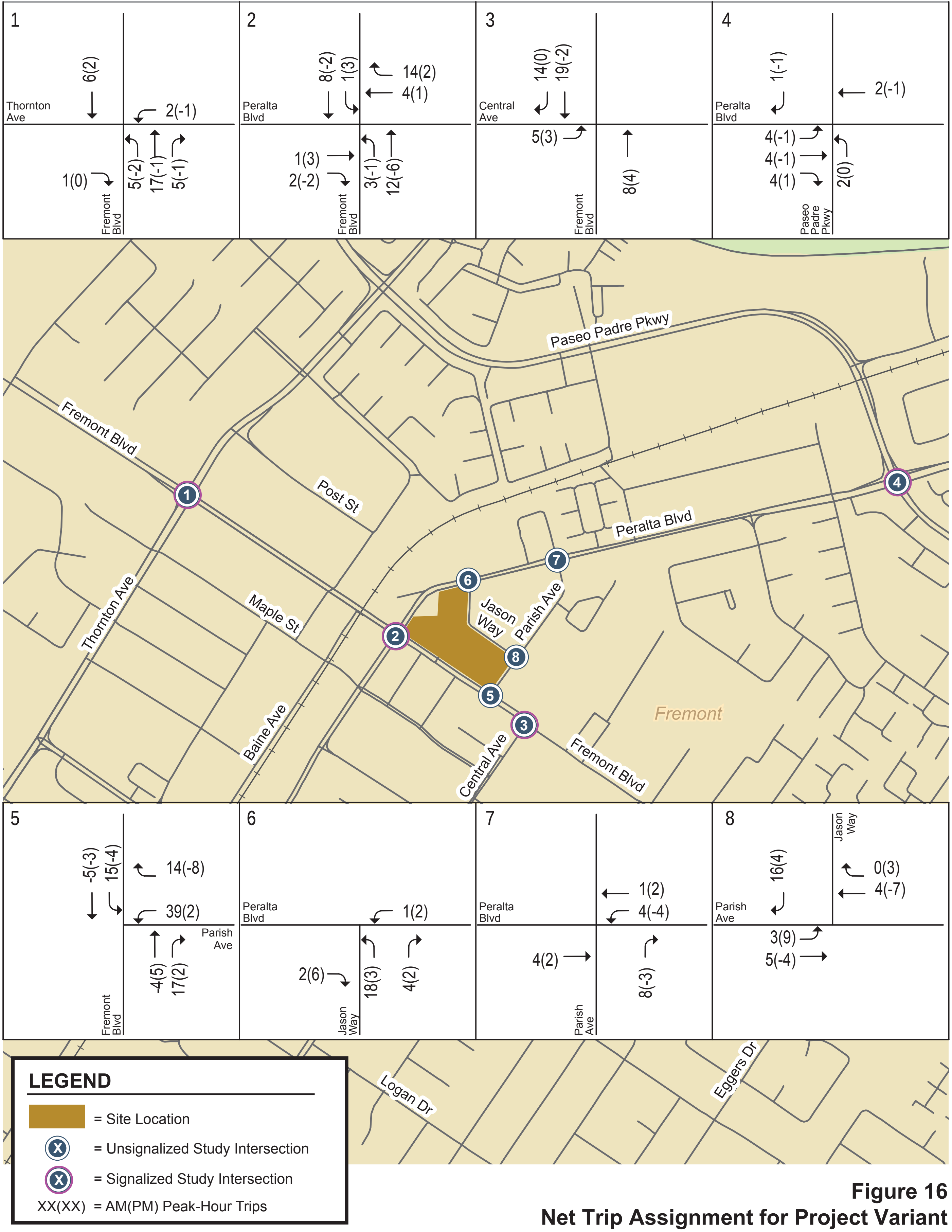


Figure 16
Net Trip Assignment for Project Variant

NORTH
Not to Scale

Project Variant Conditions Levels of Service

For the project variant, existing plus project, background plus project, and cumulative plus project conditions were evaluated to determine to what extent, if any, the impacts of the project variant would differ from those previously reported for the project. In order to do so, the net project trips for the proposed project variant were added to each of the existing, background and cumulative (no project) volumes established previously, and AM peak-hour levels of service were calculated using TRAFFIX. The AM peak-hour level of service results for the signalized intersections under all project scenarios are summarized in Table 11. The results show that the project variant would cause no material changes to delays or level of service at the signalized intersections. All intersections previously reported as operating at acceptable conditions, or conversely, under unacceptable conditions, and the scenarios and time periods during which they occurred, would continue to operate the same. Thus, the project variant would similarly have no significant intersection level of service impacts. The level of service calculation sheets for all project variant conditions are included in Appendix D.

Unsignalized Intersections

The results of the unsignalized intersection level of service analysis under all project variant study scenarios are summarized in Table 12. The project variant would result in no material changes to delays or level of service at the unsignalized intersections. All intersections previously reported as operating at acceptable conditions, or conversely, under unacceptable conditions, and the scenarios and time periods during which they occurred, would continue to operate the same. The level of service calculation sheets for all project variant conditions are included in Appendix D.

As reported under conditions with the project, with the project variant, a peak-hour volume signal warrant analysis showed that the intersection of Fremont Boulevard & Parish Avenue meets the peak-hour signal warrant under existing plus project, background plus project, and cumulative plus project conditions during the AM peak hour. The signal warrant analysis sheets for all project variant conditions are included in Appendix D.

Railroad Impacts

The project variant would result in no material changes to traffic volumes or traffic patterns on Fremont Boulevard at the railroad crossing. By time period and by direction of travel, some traffic volumes would increase and some traffic volumes would decrease by one or two vehicles per hour. The findings reported in the previous chapter therefore would apply equally to the project variant.

Pedestrian, Bicycle, & Transit Facilities

The project variant is expected to cause neither an increase nor decrease in pedestrian or bicycle demand, and would not change the off-site pedestrian or bicycle circulation or infrastructure relative to those changes already described previously for the project.

Relative to the project, the project variant is estimated to create up to two additional transit trips in each of the AM and PM peak hours. The project variant does not propose any system or service changes to the existing transit system relative to those changes already described previously for the project. Based on the Alameda County (CMP) Transportation Impact Analysis Technical Guidelines described in Chapter 7, the project variant would not cause a significant impact to transit operations in the study area. The recommendation for possible improvements (Recommendation 1) to the existing bus stop along the site frontage are applicable to the project variant.

Table 11
Signalized Intersection Level of Service Summary Project Variant Conditions

			Existing					Background					Cumulative				
			No Project		With Project			No Project		With Project			No Project		With Project		
No.	Intersection	LOS Std	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Incr. In Avg Delay
1	Fremont Blvd & Thornton Ave	E	37.9	D	38.0	D	0.1	38.1	D	38.2	D	0.1	28.6	C	29.2	C	0.6
2	Fremont Blvd & Peralta Blvd	E	27.0	C	27.3	C	0.3	27.3	C	27.5	C	0.2	32.7	C	32.9	C	0.2
3	Fremont Blvd & Central Ave	E	34.8	C	34.8	C	0.0	35.1	D	35.5	D	0.4	71.3	E	75.3	E	4.0
4	Paseo Padre Pkwy & Peralta Bl	E	46.4	D	46.6	D	0.2	46.8	D	47.3	D	0.5	81.9	F	83.0	F	1.1

[1] Signalized intersection level of service is based on the Highw ay Capacity Manual (HCM) methodology, using average control delay for the entire intersection.

Table 12
Unsignalized Intersection Level of Service Summary Project Variant Conditions

		Existing				Background				Buildout			
		No Project		With Project		No Project		With Project		No Project		With Project	
No.	Intersection	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]	Avg. Delay[1]	LOS[1]
5	Fremont Blvd & Parish Ave	4.2/54.9	A/F	15.5/156.6	C/F	6.1/77.7	A/F	21.7/sat[2]	C/F	15.7/sat[2]	C/F	45.6/sat[2]	E/F
6	Jason Way & Peralta Blvd	0.1/13.8	A/B	0.5/16.4	A/C	0.1/14.0	A/B	0.5/16.6	A/C	0.1/14.1	A/B	0.3/17.4	A/C
7	Parish Avenue & Peralta Bl	4.5/33.0	A/D	4.7/34.6	A/D	4.7/35.4	A/E	5.0/37.3	A/E	2.7/32.2	A/D	2.8/33.1	A/D
8	Jason Way & Parish Ave	0.3/10.3	A/B	0.8/10.2	A/B	0.3/10.4	A/B	0.8/10.2	A/B	0.3/10.5	A/B	0.8/10.3	A/B

Note: all intersections were counted in May 2017.

[1] unsignalized intersections were analyzed based on Highway Capacity Manual (HCM) methodology using TRAFFIX analysis software. All unsignalized study intersections are Side Street Stop Control (SSSC). SSSC intersection levels of service and delays are reported for both the overall average delay / the approach with highest delay.

[2] "sat" designates *oversaturated* conditions. Delay value is not meaningful or reflective of actual conditions.

Site Access, Circulation and Parking Layout

Site access, on-site circulation, and the parking layout on-site are described below for the project variant site plan. The project variant site plan consists of only that part of the plan that differs from the project site plan- which is the part of the site between Fremont Boulevard and the Main Street on site. The operations at the site driveways and at the intersection of Fremont Boulevard and Parish Way are reported below only to the extent that the layout of the site and the effect on operations differ from what is reported in previous chapters of this report. Where the findings for the project indicated impacts and recommendations, they will be repeated, as applicable. The project variant site plan was shown previously on Figure 15.

Access Operations at Fremont Boulevard and Parish Avenue

As reported for the project, the intersection of Fremont Boulevard and Parish Avenue would meet the peak-hour signal warrant under all project scenarios during the AM peak hour. Similarly, the level of service and vehicle queuing analysis at the intersection of Fremont Boulevard and Parish Avenue under the project variant conditions showed that, just as with the project, the stop-controlled westbound approach on Parish Avenue would operate at LOS F, with delays in excess of two minutes, under project scenarios during both peak hours. Thus, the recommendation for installation of a traffic signal at the intersection of Fremont Boulevard and Parish Avenue applies to the project variant, as well. The signal warrant and level of service calculation sheets for project variant conditions are included in Appendix D.

Access Operations at Jason Way and Peralta Boulevard

The project variant, evaluated relative to the project, would result in no material changes to traffic volumes or traffic patterns at the intersection of Jason Way and Peralta Boulevard. The findings for the project, as reported previously, remain applicable to the project variant. These include the finding that a signal is not warranted under any project scenarios. To ensure adequate sight distance from Jason Way, the recommendation described previously for restricting parking on Peralta Boulevard should be followed for the project variant. The signal warrant calculation sheet for project variant conditions is included in Appendix D.

Access Operations at Jason Way and Parish Avenue

Relative to the project, the project variant would result in no material changes to traffic volumes or traffic patterns at the intersection of Jason Way and Parish Avenue. The findings for the project, as reported previously, remain applicable to the project variant. These include the finding that a signal is not warranted under any project conditions. The signal warrant calculation sheet for project variant conditions is included in Appendix D.

Access Operations at Fremont Boulevard and Main Site Driveway

The project variant, when evaluated in relation to the project, would result in no material changes to traffic volumes or traffic patterns at the intersection of Fremont Boulevard and the Main Site Driveway. Relative to the project, the project variant will, in some directions and time periods add one or two peak-hour trips, and in other cases subtract one or two peak-hour trips, the net effect being negligible. The findings for the project, as reported previously, remain applicable to the project variant. These include the finding that a signal is not warranted under any project conditions. To ensure that the existing and future vehicle backups on Fremont Boulevard would not be worsened by the project, or project variant, the recommendation described previously to restrict access to right-turn in and out only at the Main Site Driveway should be followed for the project variant. The signal warrant calculation sheet for project variant conditions is included in Appendix D.

Access Operations at South Site Driveway and Parish Avenue

Under the project variant site design, the location of the South Site Driveway would be unchanged-located 75 feet east of Fremont Boulevard. Relative to the project, the project variant will, in some directions and time periods, add one or two peak-hour trips, and in other cases subtract one or two peak-hour trips, the net effect being negligible. Accordingly, the recommendation for installation of a signal at the intersection of Fremont Boulevard and Parish Avenue, per Recommendation 2, applies to the project variant, as well. The signal warrant calculation sheet for project variant conditions is included in Appendix D.

The parking garage shown on the site plan for the project variant has two entrances. The entrance/exit at the south end, on the south driveway, would be located approximately 50 feet from Parish Avenue. With this design, the southbound driveway approach at the intersection could accommodate two queued vehicles without obstructing the garage entrance/exit. The average vehicle arrival rate on the southbound approach of Parish Avenue would be less than one vehicle per minute during the peak hours. The rate would be higher during brief surges in demand. There could also be brief periods when surges in demand on westbound Parish Avenue temporarily back up to the south driveway, affecting the ability of southbound vehicles on the South Site Driveway to clear. However, these periods would be the exception, and the installation of the traffic signal at Fremont Boulevard and Parish Avenue, per Recommendation 2 above, would reduce the frequency and duration of the blockage of the South Site Driveway.

As the vehicle queuing issues on Parish Avenue would remain, there would remain the need for Recommendation 5: installation of the “KEEP CLEAR” marking in the westbound lane of Parish Avenue at the South Site Driveway.

With regard to the location of the south garage entrance/exit, consideration must also be made for the northbound driveway access and the potential for queues to develop. The location of the garage entrance/exit provides 50 feet of storage for (two) queued vehicles in the northbound direction on the south driveway. With 50 feet of storage, a queue exceeding two vehicles would spill back onto Parish Avenue. In the worst case, this obstruction could cause queues on eastbound Parish Avenue to potentially back up to Fremont Boulevard.

The inbound (northbound) peak-hour volumes on the south driveway are less than 60 vehicles. Specifically, it’s the northbound left-turn into the south garage entrance that would cause the northbound vehicle backup onto Parish Avenue. The northbound left-turn demand into the garage is estimated to be 30 to 35 vehicles in each of the AM and PM peak hours. This translates into about one vehicle every two minutes, which is relatively infrequent.

The garage entrance is controlled by a gate that will be activated upon arrival. The service rate of the gate (vehicles served per hour) will depend on the type of access control used, e.g., Automatic Vehicle Identification (AVI), card reader, ticket dispenser, etc. Use of the garage by non-residents will require that a vehicle storage reservoir be provided inbound between the main street on site and the gate. Based on the low volume of inbound vehicles, storage for one vehicle should be adequate. The reservoir length should be approximately 25 feet, depending on the space requirements for operation of the gate. The site plan does not show this dimension, but it scales to approximately 15 feet. In order to minimize the occurrence of vehicles in the subject reservoir spilling into the main drive aisle, it is recommended that the gate control service rate be at least 300 vehicles per hour.

Recommendation 8: The gate control at the south garage entrance should be designed using a control system that will provide access to both residents and non-residents, at a service rate of at least 300 vehicles per hour, and should provide a vehicle storage reservoir for at least one vehicle inbound between the main street on site and the gate. Prior to final design, the gate access and control system should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality.

With implementation of this recommendation, the 50-foot setback of the south garage entrance from Parish Avenue should be adequate. As previously mentioned, the current parking prohibition on the north side of Parish Avenue over the 160-foot section between Jason Way and Fremont Boulevard should be maintained, as do all other previous recommendations regarding sight distance at this location.

On-Site Circulation

East of the main street on site, the part that includes the townhomes, the project variant plan is the same as the project site plan. A discussion of that part of the site plan is included in Chapter 7 and is not repeated here.

The Main Site Driveway connects the main street on site to Fremont Boulevard. The apartments and retail are accessed from the main street on site, both via the parking garage and the surface parking along the building frontage on site. The townhomes are accessed from the side streets. The main street therefore serves as an on-site collector for the residential side streets and provides access to the retail parking, the residential guest parking, and the parking garage.

The Main Site Driveway is shown to be 30 feet wide and the main street on-site is shown to be 26 feet wide, which is unchanged from the original site plan. There are no indications that the project variant modifications to the site would adversely affect access or on-site circulation for trucks, garbage collection, or emergency vehicles.

Pedestrian circulation at grade on the project variant site plan appears unchanged from the project site plan.

Parking garage

As in the previous study, the below-grade garage will serve residents of the apartments above the commercial-retail, as well as accommodate some of the commercial-retail parking needs. The garage would provide 107 shared parking spaces for apartment residents, apartment guests, townhome guests, and commercial-retail customers and employees, which includes handicap accessible spaces and compact spaces.

Under the project variant site design, the parking garage has been extended (below-grade) the entire length of the block, from Parish Avenue to Peralta Boulevard. It is shown having two entrances/exits, one at each of the north and south ends. Both entrances/exits are shown to have gates. The south garage entrance/exit is located 50 feet north of Parish Avenue, as described previously in the discussion of south site driveway operations.

The north garage entrance/exit is located at the very north end of the main street on site, at what was previously (under the project site plan dated July 25, 2017) a dead-end aisle. With the project variant site plan showing a north garage entrance/exit located at the end of the main street on site, the entire on site circulation system effectively forms a continuous loop for vehicles, with no vehicular conflicts at the north garage entrance/exit.

The vehicle queuing conditions that were at issue at the south garage entrance/exit would not be an issue at the north garage entrance/exit. Because there would be no vehicle conflicts for inbound or outbound traffic and the travel way itself would serve as the vehicle storage, there would be no need to provide a specific storage reservoir at the north garage entrance/exit. The north garage entrance/exit would need an access control system- the same one used at the south entrance.

Beyond the gate at each of the north and south entrances, the garage would be accessible via a curved, L-shaped two-way ramp. The adequacy of the ramp design, as shown, cannot be determined based on the information provided, as the design is still conceptual. In addition to vertical clearance and grade/slope, of particular importance is that the ramp width and radius be designed to permit two cars to pass simultaneously. A turn template should be shown on the plan to demonstrate this. As stated for the single ramp of the project site plan, for both ramps of the project variant site plan, per Recommendation 7, the garage ramps should be reviewed by City staff prior to final design to ensure that they meet standard design specifications and, in particular, to confirm that ramp widths and radii are designed to permit two cars to pass simultaneously.

The garage circulation would consist of one single 520-foot straight drive aisle connecting the two ramps, with perpendicular parking along both sides. A straight aisle of this length could encourage unsafe speeds in the garage. It is recommended that one or more speed humps be installed to reduce speeds in the parking aisle.

Recommendation 9: It is recommended that one or more speed humps be installed in the drive aisle of the parking garage in order to reduce speeds in the parking aisle. Prior to final design, the speed hump design should be reviewed by City staff to ensure that it meets basic requirements for safety and functionality.

Pedestrian circulation below grade in the garage is facilitated by three stairwells and an elevator. There is one stairwell at each of the north and south ends of the garage, and one in the middle that lets out at-grade at a location on the south side of the Main Site driveway on Fremont Boulevard. The north stairs and the elevator let out onto the east side of the building adjacent to the main street on site, and the south stairwell appears to be internal to the building and provides no outside access .As there are no pedestrian pathways in the garage, pedestrians will access the stairs or elevator via the drive aisle. The maximum walking distance down the drive aisle, from any parking space to any stairwell or elevator, would be 150 to 200 feet. The volume of vehicles is expected to be low. With the speed humps recommended in Recommendation 10, vehicle speeds should be low.

The garage entrance/exit and surrounding layout will need to be designed such that adequate sight distance is provided for outbound vehicles. At the north garage entrance/exit, it appears that sight distance would be adequate. At the south garage entrance/exit, the issue of sight distance for outbound vehicles needs to be addressed within the context of the previous discussion regarding access control and vehicle storage requirements for inbound vehicles.

Recommendation 10: Prior to final design, sight distance at the south garage entrance/exit should be reviewed by City staff to ensure that it meets basic requirements for safety.

Bicycle Parking

The change in project description under the project variant changed the bicycle parking requirements on site, and the redesign of the site plan under the project variant has revised the proposed supply accordingly, to meet the code, both in terms of short-term and long-term parking requirements.

Neighborhood Traffic Issues

The project variant, when evaluated in relation to the project, would result in no material changes to traffic volumes or traffic patterns on Parish Avenue. Relative to the project, the project variant will, in some directions and time periods add one or two peak-hour trips, and in other cases subtract one or two peak-hour trips, the net effect being negligible. The findings for the project, as reported previously, remain applicable to the project variant.

Silicon Sage Mixed-Use Project
Transportation Impact Analysis

Technical Appendices

April 9, 2018

Hexagon Transportation Consultants, Inc.

Appendix A

Traffic Counts

Type of peak hour being reported: Intersection Peak

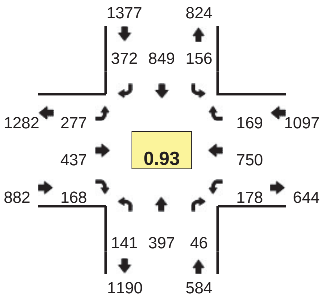
Method for determining peak hour: Total Entering Volume

LOCATION: Fremont Blvd -- Thornton Ave

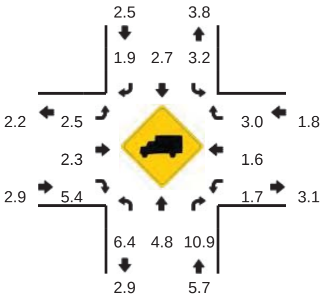
CITY/STATE: Fremont, CA

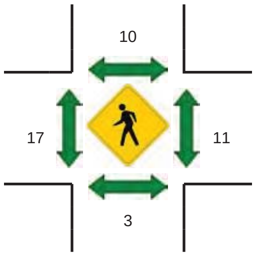
QC JOB #: 14413513

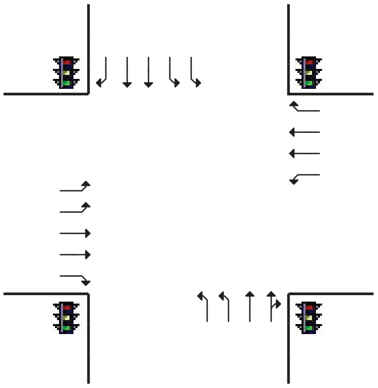
DATE: Wed, May 10 2017

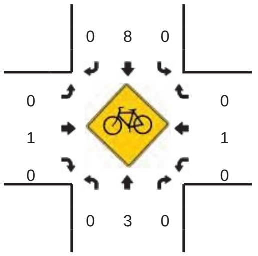


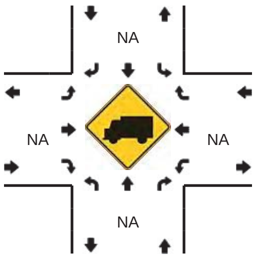
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

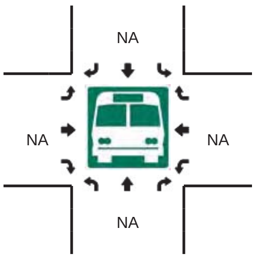












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Thornton Ave (Eastbound)				Thornton Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	7	23	2	0	1	32	18	0	7	17	12	1	1	42	7	0	170	
7:05 AM	9	14	2	0	3	28	15	0	9	14	9	2	4	42	6	0	157	
7:10 AM	6	15	0	0	5	39	23	0	7	18	5	1	2	31	8	0	160	
7:15 AM	11	14	0	0	8	39	14	0	11	20	7	1	10	48	14	0	197	
7:20 AM	18	18	4	0	12	42	24	0	9	25	14	1	11	52	6	0	236	
7:25 AM	9	20	3	0	6	42	25	0	11	27	13	0	6	59	3	0	224	
7:30 AM	5	15	4	0	12	32	30	0	24	23	13	2	13	51	11	2	237	
7:35 AM	8	35	3	0	7	49	36	0	13	24	12	2	13	60	6	1	269	
7:40 AM	6	27	2	0	5	63	43	0	27	35	12	1	9	63	20	0	313	
7:45 AM	9	38	2	0	17	65	50	0	18	48	13	1	17	76	17	0	371	
7:50 AM	7	34	2	0	10	66	38	0	28	37	12	0	15	64	19	0	332	
7:55 AM	16	38	6	0	13	45	35	0	46	40	10	1	26	66	15	0	357	3023
8:00 AM	7	33	1	0	6	66	24	0	21	67	15	0	18	96	17	0	371	3224
8:05 AM	16	39	7	0	11	90	20	0	17	35	18	1	5	45	9	1	314	3381
8:10 AM	13	28	3	0	21	86	24	0	22	20	16	3	13	63	16	0	328	3549
8:15 AM	13	34	7	0	15	70	22	0	9	28	4	5	13	63	11	1	295	3647
8:20 AM	4	13	4	0	21	74	31	0	13	23	13	2	14	57	22	1	292	3703
8:25 AM	20	44	4	0	10	71	23	0	26	32	15	3	17	57	9	1	332	3811
8:30 AM	16	33	4	0	14	73	27	0	16	51	20	0	13	61	7	0	335	3909
8:35 AM	14	36	4	0	13	80	35	0	15	21	20	2	13	39	7	1	300	3940
8:40 AM	3	29	5	0	20	60	29	0	25	36	12	3	12	49	6	0	289	3916
8:45 AM	16	27	6	0	10	65	33	0	17	30	11	2	3	50	14	0	284	3829
8:50 AM	10	39	2	0	9	69	18	0	15	22	16	2	17	48	7	0	274	3771
8:55 AM	12	34	4	0	11	46	26	0	17	30	12	3	18	52	10	1	276	3690

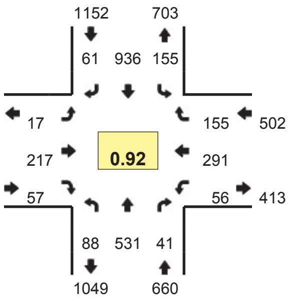
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	128	440	40	0	160	704	492	0	368	500	140	8	232	824	204	0	4240
Heavy Trucks	8	12	4		12	12	4		12	8	8		8	0	4		92
Pedestrians		0				12				28				8			48
Bicycles	0	2	0		0	0	0		0	0	0		0	1	0		3
Railroad																	
Stopped Buses																	

Comments:

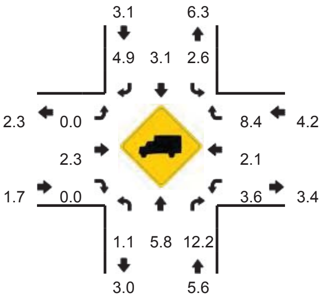
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

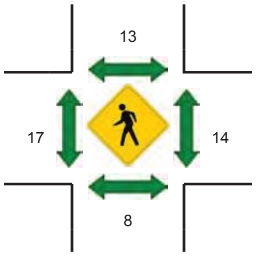
Type of peak hour being reported: Intersection Peak　　Method for determining peak hour: Total Entering Volume

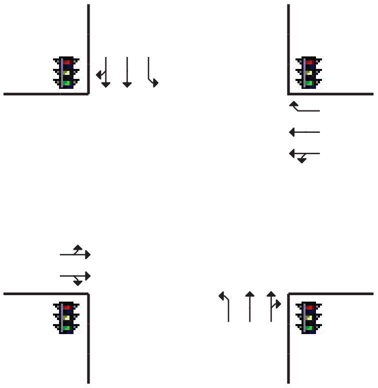
LOCATION: Fremont Blvd -- Peralta Blvd　　**QC JOB #:** 14413531
CITY/STATE: Fremont, CA　　**DATE:** Wed, May 10 2017

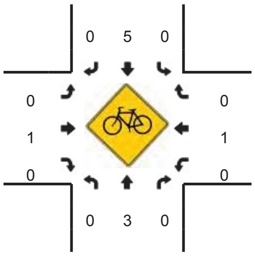


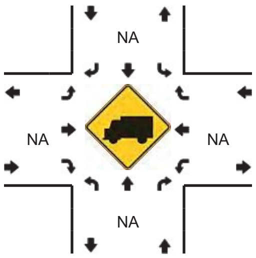
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:25 AM -- 8:40 AM

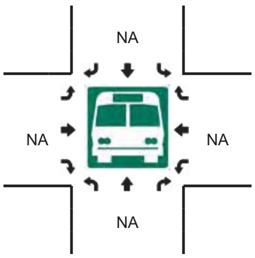












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Peralta Blvd (Eastbound)				Peralta Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	25	3	0	9	51	1	0	1	4	2	0	0	10	6	0	112	
7:05 AM	2	22	5	0	5	44	2	0	0	8	3	0	4	8	7	0	110	
7:10 AM	2	20	2	0	0	29	3	0	1	6	2	0	1	13	14	0	93	
7:15 AM	2	16	2	0	4	36	4	0	0	8	2	0	5	14	8	0	101	
7:20 AM	2	17	2	0	7	57	3	0	1	3	6	0	0	8	7	0	113	
7:25 AM	2	19	4	0	8	63	6	0	0	5	4	0	6	7	8	0	132	
7:30 AM	4	33	1	0	4	49	1	0	0	5	4	0	6	16	13	0	136	
7:35 AM	8	36	5	0	7	70	5	0	1	10	3	0	6	14	8	0	173	
7:40 AM	1	34	5	0	7	69	2	0	1	15	10	0	6	13	12	0	175	
7:45 AM	10	50	4	0	13	64	6	0	1	19	5	0	6	20	13	0	211	
7:50 AM	9	45	3	0	12	83	9	0	0	15	8	0	4	32	16	0	236	
7:55 AM	6	45	8	0	17	62	6	0	0	22	3	0	2	22	10	0	203	1795
8:00 AM	7	55	3	0	5	62	5	0	2	24	9	0	4	28	10	0	214	1897
8:05 AM	10	40	4	0	14	102	5	0	2	18	4	0	5	26	16	0	246	2033
8:10 AM	9	36	3	0	20	90	5	0	4	14	3	0	5	24	11	0	224	2164
8:15 AM	5	55	5	0	11	81	4	0	1	20	4	0	3	24	9	0	222	2285
8:20 AM	2	32	2	0	2	46	1	0	1	14	2	0	3	23	5	0	133	2305
8:25 AM	9	48	2	0	15	97	3	0	1	14	3	0	7	31	22	0	252	2425
8:30 AM	6	38	2	0	16	91	5	0	3	27	6	0	10	28	14	0	246	2535
8:35 AM	5	31	3	0	24	82	9	0	2	19	2	0	2	14	14	0	207	2569
8:40 AM	10	56	2	0	6	76	3	0	0	11	8	0	5	19	15	0	211	2605
8:45 AM	3	28	2	0	14	61	2	0	4	10	8	0	4	19	6	0	161	2555
8:50 AM	11	51	8	0	13	65	3	0	3	13	12	0	8	30	14	0	231	2550
8:55 AM	7	49	8	0	11	67	9	0	1	14	5	0	5	21	16	0	213	2560

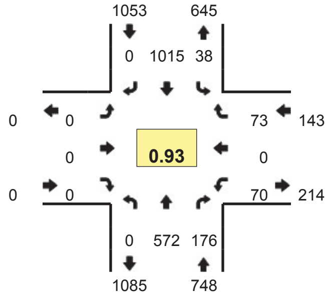
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	468	28	0	220	1080	68	0	24	240	44	0	76	292	200	0	2820
Heavy Trucks	0	40	4		12	28	4		0	4	0		0	8	24		124
Pedestrians		12				16				8				12			48
Bicycles	0	1	0		0	2	0		0	0	0		0	1	0		4
Railroad																	
Stopped Buses																	

Comments:

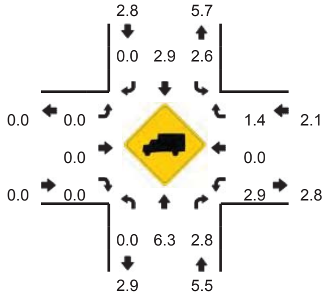
Report generated on 5/25/2017 10:31 AM　　SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

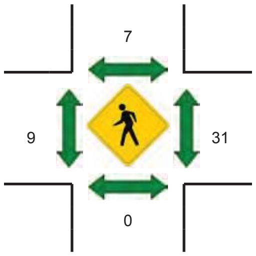
Type of peak hour being reported: Intersection Peak Method for determining peak hour: Total Entering Volume

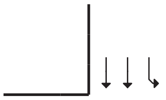
LOCATION: Fremont Blvd -- Parish Ave **QC JOB #:** 14413533
CITY/STATE: Fremont, CA **DATE:** Wed, May 10 2017

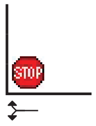


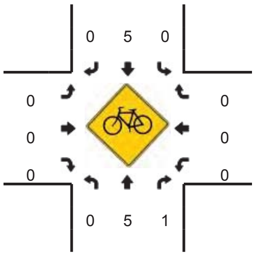
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

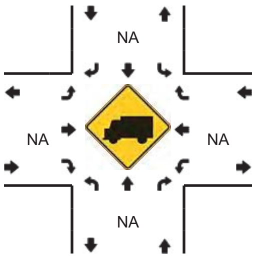


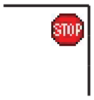


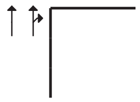


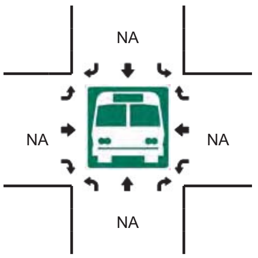












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Parish Ave (Eastbound)				Parish Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	26	4	0	7	42	0	0	0	0	0	0	2	0	2	0	83	
7:05 AM	0	22	5	0	1	44	0	0	0	0	0	0	6	0	2	0	80	
7:10 AM	0	28	5	0	1	35	0	0	0	0	0	0	3	0	1	0	73	
7:15 AM	0	21	6	0	1	42	0	0	0	0	0	0	4	0	0	0	74	
7:20 AM	0	20	4	0	4	63	0	0	0	0	0	0	5	0	0	0	96	
7:25 AM	0	27	3	0	4	72	0	0	0	0	0	0	3	0	2	0	111	
7:30 AM	0	34	9	0	2	56	0	0	0	0	0	0	10	0	12	0	123	
7:35 AM	0	29	2	0	4	76	0	0	0	0	0	0	10	0	2	0	123	
7:40 AM	0	42	8	0	2	88	0	0	0	0	0	0	6	0	1	0	147	
7:45 AM	0	53	15	0	3	73	0	0	0	0	0	0	8	0	11	0	163	
7:50 AM	0	50	18	0	1	91	0	0	0	0	0	0	9	0	12	0	181	
7:55 AM	0	54	19	0	2	71	0	0	0	0	0	0	7	0	12	0	165	1419
8:00 AM	0	51	26	0	3	73	0	0	0	0	0	0	6	0	8	0	167	1503
8:05 AM	0	35	29	0	5	101	0	0	0	0	0	0	6	0	9	0	185	1608
8:10 AM	0	44	15	0	5	98	0	0	0	0	0	0	4	0	4	0	170	1705
8:15 AM	0	52	17	0	1	87	0	0	0	0	0	0	8	0	1	0	166	1797
8:20 AM	0	44	11	0	3	39	0	0	0	0	0	0	3	0	3	0	103	1804
8:25 AM	0	52	6	0	7	109	0	0	0	0	0	0	4	0	1	0	179	1872
8:30 AM	0	42	4	0	4	99	0	0	0	0	0	0	7	0	6	0	162	1911
8:35 AM	0	38	7	0	4	82	0	0	0	0	0	0	4	0	1	0	136	1924
8:40 AM	0	57	9	0	0	92	0	0	0	0	0	0	4	0	5	0	167	1944
8:45 AM	0	50	6	0	2	69	0	0	0	0	0	0	8	0	4	0	139	1920
8:50 AM	0	59	7	0	1	72	0	0	0	0	0	0	5	0	4	0	148	1887
8:55 AM	0	39	11	0	3	87	0	0	0	0	0	0	7	0	6	0	153	1875

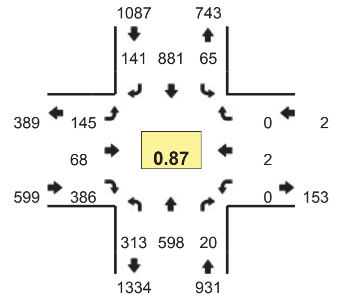
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	520	280	0	52	1088	0	0	0	0	0	0	64	0	84	0	2088
Heavy Trucks	0	24	4		4	36	0		0	0	0		0	0	0		68
Pedestrians		0				4				4				32			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

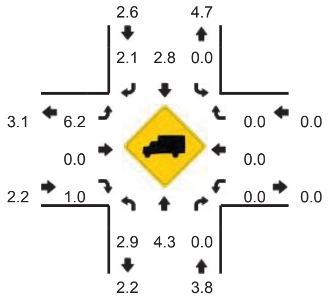
Report generated on 5/25/2017 10:31 AM SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

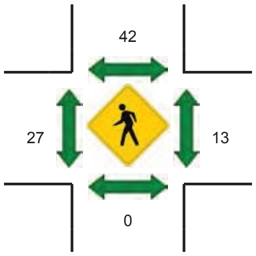
Type of peak hour being reported: Intersection Peak Method for determining peak hour: Total Entering Volume

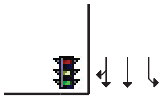
LOCATION: Fremont Blvd -- Central Ave **QC JOB #:** 14413539
CITY/STATE: Fremont, CA **DATE:** Wed, May 10 2017

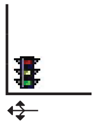


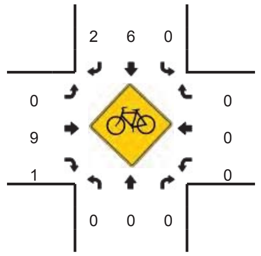
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

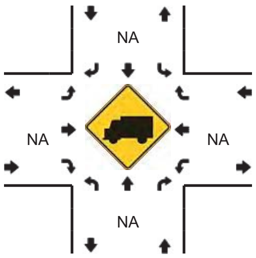


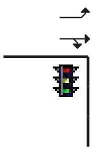


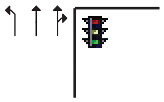


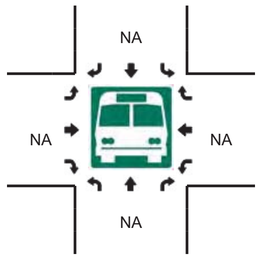












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Central Ave (Eastbound)				Central Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	12	20	0	3	2	33	9	0	6	1	7	0	0	0	0	0	93	
7:05 AM	7	18	0	0	0	36	14	0	8	0	18	0	0	0	0	0	101	
7:10 AM	8	30	1	3	0	31	8	0	7	1	14	0	0	0	0	0	103	
7:15 AM	7	14	0	4	0	42	5	0	10	0	9	0	0	2	0	0	93	
7:20 AM	12	19	1	5	5	54	8	0	3	1	16	0	0	0	0	0	124	
7:25 AM	10	20	0	3	3	58	10	0	11	3	17	0	1	3	0	0	139	
7:30 AM	11	36	2	2	2	57	8	0	6	2	22	0	6	2	0	0	156	
7:35 AM	14	20	1	5	11	53	16	0	9	3	25	0	0	0	0	0	157	
7:40 AM	25	45	1	1	10	69	9	0	9	5	42	0	0	0	0	0	216	
7:45 AM	27	60	3	0	14	61	10	0	7	13	23	0	0	0	0	0	218	
7:50 AM	17	61	4	9	16	81	15	0	16	15	42	0	0	0	0	0	276	
7:55 AM	21	64	3	12	13	54	14	0	12	23	41	0	0	0	0	0	257	1933
8:00 AM	23	55	2	12	6	60	8	0	10	9	34	0	0	1	0	0	220	2060
8:05 AM	21	50	2	7	0	83	9	0	17	2	37	0	0	0	0	0	228	2187
8:10 AM	26	47	2	11	2	87	13	0	9	0	28	0	0	0	0	0	225	2309
8:15 AM	22	56	1	7	1	96	17	0	12	0	21	0	0	0	0	0	233	2449
8:20 AM	16	37	1	3	0	37	4	0	19	1	32	0	0	0	0	0	150	2475
8:25 AM	15	56	0	1	0	97	15	0	8	0	31	0	0	0	0	0	223	2559
8:30 AM	14	29	1	1	2	89	11	0	10	0	23	0	0	0	0	0	180	2583
8:35 AM	19	38	0	3	1	67	16	0	16	0	32	0	0	1	0	0	193	2619
8:40 AM	17	46	1	0	1	81	14	0	11	0	15	0	0	0	0	0	186	2589
8:45 AM	22	43	2	2	0	61	16	0	12	0	32	0	1	1	0	0	192	2563
8:50 AM	27	58	1	1	0	51	11	0	10	2	29	0	1	0	0	0	191	2478
8:55 AM	14	31	1	2	0	84	21	0	15	0	30	0	3	0	1	0	202	2423

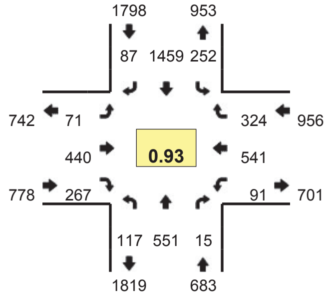
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	244	720	36	132	140	780	148	0	152	188	468	0	0	4	0	0	3012
Heavy Trucks	4	24	0		0	20	4		4	0	12		0	0	0		68
Pedestrians		0				64				32				28			124
Bicycles	0	0	0		0	1	0		0	8	0		0	0	0		9
Railroad																	
Stopped Buses																	

Comments:

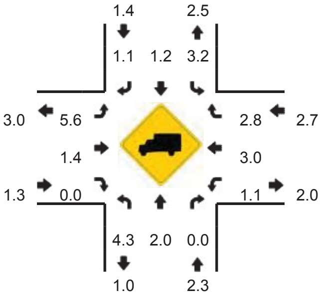
Report generated on 5/25/2017 10:31 AM SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

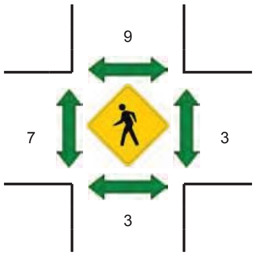
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

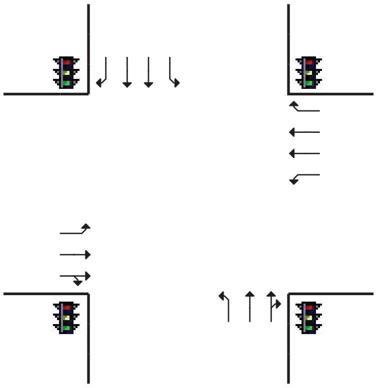
LOCATION: Paseo Padre Pkwy -- Peralta Blvd | **QC JOB #:** 14413537
CITY/STATE: Fremont, CA | **DATE:** Wed, May 10 2017

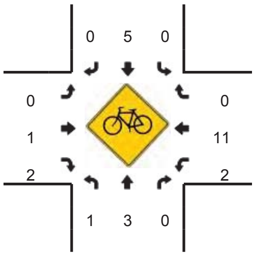


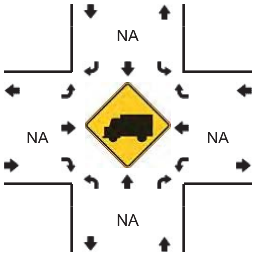
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

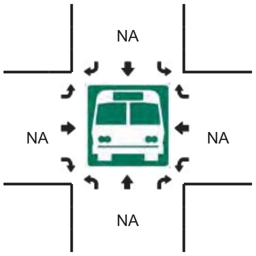












5-Min Count Period Beginning At	Paseo Padre Pkwy (Northbound)				Paseo Padre Pkwy (Southbound)				Peralta Blvd (Eastbound)				Peralta Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	11	1	0	11	58	2	0	5	9	5	0	1	25	30	0	162	
7:05 AM	3	31	1	0	6	54	6	0	2	11	2	0	2	15	16	0	149	
7:10 AM	1	16	0	0	12	76	7	0	3	17	3	0	9	34	29	0	207	
7:15 AM	3	16	1	0	12	93	4	0	4	12	8	0	3	22	28	0	206	
7:20 AM	1	34	3	0	16	118	6	3	3	8	11	0	1	10	25	0	239	
7:25 AM	2	38	1	0	16	130	5	0	4	8	10	0	1	18	36	0	269	
7:30 AM	6	33	1	0	16	108	3	0	5	23	12	0	13	42	33	0	295	
7:35 AM	3	48	0	0	20	139	6	0	4	11	11	0	7	25	24	0	298	
7:40 AM	4	48	0	0	17	135	11	0	2	21	9	0	11	43	27	0	328	
7:45 AM	7	36	2	0	22	117	9	0	9	38	34	0	10	64	32	0	380	
7:50 AM	15	45	0	1	16	96	14	1	3	35	29	0	14	66	34	0	369	
7:55 AM	11	70	3	0	24	124	9	2	10	35	25	0	4	38	21	0	376	3278
8:00 AM	12	40	1	0	18	118	10	0	18	44	36	0	6	59	23	0	385	3501
8:05 AM	9	26	2	0	12	96	6	1	1	73	39	0	10	51	27	0	353	3705
8:10 AM	16	48	3	0	29	113	9	0	6	54	30	0	7	40	28	0	383	3881
8:15 AM	8	56	0	1	16	128	3	1	9	41	15	0	13	34	32	0	357	4032
8:20 AM	18	44	1	0	19	110	3	0	1	30	12	0	2	64	25	0	329	4122
8:25 AM	1	45	1	1	28	154	4	2	4	32	14	0	4	25	21	0	336	4189
8:30 AM	10	45	2	0	24	129	3	0	4	26	13	0	2	32	30	1	321	4215
8:35 AM	6	29	0	0	25	102	2	1	3	35	16	0	10	33	33	0	295	4212
8:40 AM	8	32	2	0	17	96	5	1	3	17	7	0	4	22	39	0	253	4137
8:45 AM	5	53	0	0	13	173	5	1	6	11	15	0	2	28	27	0	339	4096
8:50 AM	3	30	0	0	19	126	9	0	10	19	15	0	11	44	32	1	319	4046
8:55 AM	6	50	2	0	25	125	4	0	3	24	12	0	10	24	27	0	312	3982

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	152	620	16	4	232	1352	132	12	124	456	360	0	96	652	312	0	4520
Heavy Trucks	8	20	0		8	12	4		0	8	0		4	12	16		92
Pedestrians		8				24				16				4			52
Bicycles	0	0	0		0	2	0		0	0	0		0	7	0		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2017 10:31 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

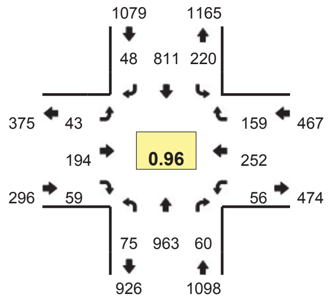
Location: Peralta Blvd & Parish Cir
Date: 5/10/2017
Site Code: 14413535

	Parish Cir (West) Southbound					Parish Cir (East) From Northeast					Peralta Blvd Westbound					Parish Ave Northbound					Peralta Blvd Eastbound				
Start Time	Right	Thru	Left	Left to Parish Cir (East)	U-Turns	Right to Parish Cir (West)	Right to Peralta Blvd	Thru to Parish Ave	Left to Peralta Blvd	U-Turns	Right to Parish Cir (East)	Right	Thru	Left	U-Turns	Right	Thru to Parish Cir (East)	Thru	Left	U-Turns	Right	Thru	Left to Parish Cir (East)	Left	U-Turns
07:00	0	0	0	0	0	0	1	0	0	0	0	0	17	5	0	2	0	0	0	0	0	7	0	0	0
07:05	0	0	0	0	0	0	0	0	0	0	0	0	18	7	0	6	0	0	0	0	0	12	0	0	0
07:10	0	0	0	0	0	0	0	0	0	0	0	0	25	3	0	3	0	0	0	0	0	11	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	30	3	0	8	0	0	0	0	0	11	0	0	0
07:20	0	0	0	0	0	0	0	0	0	0	0	0	21	7	0	7	0	0	0	0	0	13	0	0	0
07:25	0	0	0	0	0	0	0	0	0	0	0	0	12	5	0	4	0	0	0	0	0	15	0	0	0
07:30	0	0	0	0	0	0	0	0	1	0	0	0	32	9	0	12	0	0	1	0	0	13	0	0	0
07:35	2	0	0	0	0	0	1	0	0	0	0	0	27	4	0	10	0	0	1	0	0	10	0	0	0
07:40	1	0	1	0	0	0	1	0	1	0	2	0	30	4	0	11	0	0	0	0	0	19	0	0	0
07:45	1	0	0	0	0	0	0	0	0	0	1	0	47	4	0	16	0	0	2	0	0	40	0	0	0
07:50	0	0	1	0	0	0	0	0	0	0	0	0	59	6	0	31	0	0	0	0	0	29	0	0	0
07:55	1	0	0	0	0	0	1	0	0	0	1	0	41	7	0	22	2	0	1	0	0	41	0	0	0
08:00	2	0	1	0	0	0	1	0	1	0	0	1	33	5	0	40	0	0	1	0	0	23	0	0	0
08:05	0	0	3	0	0	0	0	0	0	0	0	0	46	9	0	37	0	0	0	0	1	40	0	0	0
08:10	0	0	1	0	0	0	0	1	0	0	0	0	44	6	0	24	1	0	0	0	0	36	0	0	0
08:15	1	0	0	0	0	0	0	0	0	0	0	0	40	7	0	20	0	0	0	0	0	37	0	0	0
08:20	1	0	0	0	0	0	0	0	0	0	1	0	56	6	0	9	0	0	1	0	1	26	0	0	0
08:25	0	0	0	0	0	0	0	0	0	0	1	0	41	11	0	16	0	0	1	0	1	30	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	1	1	39	4	0	8	0	0	2	0	0	34	0	0	0
08:35	0	1	0	0	0	0	1	1	1	0	0	0	37	2	0	4	0	0	0	0	1	36	0	0	0
08:40	0	0	0	0	0	0	2	0	0	0	0	0	32	3	0	6	0	0	0	0	2	20	0	0	0
08:45	0	0	0	0	0	0	0	1	0	0	1	0	27	4	0	8	0	0	0	0	2	20	0	0	0
08:50	1	0	1	0	0	0	0	0	1	0	0	1	43	5	0	7	0	0	0	0	0	26	0	0	0
08:55	0	1	0	0	0	0	0	0	0	0	1	0	41	6	0	11	0	0	2	0	2	32	1	0	0
Total	**10**	**2**	**8**	**0**	**0**	**0**	**8**	**3**	**5**	**0**	**9**	**3**	**838**	**132**	**0**	**322**	**3**	**0**	**12**	**0**	**10**	**581**	**1**	**0**	**0**

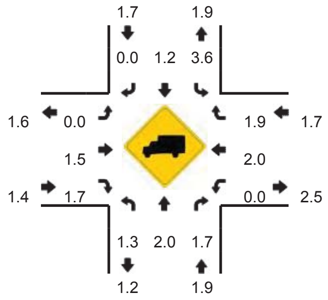
Peak Hour: 7:40 AM - 8:40 AM
Peak 15: 7:55 AM - 8:05 AM
PHF: 0.87

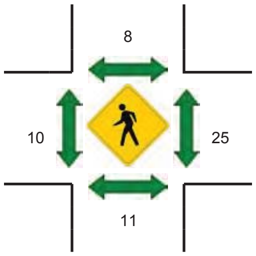
Type of peak hour being reported: Intersection Peak Method for determining peak hour: Total Entering Volume

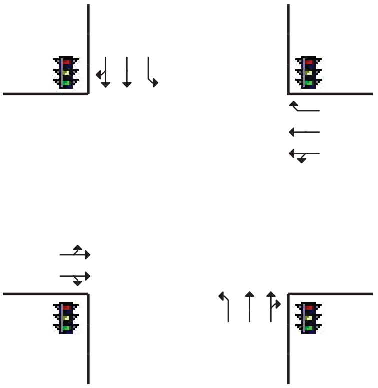
LOCATION: Fremont Blvd -- Peralta Blvd **QC JOB #:** 14413532
CITY/STATE: Fremont, CA **DATE:** Wed, May 10 2017

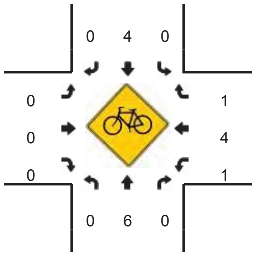


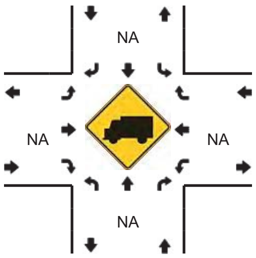
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

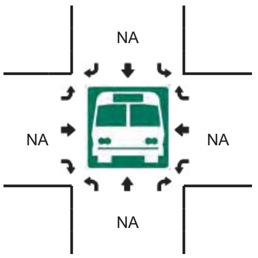












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Peralta Blvd (Eastbound)				Peralta Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	61	4	0	13	59	7	0	5	11	5	0	4	24	16	0	217	
4:05 PM	4	51	4	0	12	34	4	0	6	12	4	0	3	24	14	0	172	
4:10 PM	11	91	7	0	22	53	11	0	4	6	6	0	2	21	12	0	246	
4:15 PM	4	94	4	0	14	38	4	0	2	11	4	0	2	16	14	0	207	
4:20 PM	3	63	6	0	13	55	7	0	3	12	1	0	2	18	3	0	186	
4:25 PM	4	78	9	0	12	40	5	0	3	17	3	0	1	16	9	0	197	
4:30 PM	9	84	5	0	18	59	5	0	4	12	4	0	5	21	16	0	242	
4:35 PM	5	74	6	0	15	54	4	0	3	21	6	0	5	18	9	0	220	
4:40 PM	8	69	8	0	14	35	3	0	4	16	3	0	5	17	20	0	202	
4:45 PM	5	67	7	0	10	54	4	0	6	15	4	0	6	28	13	0	219	
4:50 PM	4	67	2	0	12	53	4	0	4	8	3	0	8	23	12	0	200	
4:55 PM	5	73	2	0	13	51	9	0	6	12	6	0	5	24	12	0	218	2526
5:00 PM	9	81	1	0	18	62	0	0	8	14	7	0	5	27	14	0	246	2555
5:05 PM	5	57	6	0	9	30	2	0	1	20	3	0	6	20	20	0	179	2562
5:10 PM	7	90	5	0	24	78	3	0	3	16	6	0	3	11	9	0	255	2571
5:15 PM	10	95	5	0	14	64	4	0	2	22	5	0	3	27	13	0	264	2628
5:20 PM	9	52	6	0	27	69	2	0	3	13	5	0	5	19	13	0	223	2665
5:25 PM	7	86	5	0	12	89	4	0	4	10	3	0	4	24	13	0	261	2729
5:30 PM	1	102	2	0	22	62	6	0	3	18	1	0	7	22	10	0	256	2743
5:35 PM	6	83	7	0	17	74	6	0	3	12	3	0	5	13	17	0	246	2769
5:40 PM	4	69	5	0	26	71	9	0	3	14	6	0	5	24	13	0	249	2816
5:45 PM	7	77	7	0	12	64	4	0	2	22	3	0	6	26	12	0	242	2839
5:50 PM	7	61	5	0	23	78	6	0	5	18	9	0	3	23	17	0	255	2894
5:55 PM	3	110	6	0	16	70	2	0	6	15	8	0	4	16	8	0	264	2940

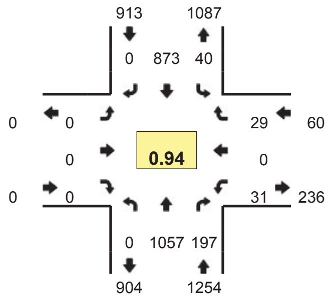
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	1084	56	0	204	900	64	0	40	160	28	0	64	236	160	0	3052
Heavy Trucks	0	24	0		4	12	0		0	0	0		0	8	0		48
Pedestrians		0				8				16				28			52
Bicycles	0	2	0		0	1	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

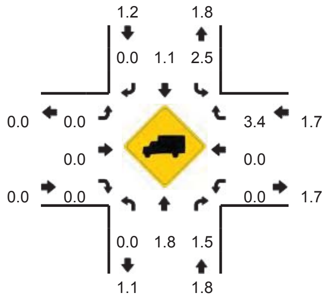
Report generated on 5/25/2017 10:31 AM SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

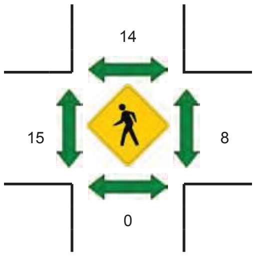
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

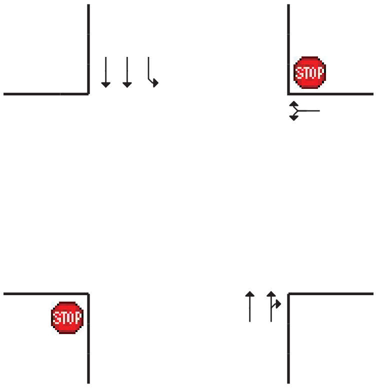
LOCATION: Fremont Blvd -- Parish Ave | **QC JOB #:** 14413534
CITY/STATE: Fremont, CA | **DATE:** Wed, May 10 2017

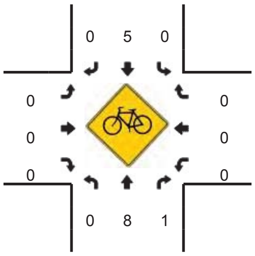


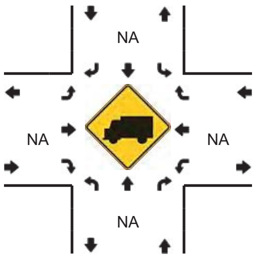
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

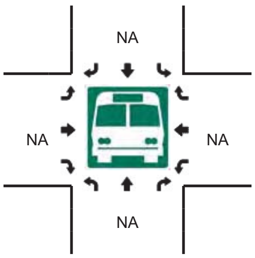












5-Min Count Period Beginning At	Fremont Blvd (Northbound)				Fremont Blvd (Southbound)				Parish Ave (Eastbound)				Parish Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	76	18	0	4	65	0	0	0	0	0	0	1	0	1	0	165	
4:05 PM	0	80	10	0	1	41	0	0	0	0	0	0	4	0	2	0	138	
4:10 PM	0	93	15	0	4	54	0	0	0	0	0	0	4	0	3	0	173	
4:15 PM	0	85	14	0	4	43	0	0	0	0	0	0	4	0	0	0	150	
4:20 PM	0	70	11	0	4	54	0	0	0	0	0	0	4	0	2	0	145	
4:25 PM	0	91	8	0	2	43	0	0	0	0	0	0	4	0	4	0	152	
4:30 PM	0	97	8	0	3	64	0	0	0	0	0	0	0	0	5	0	177	
4:35 PM	0	81	11	0	1	67	0	0	0	0	0	0	2	0	1	0	163	
4:40 PM	0	82	19	0	2	38	0	0	0	0	0	0	2	0	1	0	144	
4:45 PM	0	90	15	0	1	57	0	0	0	0	0	0	3	0	0	0	166	
4:50 PM	0	64	9	0	4	65	0	0	0	0	0	0	4	0	2	0	148	
4:55 PM	0	95	21	0	3	55	0	0	0	0	0	0	2	0	1	0	177	1898
5:00 PM	0	87	13	0	7	62	0	0	0	0	0	0	3	0	2	0	174	1907
5:05 PM	0	93	28	0	3	34	0	0	0	0	0	0	1	0	2	0	161	1930
5:10 PM	0	91	16	0	2	77	0	0	0	0	0	0	3	0	2	0	191	1948
5:15 PM	0	81	11	0	8	71	0	0	0	0	0	0	2	0	7	0	180	1978
5:20 PM	0	77	16	0	1	64	0	0	0	0	0	0	1	0	3	0	162	1995
5:25 PM	0	91	11	0	5	81	0	0	0	0	0	0	5	0	2	0	195	2038
5:30 PM	0	119	17	0	1	78	0	0	0	0	0	0	1	0	1	0	217	2078
5:35 PM	0	74	18	0	3	81	0	1	0	0	0	0	1	0	1	0	179	2094
5:40 PM	0	89	22	0	3	65	0	0	0	0	0	0	5	0	3	0	187	2137
5:45 PM	0	80	17	0	2	92	0	0	0	0	0	0	3	0	1	0	195	2166
5:50 PM	0	84	10	0	1	87	0	0	0	0	0	0	2	0	3	0	187	2205
5:55 PM	0	91	18	0	3	81	0	0	0	0	0	0	4	0	2	0	199	2227

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1136	184	0	36	960	0	4	0	0	0	0	28	0	16	0	2364
Heavy Trucks	0	16	0		0	12	0		0	0	0		0	0	0		28
Pedestrians		0				16				12				8			36
Bicycles	0	4	0		0	1	0		0	0	0		0	0	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2017 10:31 AM

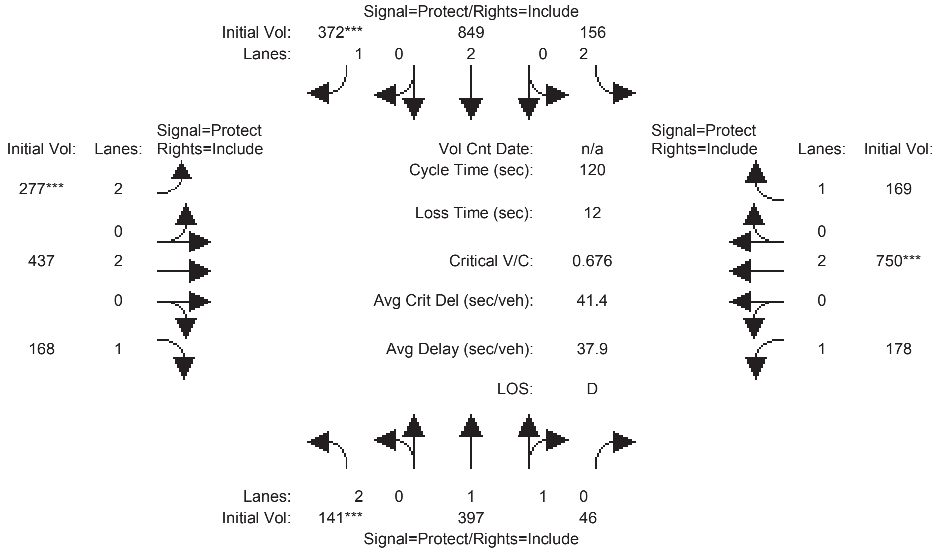
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B

LOS Calculations

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

Intersection #1: Fremont & Thornton



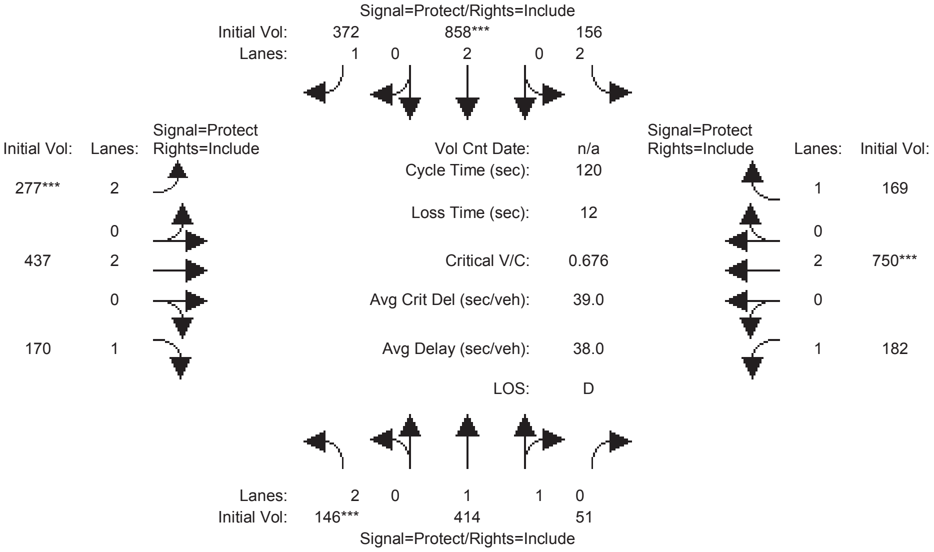
Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 12
Critical V/C: 0.676
Avg Crit Del (sec/veh): 41.4
Avg Delay (sec/veh): 37.9
LOS: D

```
Street Name:            Fremont Blvd                     Thornton Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     141  397    46   156  849   372   277  437   168   178  750   169
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  141  397    46   156  849   372   277  437   168   178  750   169
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   152  427    49   168  913   400   298  470   181   191  806   182
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  152  427    49   168  913   400   298  470   181   191  806   182
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  152  427    49   168  913   400   298  470   181   191  806   182
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.82  0.92 0.95  0.81  0.95 0.95  0.83
Lanes:       2.00 1.79  0.21  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3183   369  3502 3610  1558  3502 3610  1548  1805 3610  1568
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.13  0.13  0.05 0.25  0.26  0.09 0.13  0.12  0.11 0.22  0.12
Crit Moves:  ****                        ****  ****                   ****
Green Time:   7.7 39.2  39.2  14.0 45.6  45.6  15.1 30.2  30.2  24.6 39.7  39.7
Volume/Cap:  0.68 0.41  0.41  0.41 0.67  0.68  0.68 0.52  0.46  0.52 0.68  0.35
Delay/Veh:   62.9 31.6  31.6  49.8 32.2  34.2  54.3 39.2  38.9  43.7 36.2  30.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.9 31.6  31.6  49.8 32.2  34.2  54.3 39.2  38.9  43.7 36.2  30.8
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   14    14     7   27    23    13   15    11    13   25    10
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #1: Fremont & Thornton



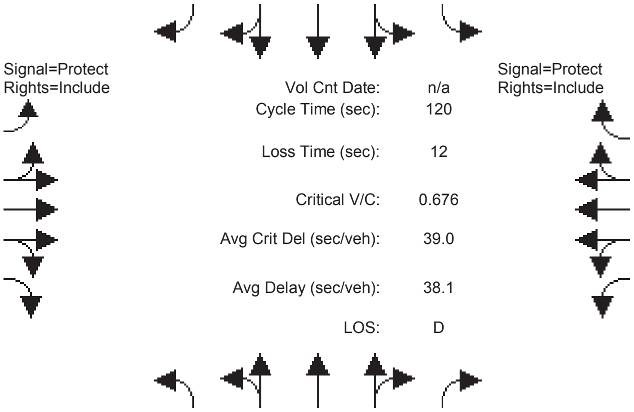
```
Street Name:           Fremont Blvd                      Thornton Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0 4.0    4.0   4.0 4.0    4.0   4.0 4.0    4.0   4.0 4.0    4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     146  414    51   156  858   372   277  437   170   182  750   169
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  146  414    51   156  858   372   277  437   170   182  750   169
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   157  445    55   168  923   400   298  470   183   196  806   182
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  157  445    55   168  923   400   298  470   183   196  806   182
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  157  445    55   168  923   400   298  470   183   196  806   182
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.84  0.92 0.95  0.83  0.95 0.95  0.84
Lanes:       2.00 1.78  0.22  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3162   390  3502 3610  1591  3502 3610  1569  1805 3610  1589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.14  0.14  0.05 0.26  0.25  0.09 0.13  0.12  0.11 0.22  0.11
Crit Moves:  ****                  ****        ****                  ****
Green Time:   8.0 39.8  39.8  13.5 45.3  45.3  15.1 29.9  29.9  24.9 39.6  39.6
Volume/Cap:  0.68 0.42  0.42  0.42 0.68  0.67  0.68 0.52  0.47  0.52 0.68  0.35
Delay/Veh:   62.5 31.5  31.5  50.3 32.6  33.9  54.3 39.5  39.2  43.6 36.2  30.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.5 31.5  31.5  50.3 32.6  33.9  54.3 39.5  39.2  43.6 36.2  30.8
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   14    14     7   27    23    13   15    12    13   25    10
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

Intersection #1: Fremont & Thornton

Signal=Protect/Rights=Include
Initial Vol: 372 857*** 159
Lanes: 1 0 2 0 2



Initial Vol: 277*** Lanes: 2 (Signal=Protect Rights=Include)
Lanes: 0
Initial Vol: 438 Lanes: 2
Lanes: 0
Initial Vol: 168 Lanes: 1

Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 12
Critical V/C: 0.676
Avg Crit Del (sec/veh): 39.0
Avg Delay (sec/veh): 38.1
LOS: D

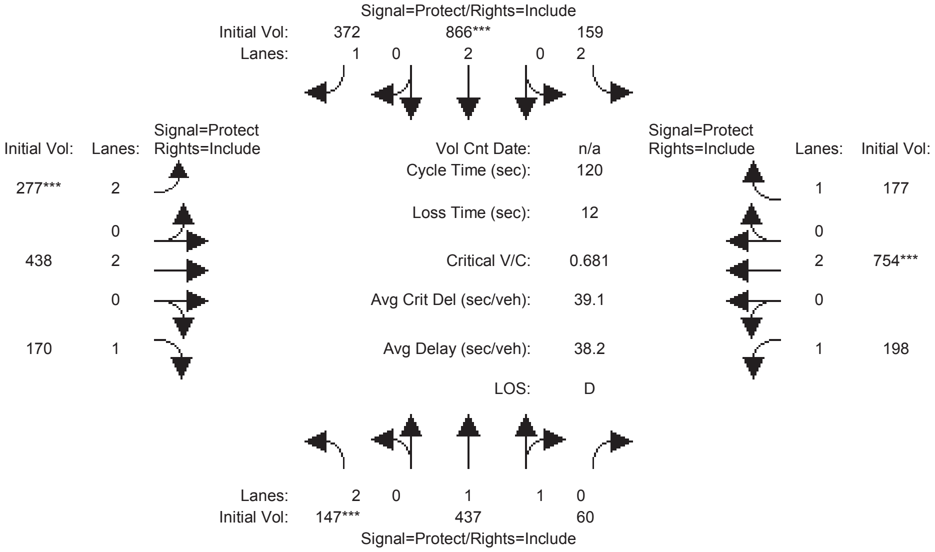
Signal=Protect Rights=Include
Lanes: 1 Initial Vol: 177
Lanes: 0
Lanes: 2 Initial Vol: 754***
Lanes: 0
Lanes: 1 Initial Vol: 194

Lanes: 2 0 1 1 0
Initial Vol: 142*** 420 55
Signal=Protect/Rights=Include

```
Street Name:            Fremont Blvd                      Thornton Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     142  420    55   159  857   372   277  438   168   194  754   177
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  142  420    55   159  857   372   277  438   168   194  754   177
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   153  452    59   171  922   400   298  471   181   209  811   190
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  153  452    59   171  922   400   298  471   181   209  811   190
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  153  452    59   171  922   400   298  471   181   209  811   190
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.84  0.92 0.95  0.83  0.95 0.95  0.84
Lanes:       2.00 1.77  0.23  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3138   411  3502 3610  1591  3502 3610  1569  1805 3610  1589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.14  0.14  0.05 0.26  0.25  0.09 0.13  0.12  0.12 0.22  0.12
Crit Moves:  ****                   ****        ****                   ****
Green Time:   7.7 39.6  39.6  13.4 45.3  45.3  15.1 29.1  29.1  25.8 39.9  39.9
Volume/Cap:  0.68 0.44  0.44  0.44 0.68  0.67  0.68 0.54  0.47  0.54 0.68  0.36
Delay/Veh:   62.8 31.7  31.7  50.5 32.6  33.9  54.3 40.2  39.8  43.3 36.1  30.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.8 31.7  31.7  50.5 32.6  33.9  54.3 40.2  39.8  43.3 36.1  30.8
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   15    15     7   27    23    13   16    12    14   25    10
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #1: Fremont & Thornton



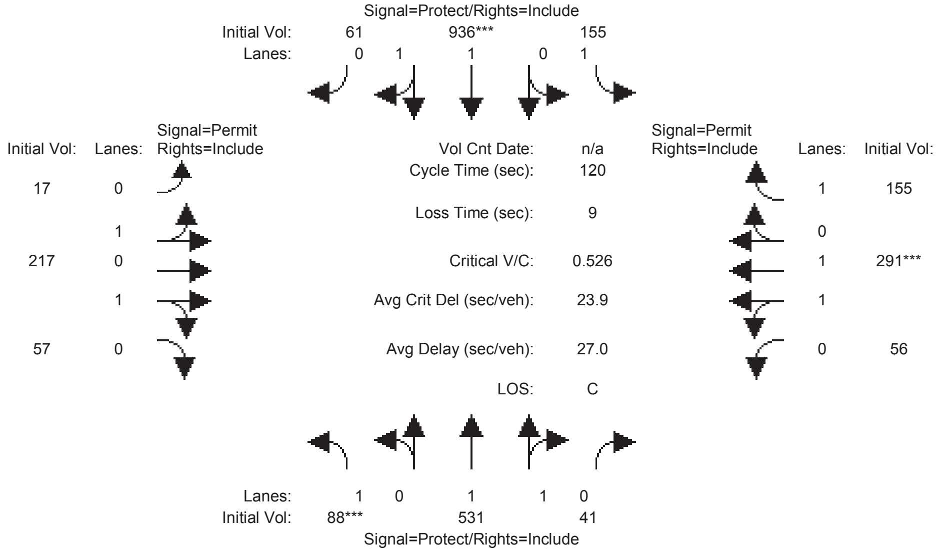
```
                        Signal=Protect/Rights=Include
        Initial Vol:    372         866***          159
              Lanes:      1     0     2       0     2

                 Signal=Protect                                      Signal=Protect
Initial Vol: Lanes: Rights=Include        Vol Cnt Date:     n/a      Rights=Include   Lanes:  Initial Vol:
                                     Cycle Time (sec):      120
  277***      2                                                                         1        177
                                      Loss Time (sec):       12
              0                                                                         0
  438         2                          Critical V/C:    0.681                         2        754***
              0                   Avg Crit Del (sec/veh):  39.1                         0
  170         1                     Avg Delay (sec/veh):   38.2                         1        198
                                                   LOS:      D

              Lanes:      2     0     1       1     0
        Initial Vol:  147***         437            60
                        Signal=Protect/Rights=Include
```

```
Street Name:              Fremont Blvd                      Thornton Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     147  437    60   159  866   372   277  438   170   198  754   177
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  147  437    60   159  866   372   277  438   170   198  754   177
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   158  470    65   171  931   400   298  471   183   213  811   190
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  158  470    65   171  931   400   298  471   183   213  811   190
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  158  470    65   171  931   400   298  471   183   213  811   190
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.84  0.92 0.95  0.83  0.95 0.95  0.84
Lanes:       2.00 1.76  0.24  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3117   428  3502 3610  1591  3502 3610  1569  1805 3610  1589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.15  0.15  0.05 0.26  0.25  0.09 0.13  0.12  0.12 0.22  0.12
Crit Moves:  ****                  ****        ****                   ****
Green Time:   8.0 40.4  40.4  13.1 45.5  45.5  15.0 28.7  28.7  25.9 39.6  39.6
Volume/Cap:  0.68 0.45  0.45  0.45 0.68  0.66  0.68 0.55  0.49  0.55 0.68  0.36
Delay/Veh:   62.8 31.4  31.4  50.9 32.6  33.7  54.6 40.7  40.3  43.4 36.4  31.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.8 31.4  31.4  50.9 32.6  33.7  54.6 40.7  40.3  43.4 36.4  31.0
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   15    15     7   27    23    13   16    12    14   25    10
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

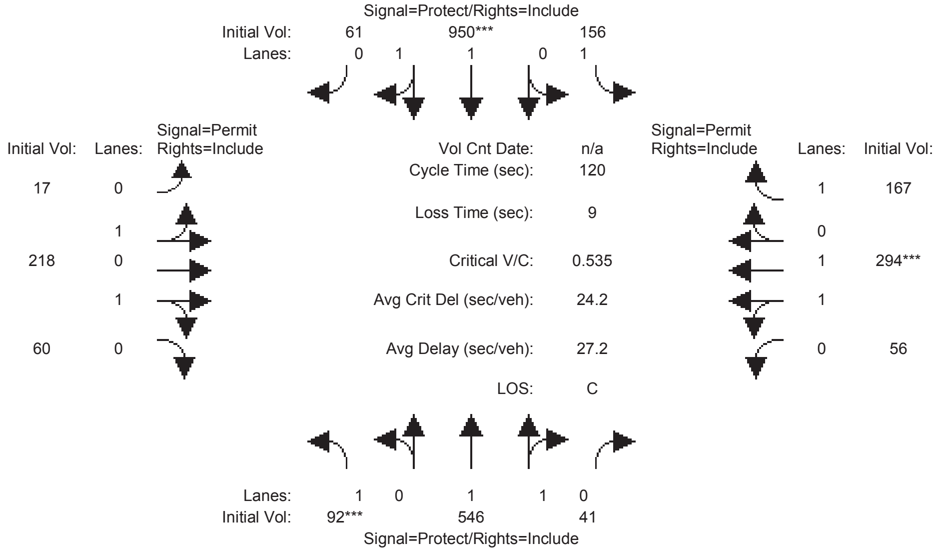
Intersection #2: Fremont & Peralta



```
Street Name:           Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      88  531    41   155  936    61    17  217    57    56  291   155
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   88  531    41   155  936    61    17  217    57    56  291   155
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:    96  577    45   168 1017    66    18  236    62    61  316   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   96  577    45   168 1017    66    18  236    62    61  316   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   96  577    45   168 1017    66    18  236    62    61  316   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.85 0.85  0.84  0.76 0.76  0.82
Lanes:       1.00 1.86  0.14  1.00 1.88  0.12  0.12 1.49  0.39  0.32 1.68  1.00
Final Sat.:  1805 3314   256  1805 3358   219   188 2399   630   467 2427  1567
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.17  0.17  0.09 0.30  0.30  0.10 0.10  0.10  0.13 0.13  0.11
Crit Moves:  ****                  ****                              ****
Green Time:  12.1 52.9  52.9  28.4 69.2  69.2  29.7 29.7  29.7  29.7 29.7  29.7
Volume/Cap:  0.53 0.40  0.40  0.40 0.53  0.53  0.40 0.40  0.40  0.53 0.53  0.43
Delay/Veh:   54.1 22.9  22.9  39.2 15.7  15.7  38.0 38.0  38.0  39.7 39.7  38.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.1 22.9  22.9  39.2 15.7  15.7  38.0 38.0  38.0  39.7 39.7  38.8
LOS by Move:    D    C     C     D    B     B     D    D     D     D    D     D
HCM2k95thQ:     8   15    15    10   23    23    10   10    10    13   13    11
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #2: Fremont & Peralta

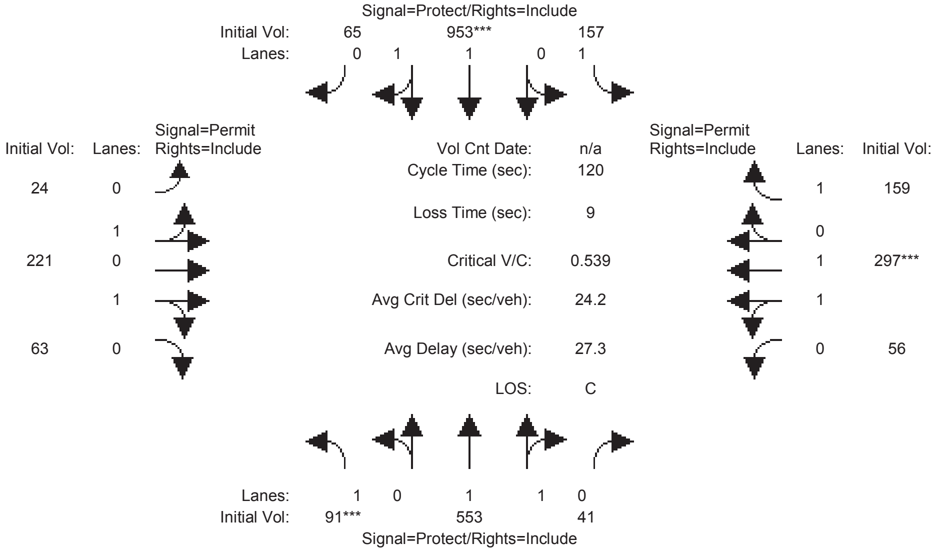


```
Street Name:           Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      92  546    41   156  950    61    17  218    60    56  294   167
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   92  546    41   156  950    61    17  218    60    56  294   167
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:   100  593    45   170 1033    66    18  237    65    61  320   182
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  100  593    45   170 1033    66    18  237    65    61  320   182
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  100  593    45   170 1033    66    18  237    65    61  320   182
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.85 0.85  0.84  0.76 0.76  0.84
Lanes:       1.00 1.86  0.14  1.00 1.88  0.12  0.11 1.48  0.41  0.32 1.68  1.00
Final Sat.:  1805 3324   250  1805 3362   216   185 2376   654   461 2422  1588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.18  0.09 0.31  0.31  0.10 0.10  0.10  0.13 0.13  0.11
Crit Moves:  ****                  ****                              ****
Green Time:  12.4 53.3  53.3  28.1 69.0  69.0  29.6 29.6  29.6  29.6 29.6  29.6
Volume/Cap:  0.53 0.40  0.40  0.40 0.53  0.53  0.40 0.40  0.40  0.53 0.53  0.46
Delay/Veh:   54.0 22.7  22.7  39.5 15.9  15.9  38.1 38.1  38.1  40.0 40.0  39.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.0 22.7  22.7  39.5 15.9  15.9  38.1 38.1  38.1  40.0 40.0  39.3
LOS by Move:    D    C     C     D    B     B     D    D     D     D    D     D
HCM2k95thQ:     8   15    15    11   23    23    10   10    10    13   13    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

Intersection #2: Fremont & Peralta



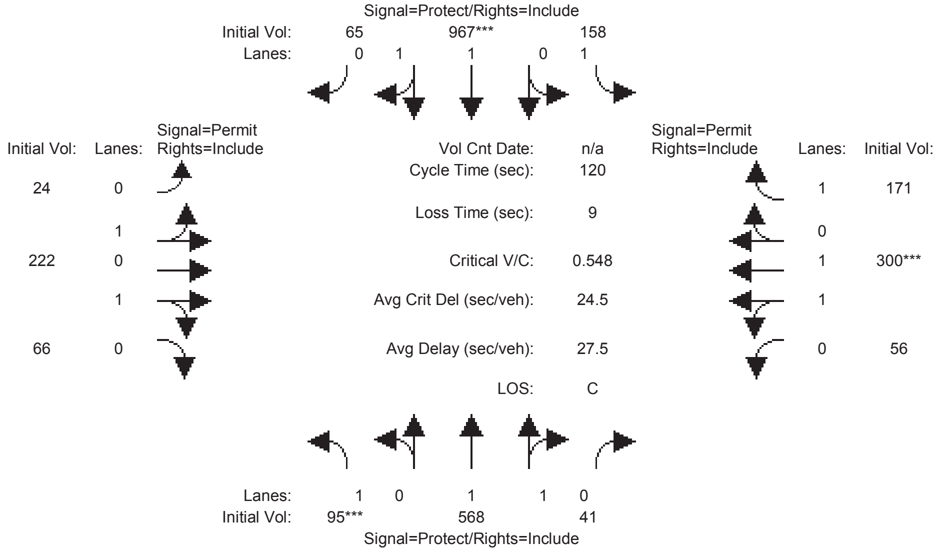
```
                          Signal=Protect/Rights=Include
               Initial Vol:     65        953***          157
                     Lanes:      0     1     1       0     1

                  Signal=Permit                                    Signal=Permit
Initial Vol:  Lanes:  Rights=Include       Vol Cnt Date:    n/a    Rights=Include     Lanes:  Initial Vol:
                                         Cycle Time (sec):  120
    24          0                                                                       1       159
                                          Loss Time (sec):    9
                1                                                                       0
   221          0                           Critical V/C:   0.539                       1       297***
                1                      Avg Crit Del (sec/veh):  24.2                    1
    63          0                        Avg Delay (sec/veh):  27.3                     0        56
                                                     LOS:     C

                     Lanes:      1     0     1       1     0
               Initial Vol:    91***        553            41
                          Signal=Protect/Rights=Include
```

```
Street Name:           Fremont Blvd                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6    4    6     6    4    4     4    4    4     4
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      91  553    41  157  953    65   24  221    63   56  297   159
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   91  553    41  157  953    65   24  221    63   56  297   159
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92
PHF Volume:    99  601    45  171 1036    71   26  240    68   61  323   173
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   99  601    45  171 1036    71   26  240    68   61  323   173
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   99  601    45  171 1036    71   26  240    68   61  323   173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.95 0.94  0.94 0.95 0.94  0.94 0.83 0.83  0.83 0.75 0.75  0.84
Lanes:       1.00 1.86  0.14 1.00 1.87  0.13 0.16 1.43  0.41 0.32 1.68  1.00
Final Sat.:  1805 3327   247 1805 3346   228  245 2257   643  453 2405  1588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.18  0.18 0.09 0.31  0.31 0.11 0.11  0.11 0.13 0.13  0.11
Crit Moves:  ****                ****                            ****
Green Time:  12.2 53.3  53.3 27.9 68.9  68.9 29.9 29.9  29.9 29.9 29.9  29.9
Volume/Cap:  0.54 0.41  0.41 0.41 0.54  0.54 0.43 0.43  0.43 0.54 0.54  0.44
Delay/Veh:   54.4 22.8  22.8 39.7 16.0  16.0 38.2 38.2  38.2 39.9 39.9  38.7
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  54.4 22.8  22.8 39.7 16.0  16.0 38.2 38.2  38.2 39.9 39.9  38.7
LOS by Move:    D    C     C    D    B     B    D    D     D    D    D     D
HCM2k95thQ:     8   16    16   11   23    23   11   11    11   13   13    11
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #2: Fremont & Peralta



Signal=Protect/Rights=Include
Initial Vol: 65 967*** 158
Lanes: 0 1 1 0 1

Signal=Permit Rights=Include
Initial Vol: 24 222 66
Lanes: 0 1 0 1 0

Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 9
Critical V/C: 0.548
Avg Crit Del (sec/veh): 24.5
Avg Delay (sec/veh): 27.5
LOS: C

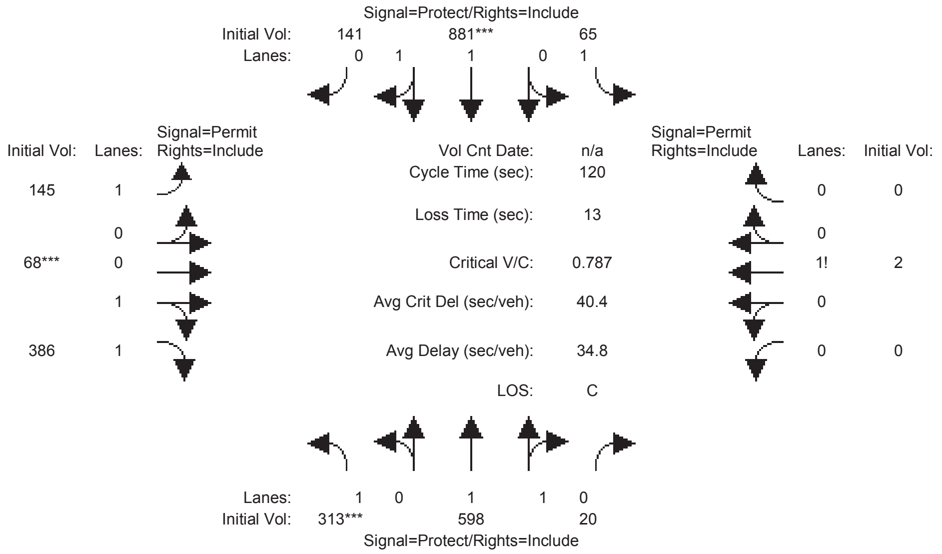
Signal=Permit Rights=Include
Lanes: 1 0 1 1 0
Initial Vol: 171 300*** 56

Lanes: 1 0 1 1 0
Initial Vol: 95*** 568 41
Signal=Protect/Rights=Include

```
Street Name:           Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95  568    41   158  967    65    24  222    66    56  300   171
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95  568    41   158  967    65    24  222    66    56  300   171
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:   103  617    45   172 1051    71    26  241    72    61  326   186
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  617    45   172 1051    71    26  241    72    61  326   186
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  617    45   172 1051    71    26  241    72    61  326   186
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.83 0.83  0.83  0.75 0.75  0.84
Lanes:       1.00 1.87  0.13  1.00 1.87  0.13  0.15 1.43  0.42  0.32 1.68  1.00
Final Sat.:  1805 3333   241  1805 3352   225   242 2241   666   448 2400  1588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.19  0.19  0.10 0.31  0.31  0.11 0.11  0.11  0.14 0.14  0.12
Crit Moves:  ****                  ****                              ****
Green Time:  12.5 53.7  53.7  27.6 68.7  68.7  29.8 29.8  29.8  29.8 29.8  29.8
Volume/Cap:  0.55 0.41  0.41  0.41 0.55  0.55  0.43 0.43  0.43  0.55 0.55  0.47
Delay/Veh:   54.4 22.7  22.7  40.0 16.3  16.3  38.4 38.4  38.4  40.2 40.2  39.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.4 22.7  22.7  40.0 16.3  16.3  38.4 38.4  38.4  40.2 40.2  39.3
LOS by Move:    D    C     C     D    B     B     D    D     D     D    D     D
HCM2k95thQ:     9   16    16    11   24    24    11   11    11    13   13    12
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

Intersection #3: Fremont & Central

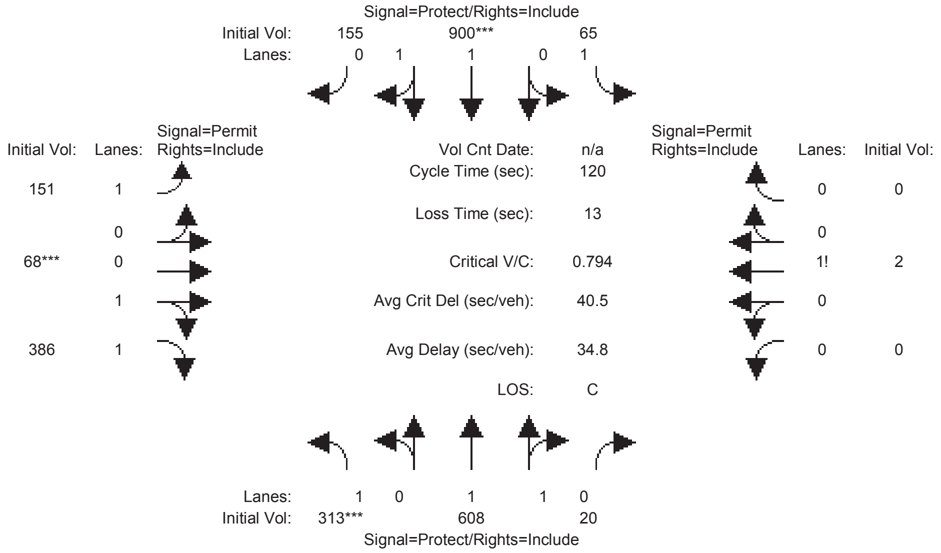


```
                      Signal=Protect/Rights=Include
          Initial Vol:    141        881***        65
                Lanes:     0     1     1     0     1

                 Signal=Permit                                    Signal=Permit
Initial Vol:  Lanes:  Rights=Include       Vol Cnt Date:     n/a    Rights=Include    Lanes:  Initial Vol:
                                       Cycle Time (sec):     120
   145          1                                                                       0          0
                                        Loss Time (sec):      13
                0                                                                       0
   68***        0                           Critical V/C:   0.787                       1!         2
                1                  Avg Crit Del (sec/veh):   40.4                       0
   386          1                      Avg Delay (sec/veh):   34.8                      0          0
                                                    LOS:      C

                Lanes:     1     0     1     1     0
          Initial Vol:  313***        598          20
                      Signal=Protect/Rights=Include
```

```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     313  598    20    65  881   141   145   68   386     0    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  313  598    20    65  881   141   145   68   386     0    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   360  687    23    75 1013   162   167   78   444     0    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  360  687    23    75 1013   162   167   78   444     0    2     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  360  687    23    75 1013   162   167   78   444     0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.93  0.92  0.75 0.87  0.80  1.00 1.00  1.00
Lanes:       1.00 1.94  0.06  1.00 1.72  0.28  1.00 0.28  1.72  0.00 1.00  0.00
Final Sat.:  1805 3476   116  1805 3042   487  1431  462  2622     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.20  0.20  0.04 0.33  0.33  0.12 0.17  0.17  0.00 0.00  0.00
Crit Moves:  ****                  ****             ****
Green Time:  30.4 67.1  67.1  14.1 50.8  50.8  25.8 25.8  25.8   0.0 25.8   0.0
Volume/Cap:  0.79 0.35  0.35  0.35 0.79  0.79  0.54 0.79  0.79  0.00 0.01  0.00
Delay/Veh:   50.6 14.6  14.6  49.8 32.8  32.8  43.8 50.7  50.7   0.0 37.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  50.6 14.6  14.6  49.8 32.8  32.8  43.8 50.7  50.7   0.0 37.0   0.0
LOS by Move:    D    B     B     D    C     C     D    D     D     A    D     A
HCM2k95thQ:    25   14    14     6   35    35    12   21    20     0    0     0
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #3: Fremont & Central

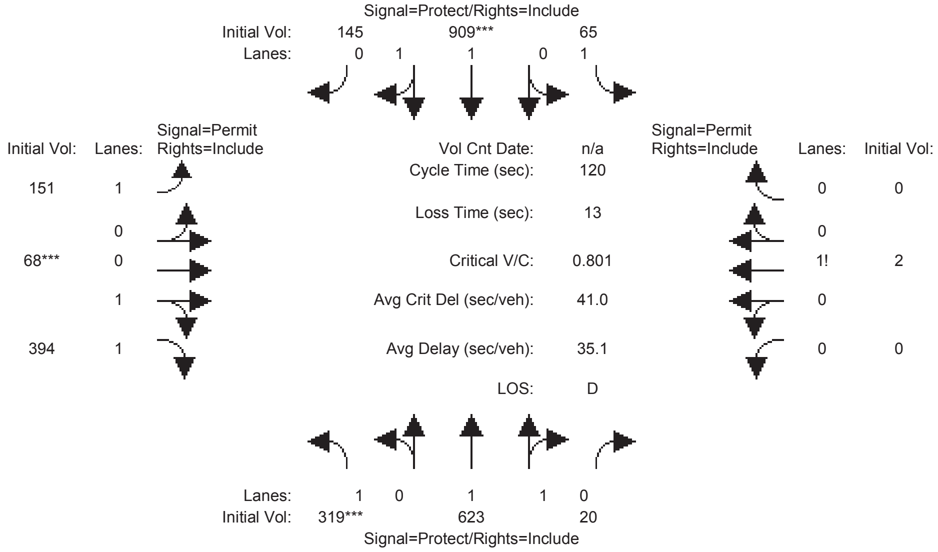


```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     313  608    20    65  900   155   151   68   386     0    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  313  608    20    65  900   155   151   68   386     0    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   360  699    23    75 1034   178   174   78   444     0    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  360  699    23    75 1034   178   174   78   444     0    2     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  360  699    23    75 1034   178   174   78   444     0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.93  0.92  0.75 0.87  0.82  1.00 1.00  1.00
Lanes:       1.00 1.94  0.06  1.00 1.70  0.30  1.00 0.29  1.71  0.00 1.00  0.00
Final Sat.:  1805 3478   114  1805 3009   518  1430  473  2687     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.20  0.20  0.04 0.34  0.34  0.12 0.17  0.17  0.00 0.00  0.00
Crit Moves:  ****                  ****             ****
Green Time:  30.1 68.0  68.0  14.0 51.9  51.9  24.9 24.9  24.9   0.0 24.9   0.0
Volume/Cap:  0.79 0.35  0.35  0.35 0.79  0.79  0.58 0.79  0.79  0.00 0.01  0.00
Delay/Veh:   51.4 14.2  14.2  49.9 32.4  32.4  45.8 51.7  51.7   0.0 37.7   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  51.4 14.2  14.2  49.9 32.4  32.4  45.8 51.7  51.7   0.0 37.7   0.0
LOS by Move:    D    B     B     D    C     C     D    D     D     A    D     A
HCM2k95thQ:    25   14    14     6   36    36    12   21    20     0    0     0
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

Intersection #3: Fremont & Central



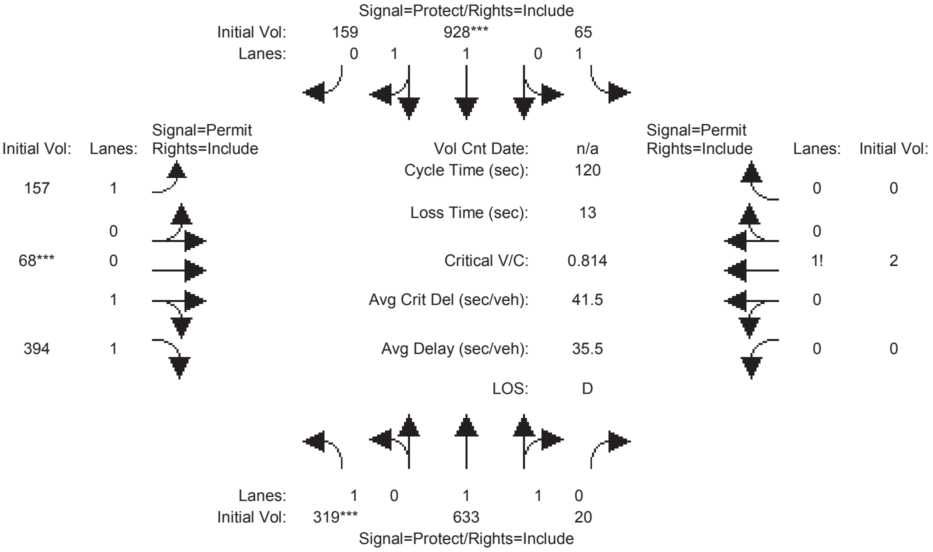
```
                              Signal=Protect/Rights=Include
                 Initial Vol:     145        909***         65
                       Lanes:       0    1      1      0     1

           Signal=Permit                                            Signal=Permit
Initial Vol:  Lanes:  Rights=Include       Vol Cnt Date:     n/a    Rights=Include    Lanes:  Initial Vol:
                                       Cycle Time (sec):     120
   151         1                                                                      0          0
                                        Loss Time (sec):      13
               0                                                                      0
  68***        0                           Critical V/C:   0.801                      1!         2
               1                   Avg Crit Del (sec/veh):    41.0                    0
   394         1                       Avg Delay (sec/veh):   35.1                    0          0
                                                    LOS:       D

                       Lanes:       1    0      1      1     0
                 Initial Vol:   319***          623          20
                              Signal=Protect/Rights=Include
```

```
Street Name:              Fremont Blvd                      Central Ave
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     319  623    20    65  909   145   151   68   394     0    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  319  623    20    65  909   145   151   68   394     0    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   367  716    23    75 1045   167   174   78   453     0    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  367  716    23    75 1045   167   174   78   453     0    2     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  367  716    23    75 1045   167   174   78   453     0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.93  0.92  0.75 0.87  0.82  1.00 1.00  1.00
Lanes:       1.00 1.94  0.06  1.00 1.72  0.28  1.00 0.28  1.72  0.00 1.00  0.00
Final Sat.:  1805 3480   112  1805 3045   486  1430  465  2693     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.21  0.21  0.04 0.34  0.34  0.12 0.17  0.17  0.00 0.00  0.00
Crit Moves:  ****                  ****             ****
Green Time:  30.4 68.1  68.1  13.7 51.4  51.4  25.2 25.2  25.2   0.0 25.2   0.0
Volume/Cap:  0.80 0.36  0.36  0.36 0.80  0.80  0.58 0.80  0.80  0.00 0.01  0.00
Delay/Veh:   51.7 14.2  14.2  50.2 33.0  33.0  45.4 52.0  52.0   0.0 37.5   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  51.7 14.2  14.2  50.2 33.0  33.0  45.4 52.0  52.0   0.0 37.5   0.0
LOS by Move:    D    B     B     D    C     C     D    D     D     A    D     A
HCM2k95thQ:    26   14    14     6   37    37    12   21    21     0    0     0
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #3: Fremont & Central

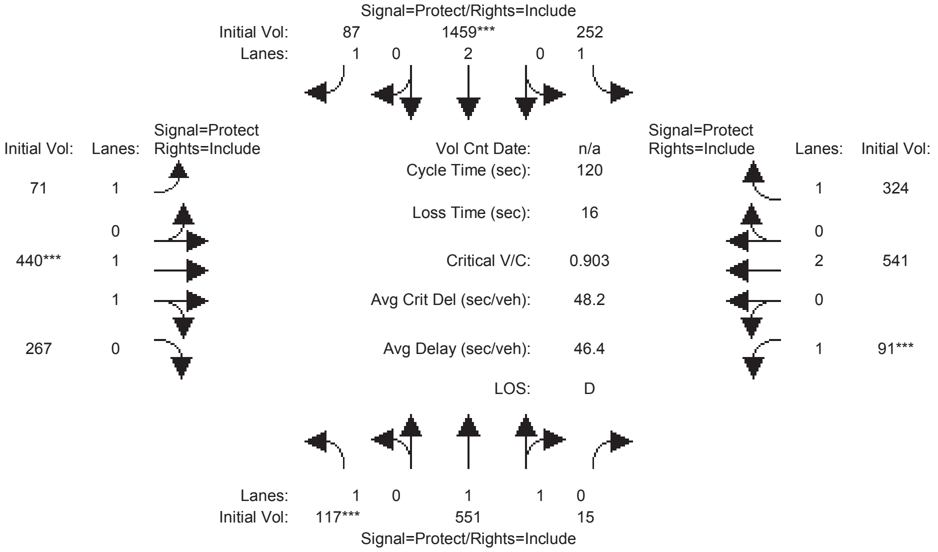


```
                         Signal=Protect/Rights=Include
              Initial Vol:    159        928***        65
                    Lanes:      0    1     1      0     1

            Signal=Permit                                      Signal=Permit
Initial Vol: Lanes: Rights=Include   Vol Cnt Date:      n/a    Rights=Include   Lanes: Initial Vol:
                                 Cycle Time (sec):      120
   157        1                                                                    0       0
                                  Loss Time (sec):       13
              0                                                                    0
   68***      0                      Critical V/C:    0.814                        1!      2
              1               Avg Crit Del (sec/veh):  41.5                        0
   394        1                    Avg Delay (sec/veh):  35.5                      0       0
                                              LOS:        D

                    Lanes:      1    0     1      1     0
              Initial Vol:  319***        633          20
                         Signal=Protect/Rights=Include
```

```
Street Name:            Fremont Blvd                        Central Ave
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     319  633    20    65  928   159   157   68   394     0    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  319  633    20    65  928   159   157   68   394     0    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   367  728    23    75 1067   183   180   78   453     0    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  367  728    23    75 1067   183   180   78   453     0    2     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  367  728    23    75 1067   183   180   78   453     0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.93  0.92  0.75 0.87  0.82  1.00 1.00  1.00
Lanes:       1.00 1.94  0.06  1.00 1.71  0.29  1.00 0.28  1.72  0.00 1.00  0.00
Final Sat.:  1805 3482   110  1805 3011   516  1430  464  2691     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.21  0.21  0.04 0.35  0.35  0.13 0.17  0.17  0.00 0.00  0.00
Crit Moves:  ****                  ****              ****
Green Time:  30.0 68.6  68.6  13.6 52.2  52.2  24.8 24.8  24.8   0.0 24.8   0.0
Volume/Cap:  0.81 0.37  0.37  0.37 0.81  0.81  0.61 0.81  0.81  0.00 0.01  0.00
Delay/Veh:   53.3 14.0  14.0  50.3 33.1  33.1  46.9 53.1  53.1   0.0 37.8   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  53.3 14.0  14.0  50.3 33.1  33.1  46.9 53.1  53.1   0.0 37.8   0.0
LOS by Move:    D    B     B     D    C     C     D    D     D     A    D     A
HCM2k95thQ:    26   15    15     6   38    38    13   22    21     0    0     0
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

Intersection #4: Paseo Padre & Peralta

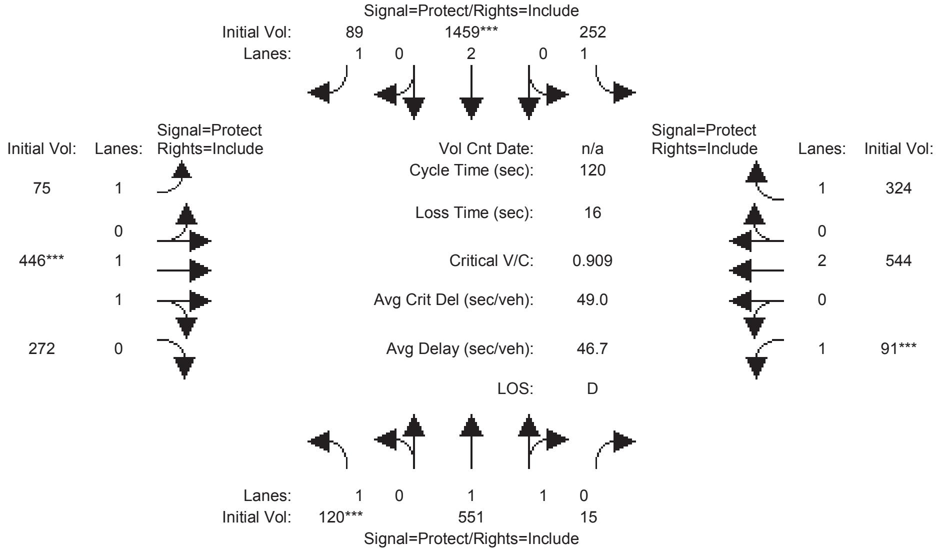


Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 16
Critical V/C: 0.903
Avg Crit Del (sec/veh): 48.2
Avg Delay (sec/veh): 46.4
LOS: D

```
Street Name:          Paseo Padre Pkwy                    Peralta Blvd
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     117  551    15   252 1459    87    71  440   267    91  541   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  117  551    15   252 1459    87    71  440   267    91  541   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   126  592    16   271 1569    94    76  473   287    98  582   348
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  126  592    16   271 1569    94    76  473   287    98  582   348
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  126  592    16   271 1569    94    76  473   287    98  582   348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.95  0.82  0.95 0.90  0.89  0.95 0.95  0.82
Lanes:       1.00 1.95  0.05  1.00 2.00  1.00  1.00 1.24  0.76  1.00 2.00  1.00
Final Sat.:  1805 3500    95  1805 3610  1556  1805 2110  1281  1805 3610  1565
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.17  0.15 0.43  0.06  0.04 0.22  0.22  0.05 0.16  0.22
Crit Moves:  ****                  ****              ****        ****
Green Time:   9.3 35.5  35.5  31.5 57.7  57.7   5.9 29.8  29.8   7.2 31.1  31.1
Volume/Cap:  0.90 0.57  0.57  0.57 0.90  0.12  0.86 0.90  0.90  0.90 0.62  0.86
Delay/Veh:  103.2 36.6  36.6  40.1 35.6  17.3 109.0 56.7  56.7 112.9 40.6  59.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 103.2 36.6  36.6  40.1 35.6  17.3 109.0 56.7  56.7 112.9 40.6  59.0
LOS by Move:    F    D     D     D    D     B     F    E     E     F    D     E
HCM2k95thQ:    14   19    19    17   50     4    10   31    31    12   19    26
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #4: Paseo Padre & Peralta



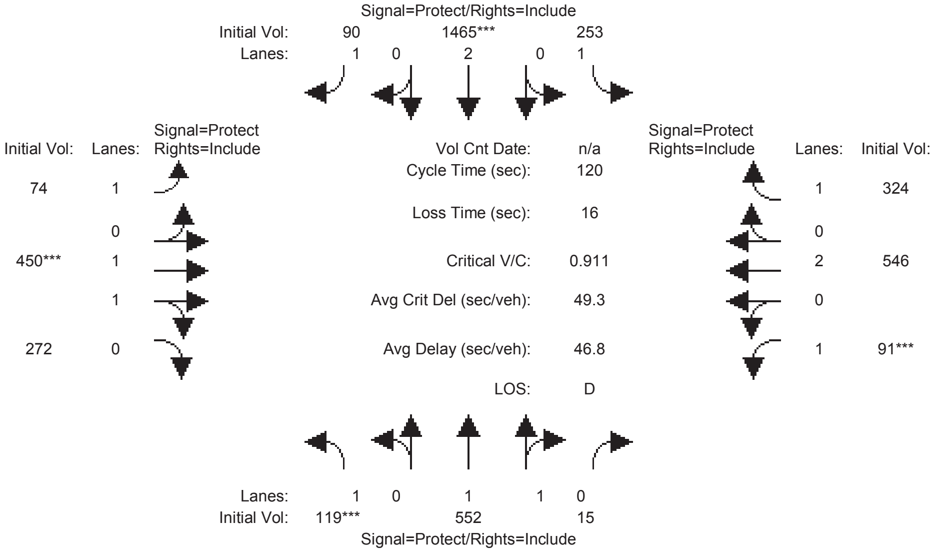
```
                          Signal=Protect/Rights=Include
              Initial Vol:    89       1459***      252
                    Lanes:     1    0     2      0    1

               Signal=Protect                                      Signal=Protect
Initial Vol:  Lanes:  Rights=Include      Vol Cnt Date:    n/a     Rights=Include    Lanes:  Initial Vol:
                                       Cycle Time (sec):   120
    75          1                                                                       1       324
                                        Loss Time (sec):    16
                0                                                                       0
  446***        1                          Critical V/C:  0.909                         2       544

                1                  Avg Crit Del (sec/veh):  49.0                        0

   272          0                       Avg Delay (sec/veh):  46.7                      1       91***

                                                    LOS:     D

                    Lanes:     1    0     1      1    0
              Initial Vol:  120***       551          15
                          Signal=Protect/Rights=Include
```

```
Street Name:         Paseo Padre Pkwy                     Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120  551    15   252 1459    89    75  446   272    91  544   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  120  551    15   252 1459    89    75  446   272    91  544   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   129  592    16   271 1569    96    81  480   292    98  585   348
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  129  592    16   271 1569    96    81  480   292    98  585   348
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  129  592    16   271 1569    96    81  480   292    98  585   348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.95  0.83  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       1.00 1.95  0.05  1.00 2.00  1.00  1.00 1.24  0.76  1.00 2.00  1.00
Final Sat.:  1805 3500    95  1805 3610  1586  1805 2110  1287  1805 3610  1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.17  0.15 0.43  0.06  0.04 0.23  0.23  0.05 0.16  0.22
Crit Moves:  ****                  ****               ****        ****
Green Time:   9.4 35.4  35.4  31.4 57.4  57.4   6.4 30.0  30.0   7.2 30.8  30.8
Volume/Cap:  0.91 0.57  0.57  0.57 0.91  0.13  0.84 0.91  0.91  0.91 0.63  0.84
Delay/Veh:  103.9 36.6  36.6  40.2 36.4  17.5 102.6 57.2  57.2 114.7 41.0  57.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 103.9 36.6  36.6  40.2 36.4  17.5 102.6 57.2  57.2 114.7 41.0  57.0
LOS by Move:    F    D     D     D    D     B     F    E     E     F    D     E
HCM2k95thQ:    14   19    19    17   51     4    10   31    31    12   20    26
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

Intersection #4: Paseo Padre & Peralta

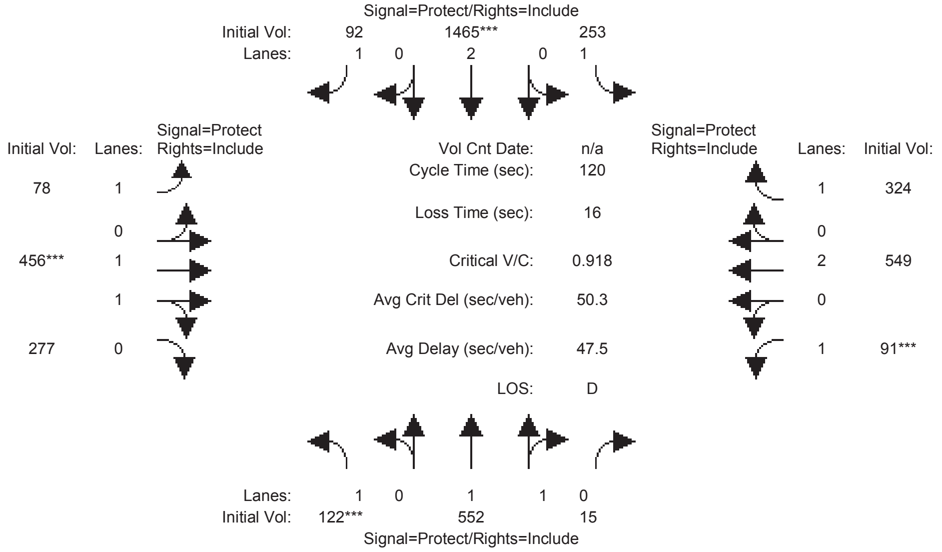


```
Street Name:         Paseo Padre Pkwy                     Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     119  552    15   253 1465    90    74  450   272    91  546   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  119  552    15   253 1465    90    74  450   272    91  546   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   128  594    16   272 1575    97    80  484   292    98  587   348
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  128  594    16   272 1575    97    80  484   292    98  587   348
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  128  594    16   272 1575    97    80  484   292    98  587   348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.95  0.83  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       1.00 1.95  0.05  1.00 2.00  1.00  1.00 1.24  0.76  1.00 2.00  1.00
Final Sat.:  1805 3500    95  1805 3610  1586  1805 2118  1280  1805 3610  1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.17  0.15 0.44  0.06  0.04 0.23  0.23  0.05 0.16  0.22
Crit Moves:  ****                   ****              ****        ****
Green Time:   9.3 35.4  35.4  31.4 57.4  57.4   6.3 30.1  30.1   7.1 30.9  30.9
Volume/Cap:  0.91 0.58  0.58  0.58 0.91  0.13  0.84 0.91  0.91  0.91 0.63  0.84
Delay/Veh:  105.1 36.7  36.7  40.2 36.6  17.4 102.2 57.5  57.5 115.6 40.9  56.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 105.1 36.7  36.7  40.2 36.6  17.4 102.2 57.5  57.5 115.6 40.9  56.5
LOS by Move:    F    D     D     D    D     B     F    E     E     F    D     E
HCM2k95thQ:    14   19    19    17   51     4    10   31    31    12   20    26
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #4: Paseo Padre & Peralta

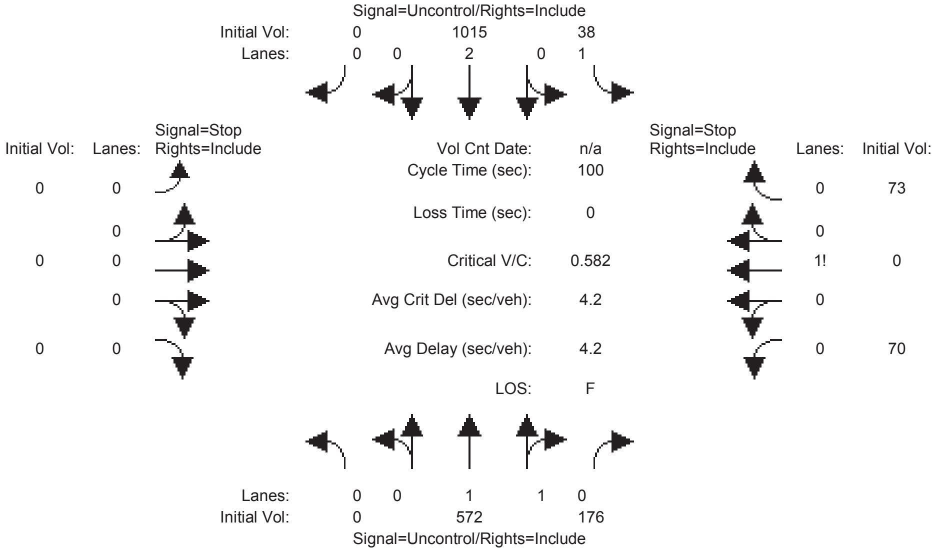


```
Street Name:          Paseo Padre Pkwy                  Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     122  552    15   253 1465    92    78  456   277    91  549   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  122  552    15   253 1465    92    78  456   277    91  549   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   131  594    16   272 1575    99    84  490   298    98  590   348
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  131  594    16   272 1575    99    84  490   298    98  590   348
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  131  594    16   272 1575    99    84  490   298    98  590   348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.95  0.83  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       1.00 1.95  0.05  1.00 2.00  1.00  1.00 1.24  0.76  1.00 2.00  1.00
Final Sat.:  1805 3500    95  1805 3610  1586  1805 2114  1284  1805 3610  1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.17  0.15 0.44  0.06  0.05 0.23  0.23  0.05 0.16  0.22
Crit Moves:  ****                  ****              ****        ****
Green Time:   9.5 35.2  35.2  31.3 57.1  57.1   6.6 30.3  30.3   7.1 30.8  30.8
Volume/Cap:  0.92 0.58  0.58  0.58 0.92  0.13  0.84 0.92  0.92  0.92 0.64  0.84
Delay/Veh:  106.0 36.8  36.8  40.4 37.6  17.7 101.1 58.2  58.2 117.6 41.1  57.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 106.0 36.8  36.8  40.4 37.6  17.7 101.1 58.2  58.2 117.6 41.1  57.0
LOS by Move:    F    D     D     D    D     B     F    E     E     F    D     E
HCM2k95thQ:    15   19    19    17   52     4    10   32    32    12   20    26
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing AM

Intersection #5: Fremont & Parish

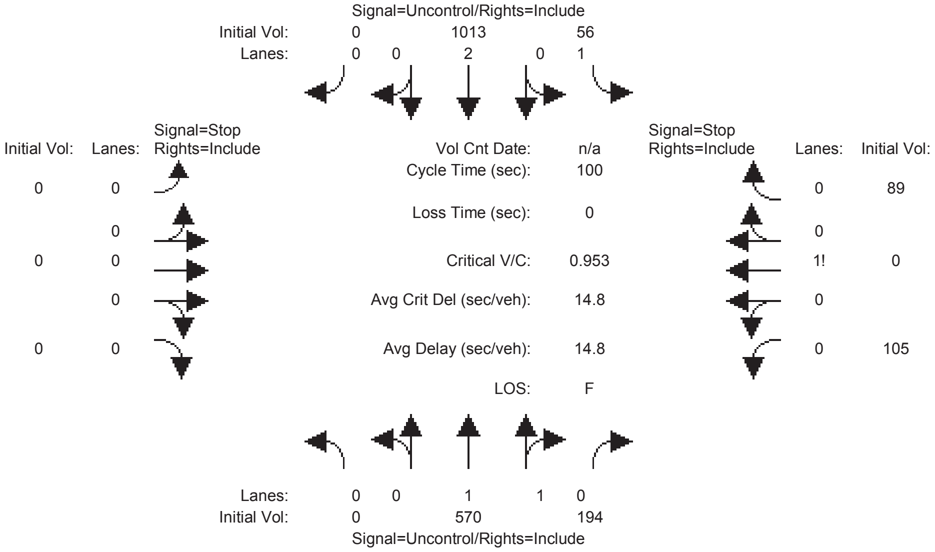


```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  572   176    38 1015     0     0    0     0    70    0    73
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  572   176    38 1015     0     0    0     0    70    0    73
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  615   189    41 1091     0     0    0     0    75    0    78
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  615   189    41 1091     0     0    0     0    75    0    78
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   811 xxxx xxxxx  xxxx xxxx xxxxx  1375 1890   409
Potent Cap.: xxxx xxxx xxxxx   824 xxxx xxxxx  xxxx xxxx xxxxx   139   71   597
Move Cap.:   xxxx xxxx xxxxx   819 xxxx xxxxx  xxxx xxxx xxxxx   129   67   594
Volume/Cap:  xxxx xxxx  xxxx  0.05 xxxx  xxxx  xxxx xxxx  xxxx  0.58 0.00  0.13
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  215 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  4.7 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 54.9 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             54.9
ApproachLOS:         *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #5: Fremont & Parish

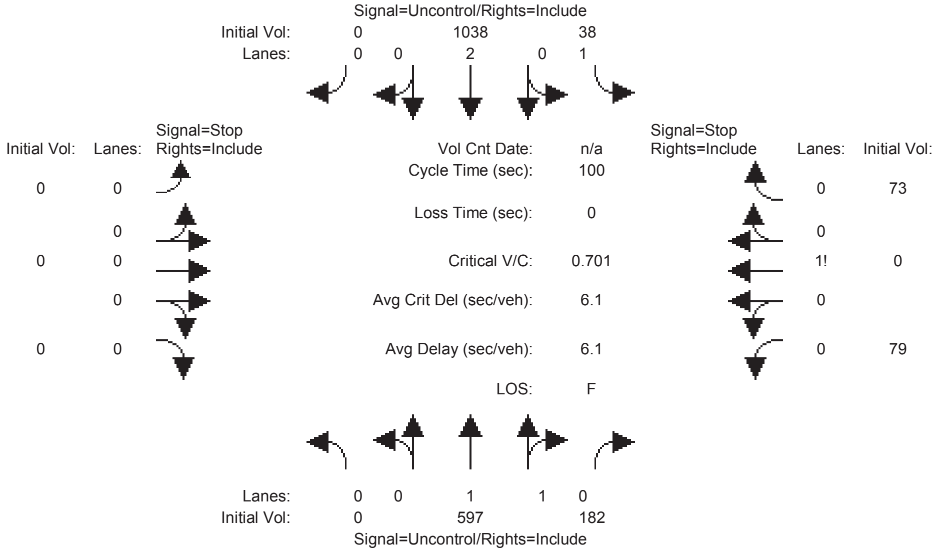


```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  570   194    56 1013     0     0    0     0   105    0    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  570   194    56 1013     0     0    0     0   105    0    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  613   209    60 1089     0     0    0     0   113    0    96
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  613   209    60 1089     0     0    0     0   113    0    96
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx    2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx    829 xxxx xxxxx  xxxx xxxx xxxxx  1420 1934   418
Potent Cap.: xxxx xxxx xxxxx    812 xxxx xxxxx  xxxx xxxx xxxxx   130   67   590
Move Cap.:   xxxx xxxx xxxxx    807 xxxx xxxxx  xxxx xxxx xxxxx   118   61   586
Volume/Cap:  xxxx xxxx  xxxx   0.07 xxxx  xxxx  xxxx xxxx  xxxx  0.95 0.00  0.16
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx    9.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *      A    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  187 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  152 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx            xxxxxx            xxxxxx            152.2
ApproachLOS:         *                 *                 *                 F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background AM

Intersection #5: Fremont & Parish



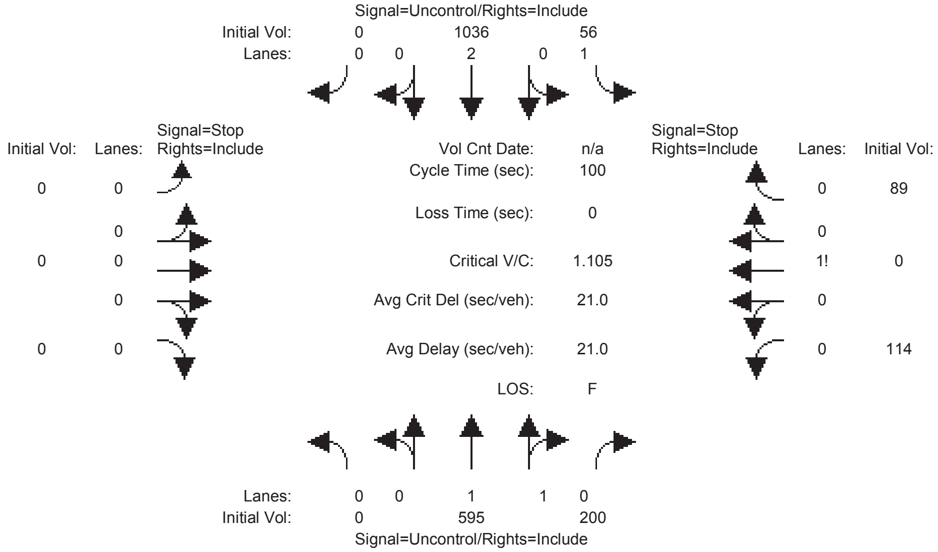
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.701
Avg Crit Del (sec/veh): 6.1
Avg Delay (sec/veh): 6.1
LOS: F

```
Street Name:           Fremont Blvd                        Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  597   182    38 1038     0     0    0     0    79    0    73
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  597   182    38 1038     0     0    0     0    79    0    73
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  642   196    41 1116     0     0    0     0    85    0    78
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  642   196    41 1116     0     0    0     0    85    0    78
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   845 xxxx xxxxx  xxxx xxxx xxxxx  1418 1945   426
Potent Cap.: xxxx xxxx xxxxx   801 xxxx xxxxx  xxxx xxxx xxxxx   130   66   583
Move Cap.:   xxxx xxxx xxxxx   796 xxxx xxxxx  xxxx xxxx xxxxx   121   62   579
Volume/Cap:  xxxx xxxx  xxxx  0.05 xxxx  xxxx  xxxx xxxx  xxxx  0.70 0.00  0.14
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  195 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  6.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 77.7 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:   xxxxxx           xxxxxx           xxxxxx             77.7
ApproachLOS:        *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #5: Fremont & Parish

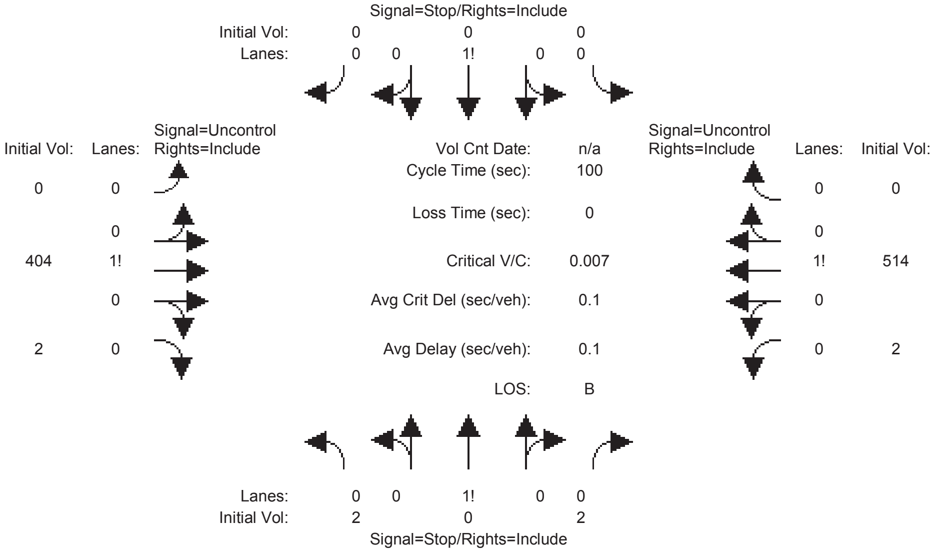


```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  595   200    56 1036     0     0    0     0   114    0    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  595   200    56 1036     0     0    0     0   114    0    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  640   215    60 1114     0     0    0     0   123    0    96
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  640   215    60 1114     0     0    0     0   123    0    96
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   862 xxxx xxxxx  xxxx xxxx xxxxx  1463 1989   434
Potent Cap.: xxxx xxxx xxxxx   789 xxxx xxxxx  xxxx xxxx xxxxx   122   62   575
Move Cap.:   xxxx xxxx xxxxx   784 xxxx xxxxx  xxxx xxxx xxxxx   111   57   572
Volume/Cap:  xxxx xxxx  xxxx  0.08 xxxx  xxxx  xxxx xxxx  xxxx  1.11 0.00  0.17
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  172 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.4 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  213 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            213.0
ApproachLOS:         *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing AM

Intersection #6: Jason & Peralta

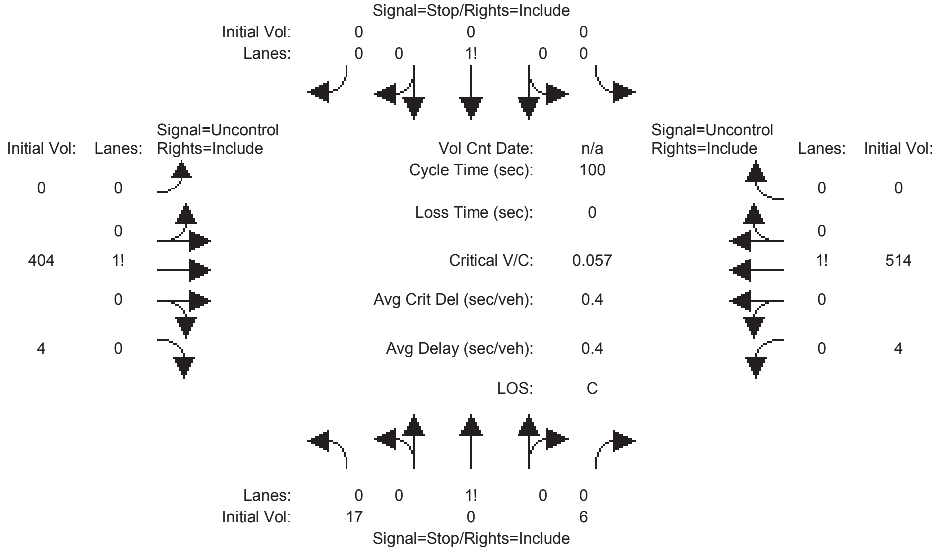


```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       2    0     2     0    0     0     0  404     2     2  514     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2    0     2     0    0     0     0  404     2     2  514     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     2    0     2     0    0     0     0  404     2     2  514     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    2    0     2     0    0     0     0  404     2     2  514     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  923  923   405   924  924   514  xxxx xxxx xxxxx   406 xxxx xxxxx
Potent Cap.:  302  272   650   252  271   564  xxxx xxxx xxxxx  1164 xxxx xxxxx
Move Cap.:    302  271   650   251  271   564  xxxx xxxx xxxxx  1164 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.00  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  412 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 13.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     *    *     *     A    *     *
ApproachDel:      13.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

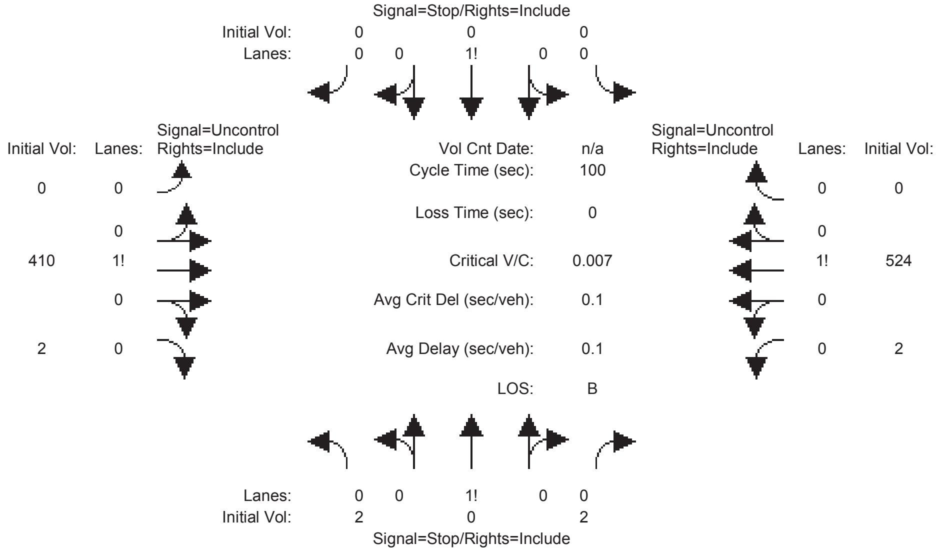
Intersection #6: Jason & Peralta



```
Street Name:                Jason Way                        Peralta Blvd
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       17    0     6     0    0     0     0  404     4     4  514     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    17    0     6     0    0     0     0  404     4     4  514     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     17    0     6     0    0     0     0  404     4     4  514     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    17    0     6     0    0     0     0  404     4     4  514     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:   3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   928  928   406   931  930   514  xxxx xxxx xxxxx   408 xxxx xxxxx
Potent Cap.:   300  270   649   249  269   564  xxxx xxxx xxxxx  1162 xxxx xxxxx
Move Cap.:     299  269   649   246  268   564  xxxx xxxx xxxxx  1162 xxxx xxxxx
Volume/Cap:   0.06 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  348 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 16.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:      *    C     *     *    *     *     *    *     *     A    *     *
ApproachDel:       16.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||--------------|
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background AM

Intersection #6: Jason & Peralta

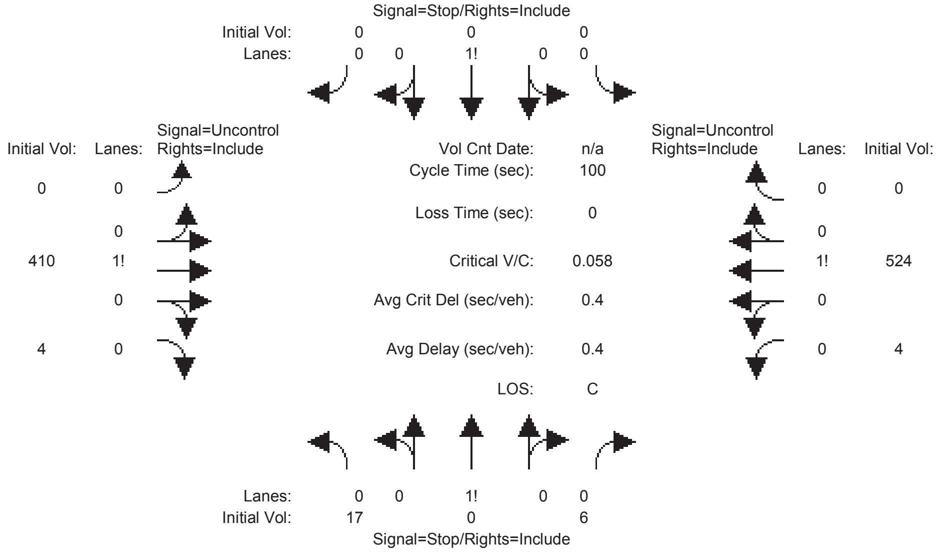


```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       2    0     2     0    0     0     0  410     2     2  524     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2    0     2     0    0     0     0  410     2     2  524     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     2    0     2     0    0     0     0  410     2     2  524     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    2    0     2     0    0     0     0  410     2     2  524     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  939  939   411   940  940   524  xxxx xxxx xxxxx   412 xxxx xxxxx
Potent Cap.:  295  266   645   246  266   557  xxxx xxxx xxxxx  1158 xxxx xxxxx
Move Cap.:    295  266   645   245  265   557  xxxx xxxx xxxxx  1158 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.00  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  405 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 14.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     *    *     *     A    *     *
ApproachDel:      14.0           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

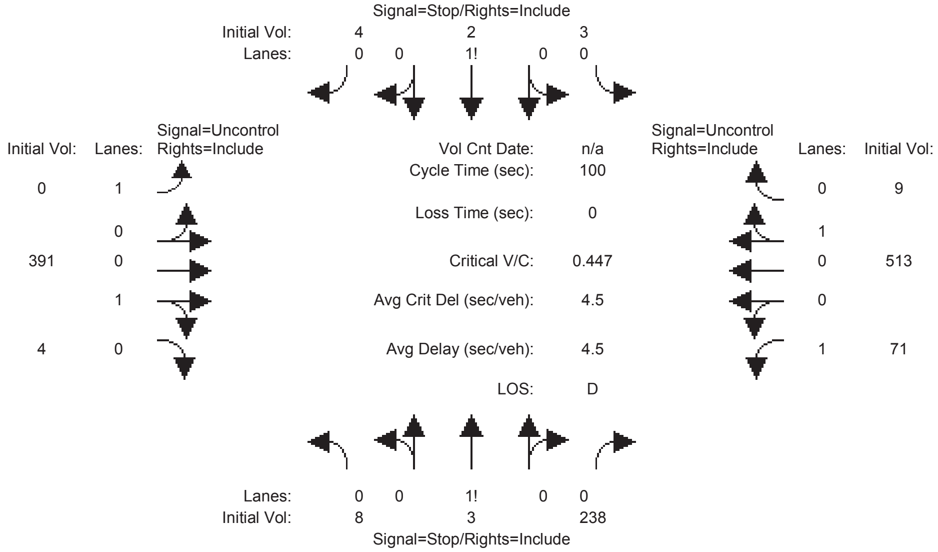
Intersection #6: Jason & Peralta



```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17    0     6     0    0     0     0  410     4     4  524     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17    0     6     0    0     0     0  410     4     4  524     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    17    0     6     0    0     0     0  410     4     4  524     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   17    0     6     0    0     0     0  410     4     4  524     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  944  944   412   947  946   524  xxxx xxxx xxxxx   414 xxxx xxxxx
Potent Cap.:  293  264   644   243  264   557  xxxx xxxx xxxxx  1156 xxxx xxxxx
Move Cap.:    293  263   644   240  263   557  xxxx xxxx xxxxx  1156 xxxx xxxxx
Volume/Cap:  0.06 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  341 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 16.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     A    *     *
ApproachDel:      16.3            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                 *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing AM

Intersection #7: Parish & Peralta



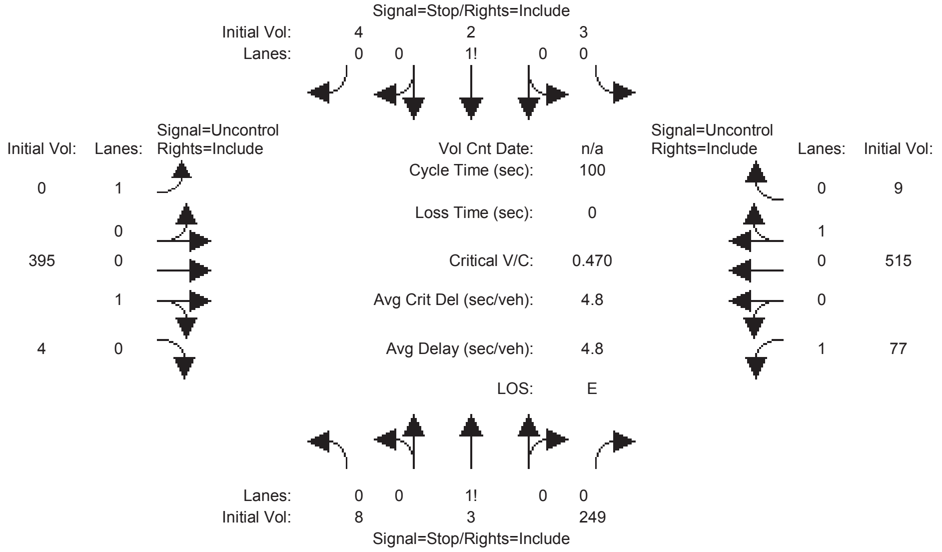
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.447
Avg Crit Del (sec/veh): 4.5
Avg Delay (sec/veh): 4.5
LOS: D

```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    3   238     3    2     4     0  391     4    71  513     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    3   238     3    2     4     0  391     4    71  513     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:     9    3   274     3    2     5     0  449     5    82  590    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    3   274     3    2     5     0  449     5    82  590    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1213 1215   452  1348 1212   595  xxxx xxxx xxxxx   454 xxxx xxxxx
Potent Cap.:  160  183   612   129  184   508  xxxx xxxx xxxxx  1117 xxxx xxxxx
Move Cap.:    148  170   612    66  170   508  xxxx xxxx xxxxx  1117 xxxx xxxxx
Volume/Cap:  0.06 0.02  0.45  0.05 0.01  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  541 xxxxx  xxxx  139 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.1 xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 18.9 xxxxx xxxxx 33.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    D     *     *    *     *     *    *     *
ApproachDel:      18.9             33.0           xxxxxx           xxxxxx
ApproachLOS:         C                D                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #7: Parish & Peralta

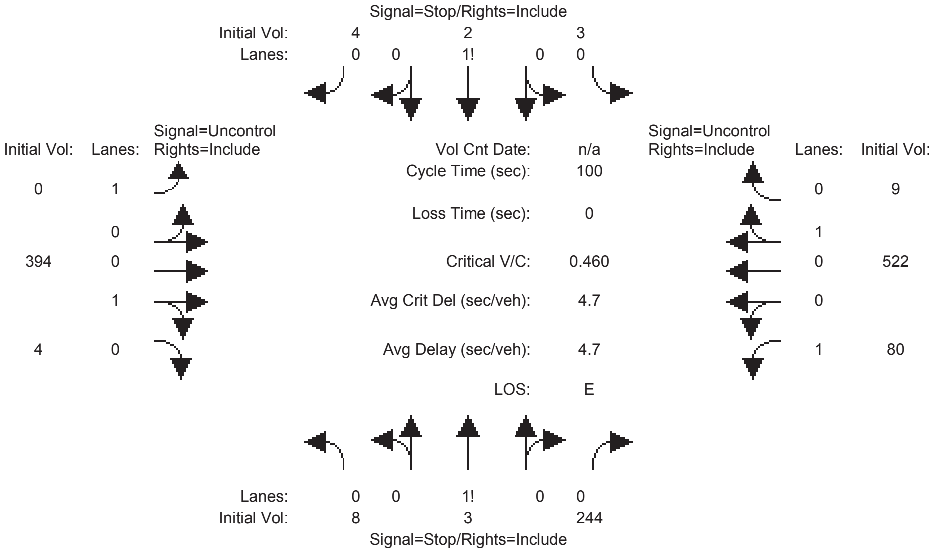


```
                               Signal=Stop/Rights=Include
                    Initial Vol:     4          2          3
                          Lanes:     0    0     1!    0    0

                  Signal=Uncontrol                                    Signal=Uncontrol
Initial Vol:  Lanes:  Rights=Include        Vol Cnt Date:       n/a   Rights=Include    Lanes:  Initial Vol:
                                         Cycle Time (sec):      100
     0          1                                                                     0        9
                                          Loss Time (sec):        0
                0                                                                     1
   395          0                            Critical V/C:    0.470                   0      515
                1                       Avg Crit Del (sec/veh):     4.8                   0
     4          0                         Avg Delay (sec/veh):     4.8                   1       77
                                                     LOS:         E

                          Lanes:     0    0     1!    0    0
                    Initial Vol:     8          3         249
                               Signal=Stop/Rights=Include
```

```
Street Name:              Parish Ave                          Peralta Blvd
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8    3   249     3    2     4     0  395     4    77  515     9
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    3   249     3    2     4     0  395     4    77  515     9
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:      9    3   286     3    2     5     0  454     5    89  592    10
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    3   286     3    2     5     0  454     5    89  592    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1234 1236   456  1375 1233   597  xxxx xxxx xxxxx   459 xxxx xxxxx
Potent Cap.:  155  178   608   124  178   507  xxxx xxxx xxxxx  1113 xxxx xxxxx
Move Cap.:    143  164   608    61  164   507  xxxx xxxx xxxxx  1113 xxxx xxxxx
Volume/Cap:  0.06 0.02  0.47  0.06 0.01  0.01  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  538 xxxxx  xxxx  129 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.4 xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 19.8 xxxxx xxxxx 35.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    E     *     *    *     *     *    *     *
ApproachDel:      19.8              35.2            xxxxxx            xxxxxx
ApproachLOS:         C                 E                 *                 *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background AM

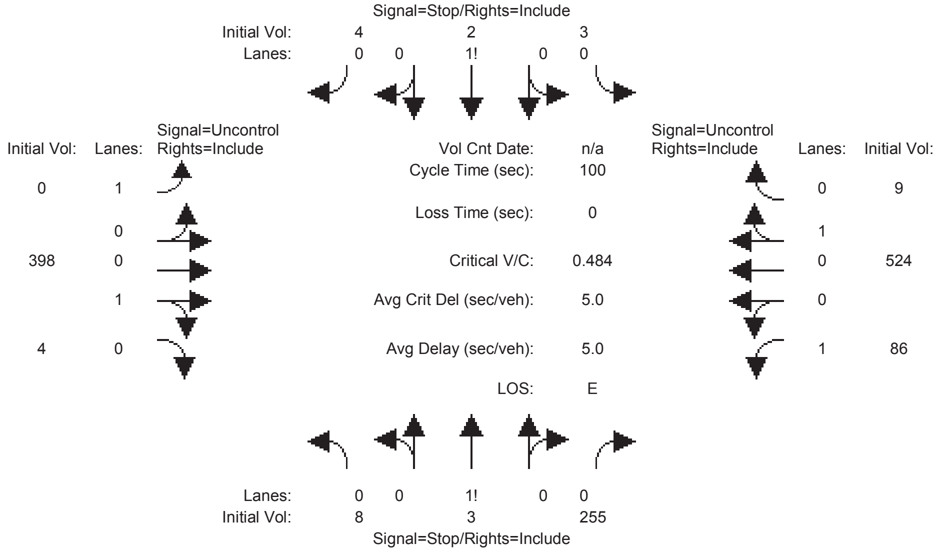
Intersection #7: Parish & Peralta



```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    3   244     3    2     4     0  394     4    80  522     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    3   244     3    2     4     0  394     4    80  522     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:     9    3   280     3    2     5     0  453     5    92  600    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    3   280     3    2     5     0  453     5    92  600    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1248 1249   455  1386 1247   605  xxxx xxxx xxxxx   457 xxxx xxxxx
Potent Cap.:  152  174   609   122  175   501  xxxx xxxx xxxxx  1114 xxxx xxxxx
Move Cap.:    139  160   609    61  161   501  xxxx xxxx xxxxx  1114 xxxx xxxxx
Volume/Cap:  0.07 0.02  0.46  0.06 0.01  0.01  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  535 xxxxx  xxxx  129 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.3 xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 19.6 xxxxx xxxxx 35.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    E     *     *    *     *     *    *     *
ApproachDel:      19.6             35.4           xxxxxx           xxxxxx
ApproachLOS:         C                E                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #7: Parish & Peralta



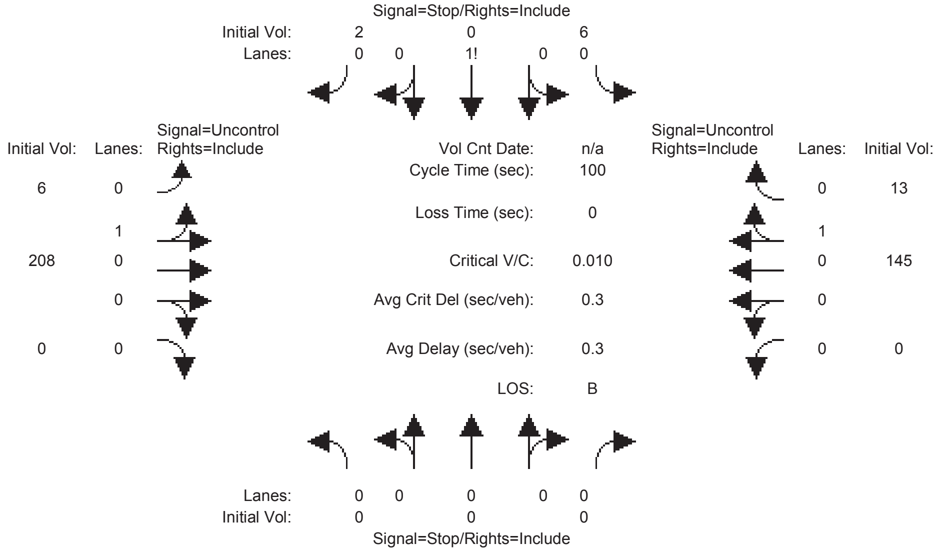
```
                         Signal=Stop/Rights=Include
             Initial Vol:      4         2         3
                   Lanes:    0    0      1!      0    0

                 Signal=Uncontrol                                     Signal=Uncontrol
Initial Vol:  Lanes:  Rights=Include       Vol Cnt Date:    n/a       Rights=Include      Lanes:   Initial Vol:
                                       Cycle Time (sec):    100
     0          1                                                                             0         9
                                        Loss Time (sec):      0
                0                                                                             1
   398          0                          Critical V/C:  0.484                               0       524
                1                    Avg Crit Del (sec/veh):    5.0                           0
     4          0                      Avg Delay (sec/veh):    5.0                            1        86
                                                    LOS:      E

                   Lanes:    0    0      1!      0    0
             Initial Vol:      8         3       255
                         Signal=Stop/Rights=Include
```

```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    3   255     3    2     4     0  398     4    86  524     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    3   255     3    2     4     0  398     4    86  524     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:     9    3   293     3    2     5     0  457     5    99  602    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    3   293     3    2     5     0  457     5    99  602    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1268 1270   460  1413 1267   607  xxxx xxxx xxxxx   462 xxxx xxxxx
Potent Cap.:  147  170   606   117  170   500  xxxx xxxx xxxxx  1110 xxxx xxxxx
Move Cap.:    134  154   606    55  155   500  xxxx xxxx xxxxx  1110 xxxx xxxxx
Volume/Cap:  0.07 0.02  0.48  0.06 0.01  0.01  xxxx xxxx  xxxx  0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  532 xxxxx  xxxx  119 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.6 xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 20.5 xxxxx xxxxx 38.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    E     *     *    *     *     *    *     *
ApproachDel:      20.5             38.0           xxxxxx           xxxxxx
ApproachLOS:         C                E                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing AM

Intersection #8: Jason & Parish



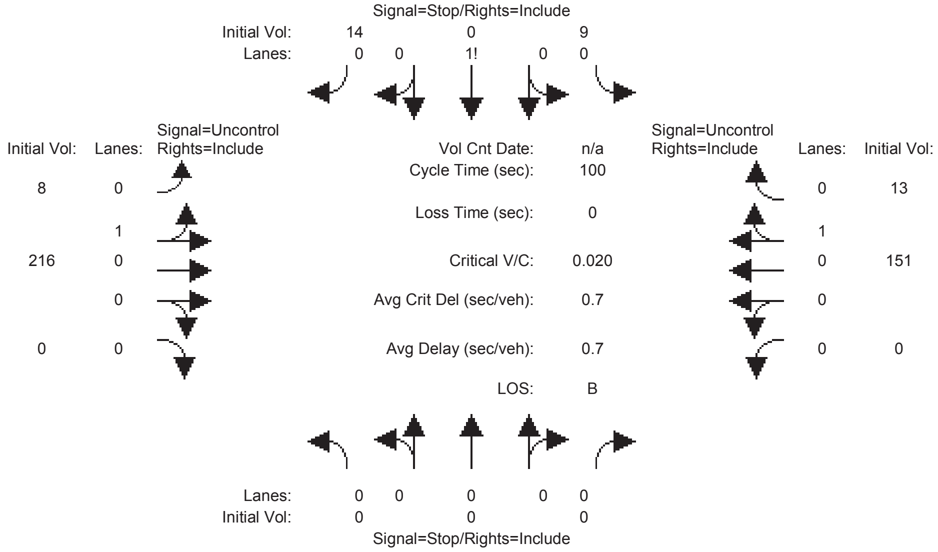
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.010
Avg Crit Del (sec/veh): 0.3
Avg Delay (sec/veh): 0.3
LOS: B

```
Street Name:                Jason Way                          Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     6    0     2     6  208     0     0  145    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     6    0     2     6  208     0     0  145    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     6    0     2     6  208     0     0  145    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     6    0     2     6  208     0     0  145    13
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   372  372   152   158 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   633  562   900  1434 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   631  559   900  1434 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  682 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            10.3            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #8: Jason & Parish



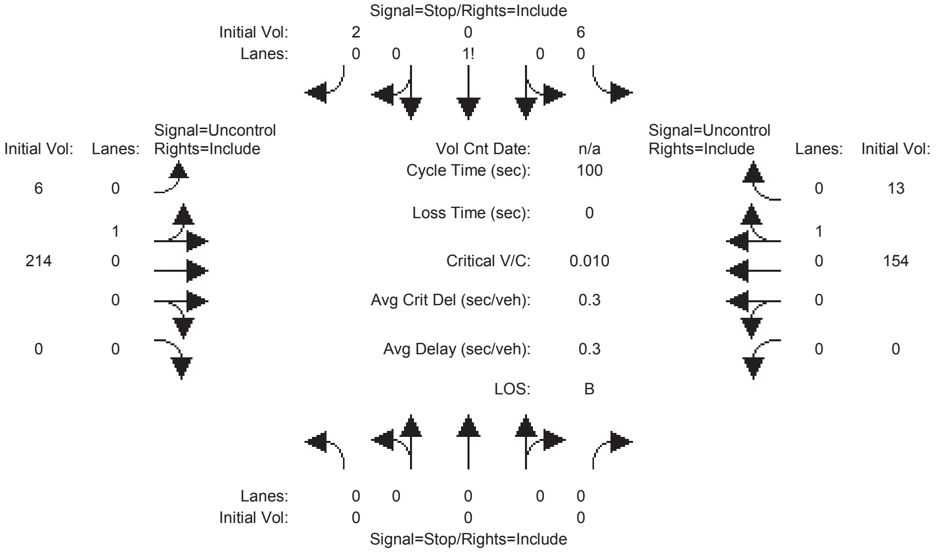
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.020
Avg Crit Del (sec/veh): 0.7
Avg Delay (sec/veh): 0.7
LOS: B

```
Street Name:                Jason Way                         Parish Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     9    0    14     8  216     0     0  151    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     9    0    14     8  216     0     0  151    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82
PHF Volume:      0    0     0    11    0    17    10  263     0     0  184    16
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    11    0    17    10  263     0     0  184    16
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   475  475   192   200 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   552  491   855  1384 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   549  488   855  1384 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.02  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  702 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:     xxxxxx            10.3             xxxxxx           xxxxxx
ApproachLOS:        *                B                 *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background AM

Intersection #8: Jason & Parish

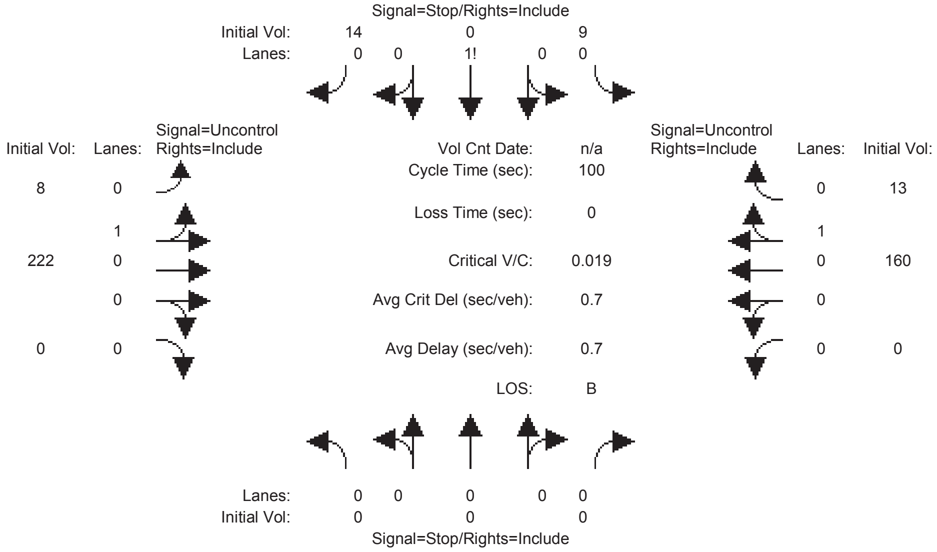


```
Street Name:            Jason Way                         Parish Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     6    0     2     6  214     0     0  154    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     6    0     2     6  214     0     0  154    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     6    0     2     6  214     0     0  154    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     6    0     2     6  214     0     0  154    13
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   387  387   161   167 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   621  551   890  1423 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   619  549   890  1423 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  670 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx             10.4           xxxxxx           xxxxxx
ApproachLOS:         *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #8: Jason & Parish

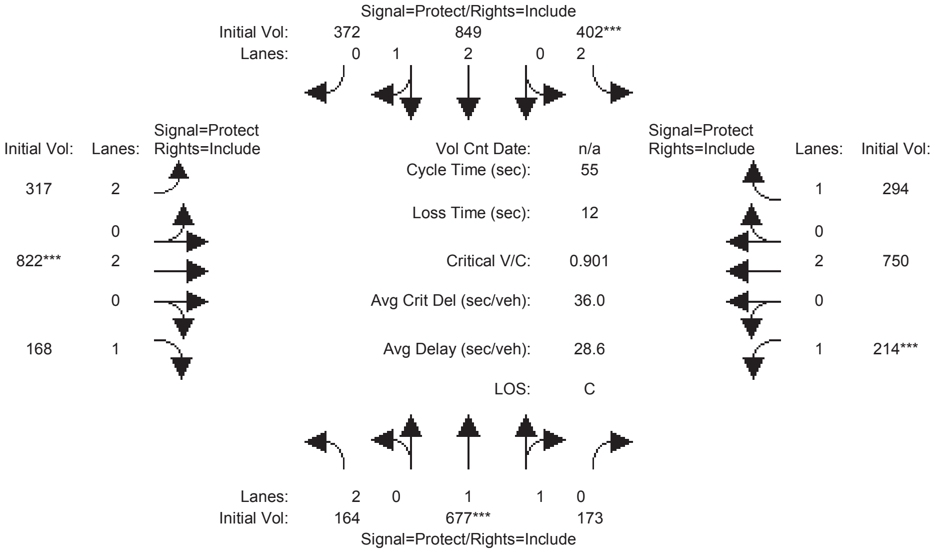


Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.019
Avg Crit Del (sec/veh): 0.7
Avg Delay (sec/veh): 0.7
LOS: B

```
Street Name:            Jason Way                         Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     9    0    14     8  222     0     0  160    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     9    0    14     8  222     0     0  160    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85
PHF Volume:     0    0     0    11    0    16     9  261     0     0  188    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    11    0    16     9  261     0     0  188    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   476  476   196   204 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   551  491   851  1380 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   548  487   851  1380 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.02  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  700 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            10.4            xxxxxx           xxxxxx
ApproachLOS:         *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative AM

Intersection #1: Fremont & Thornton



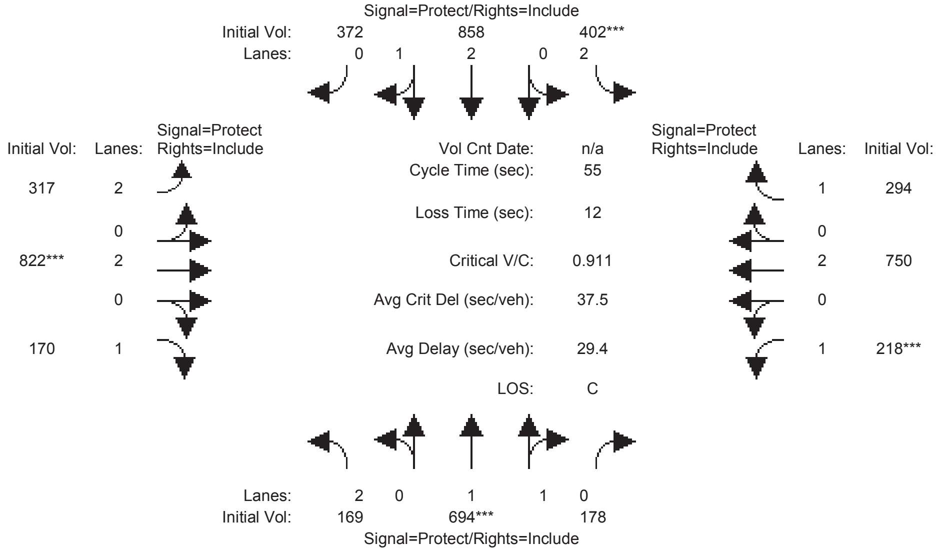
```
                            Signal=Protect/Rights=Include
              Initial Vol:    372        849        402***
                    Lanes:      0    1     2     0    2

                 Signal=Protect                                 Signal=Protect
Initial Vol: Lanes: Rights=Include       Vol Cnt Date:   n/a    Rights=Include   Lanes:  Initial Vol:
                                       Cycle Time (sec):  55
   317        2                                                                    1       294
                                       Loss Time (sec):   12
              0                                                                    0
 822***       2                          Critical V/C:   0.901                     2       750
              0                    Avg Crit Del (sec/veh): 36.0                    0
   168        1                      Avg Delay (sec/veh):  28.6                    1       214***
                                                  LOS:     C

                    Lanes:      2    0     1     1    0
              Initial Vol:    164        677***     173
                            Signal=Protect/Rights=Include
```

```
Street Name:              Fremont Blvd                      Thornton Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     164  677   173   402  849   372   317  822   168   214  750   294
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  164  677   173   402  849   372   317  822   168   214  750   294
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   164  677   173   402  849   372   317  822   168   214  750   294
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  164  677   173   402  849   372   317  822   168   214  750   294
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  164  677   173   402  849   372   317  822   168   214  750   294
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.92  0.92  0.92 0.87  0.87  0.92 0.95  0.84  0.95 0.95  0.84
Lanes:       2.00 1.59  0.41  2.00 2.08  0.92  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 2786   712  3502 3439  1507  3502 3610  1596  1805 3610  1603
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.24  0.24  0.11 0.25  0.25  0.09 0.23  0.11  0.12 0.21  0.18
Crit Moves:       ****        ****                   ****        ****
Green Time:   5.0 14.8  14.8   7.0 16.9  16.9   6.4 13.9  13.9   7.2 14.7  14.7
Volume/Cap:  0.52 0.90  0.90  0.90 0.80  0.80  0.78 0.90  0.42  0.90 0.78  0.68
Delay/Veh:   25.4 30.9  30.9  44.6 20.8  20.8  32.6 31.7  17.9  56.7 22.6  22.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  25.4 30.9  30.9  44.6 20.8  20.8  32.6 31.7  17.9  56.7 22.6  22.6
LOS by Move:    C    C     C     D    C     C     C    C     B     E    C     C
HCM2k95thQ:     4   21    21    13   18    18    10   21     6    14   16    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #1: Fremont & Thornton



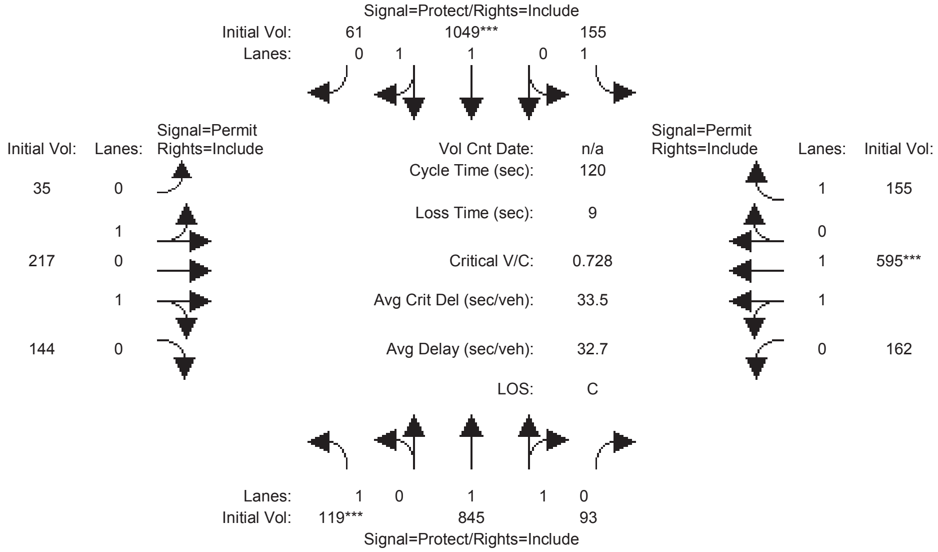
Vol Cnt Date: n/a
Cycle Time (sec): 55
Loss Time (sec): 12
Critical V/C: 0.911
Avg Crit Del (sec/veh): 37.5
Avg Delay (sec/veh): 29.4
LOS: C

```
Street Name:              Fremont Blvd                       Thornton Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169  694   178   402  858   372   317  822   170   218  750   294
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169  694   178   402  858   372   317  822   170   218  750   294
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169  694   178   402  858   372   317  822   170   218  750   294
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169  694   178   402  858   372   317  822   170   218  750   294
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169  694   178   402  858   372   317  822   170   218  750   294
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.92  0.92  0.92 0.87  0.87  0.92 0.95  0.84  0.95 0.95  0.84
Lanes:       2.00 1.59  0.41  2.00 2.09  0.91  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 2784   714  3502 3453  1497  3502 3610  1596  1805 3610  1603
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.25  0.25  0.11 0.25  0.25  0.09 0.23  0.11  0.12 0.21  0.18
Crit Moves:       ****        ****                   ****        ****
Green Time:   5.0 15.0  15.0   6.9 17.0  17.0   6.4 13.7  13.7   7.3 14.6  14.6
Volume/Cap:  0.53 0.91  0.91  0.91 0.80  0.80  0.78 0.91  0.43  0.91 0.78  0.69
Delay/Veh:   25.7 32.0  32.0  46.6 20.7  20.7  33.0 33.3  18.1  58.8 22.8  22.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  25.7 32.0  32.0  46.6 20.7  20.7  33.0 33.3  18.1  58.8 22.8  22.8
LOS by Move:    C    C     C     D    C     C     C    C     B     E    C     C
HCM2k95thQ:     5   22    22    14   18    18    10   21     6    14   16    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative AM

Intersection #2: Fremont & Peralta



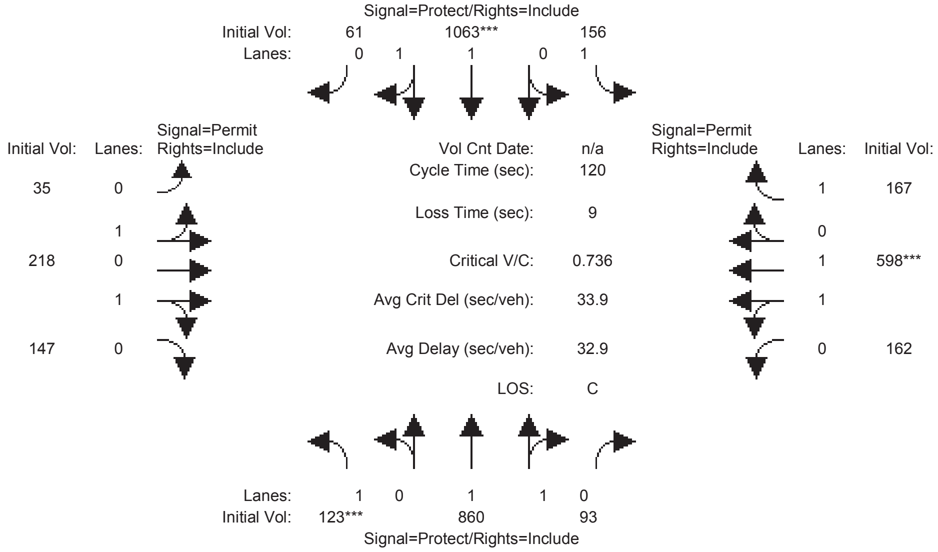
```
                         Signal=Protect/Rights=Include
               Initial Vol:     61        1049***        155
                    Lanes:       0    1       1      0    1

              Signal=Permit                                      Signal=Permit
Initial Vol:  Lanes:  Rights=Include      Vol Cnt Date:    n/a   Rights=Include    Lanes:  Initial Vol:
                                      Cycle Time (sec):    120
    35          0                                                                    1        155
                                       Loss Time (sec):      9
                1                                                                    0
   217          0                         Critical V/C:  0.728                       1        595***
                1                 Avg Crit Del (sec/veh):   33.5                     1
   144          0                     Avg Delay (sec/veh):   32.7                    0        162
                                                   LOS:      C

                    Lanes:       1    0       1      1    0
               Initial Vol:   119***         845         93
                         Signal=Protect/Rights=Include
```

```
Street Name:          Fremont Blvd                             Peralta Blvd
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      119  845    93   155 1049    61    35  217   144   162  595   155
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  119  845    93   155 1049    61    35  217   144   162  595   155
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   119  845    93   155 1049    61    35  217   144   162  595   155
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  119  845    93   155 1049    61    35  217   144   162  595   155
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  119  845    93   155 1049    61    35  217   144   162  595   155
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.74 0.74  0.74  0.67 0.67  0.84
Lanes:       1.00 1.80  0.20  1.00 1.89  0.11  0.18 1.09  0.73  0.43 1.57  1.00
Final Sat.:  1805 3203   353  1805 3384   197   249 1543  1024   545 2003  1598
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.26  0.26  0.09 0.31  0.31  0.14 0.14  0.14  0.30 0.30  0.10
Crit Moves:  ****                  ****                              ****
Green Time:  10.9 46.8  46.8  15.2 51.1  51.1  49.0 49.0  49.0  49.0 49.0  49.0
Volume/Cap:  0.73 0.68  0.68  0.68 0.73  0.73  0.34 0.34  0.34  0.73 0.73  0.24
Delay/Veh:   68.3 31.7  31.7  57.9 30.4  30.4  24.6 24.6  24.6  32.5 32.5  23.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  68.3 31.7  31.7  57.9 30.4  30.4  24.6 24.6  24.6  32.5 32.5  23.4
LOS by Move:    E    C     C     E    C     C     C    C     C     C    C     C
HCM2k95thQ:    11   27    27    13   32    32    10   10    10    24   24     7
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #2: Fremont & Peralta

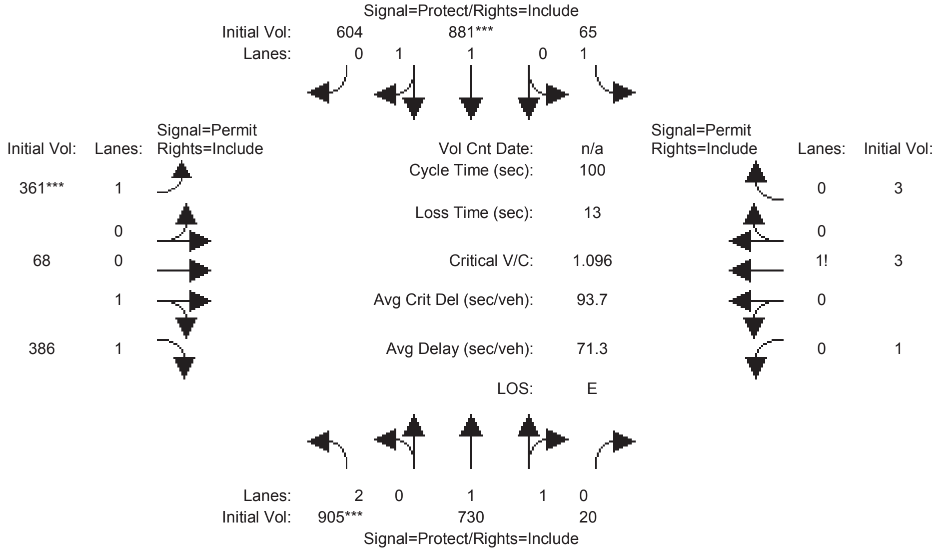


```
                         Signal=Protect/Rights=Include
           Initial Vol:     61      1063***      156
                 Lanes:      0    1     1     0    1

                Signal=Permit                                    Signal=Permit
Initial Vol: Lanes: Rights=Include     Vol Cnt Date:     n/a     Rights=Include   Lanes:  Initial Vol:
                                  Cycle Time (sec):     120
   35          0                                                                    1        167
                                   Loss Time (sec):       9
               1                                                                    0
  218          0                      Critical V/C:   0.736                         1        598***
               1               Avg Crit Del (sec/veh):   33.9                       1
  147          0                   Avg Delay (sec/veh):   32.9                      0        162
                                               LOS:       C

                 Lanes:      1    0     1     1    0
           Initial Vol:   123***       860        93
                         Signal=Protect/Rights=Include
```

```
Street Name:            Fremont Blvd                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     123  860    93   156 1063    61    35  218   147   162  598   167
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  123  860    93   156 1063    61    35  218   147   162  598   167
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   123  860    93   156 1063    61    35  218   147   162  598   167
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  123  860    93   156 1063    61    35  218   147   162  598   167
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  123  860    93   156 1063    61    35  218   147   162  598   167
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.74 0.74  0.74  0.67 0.67  0.84
Lanes:       1.00 1.80  0.20  1.00 1.89  0.11  0.17 1.09  0.74  0.43 1.57  1.00
Final Sat.:  1805 3209   347  1805 3387   194   246 1529  1031   542 1999  1598
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.27  0.27  0.09 0.31  0.31  0.14 0.14  0.14  0.30 0.30  0.10
Crit Moves:  ****                  ****                              ****
Green Time:  11.1 47.1  47.1  15.2 51.1  51.1  48.7 48.7  48.7  48.7 48.7  48.7
Volume/Cap:  0.74 0.68  0.68  0.68 0.74  0.74  0.35 0.35  0.35  0.74 0.74  0.26
Delay/Veh:   68.7 31.7  31.7  58.4 30.7  30.7  24.9 24.9  24.9  33.0 33.0  23.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  68.7 31.7  31.7  58.4 30.7  30.7  24.9 24.9  24.9  33.0 33.0  23.8
LOS by Move:    E    C     C     E    C     C     C    C     C     C    C     C
HCM2k95thQ:    12   28    28    13   33    33    11   11    10    24   24     8
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative AM

Intersection #3: Fremont & Central



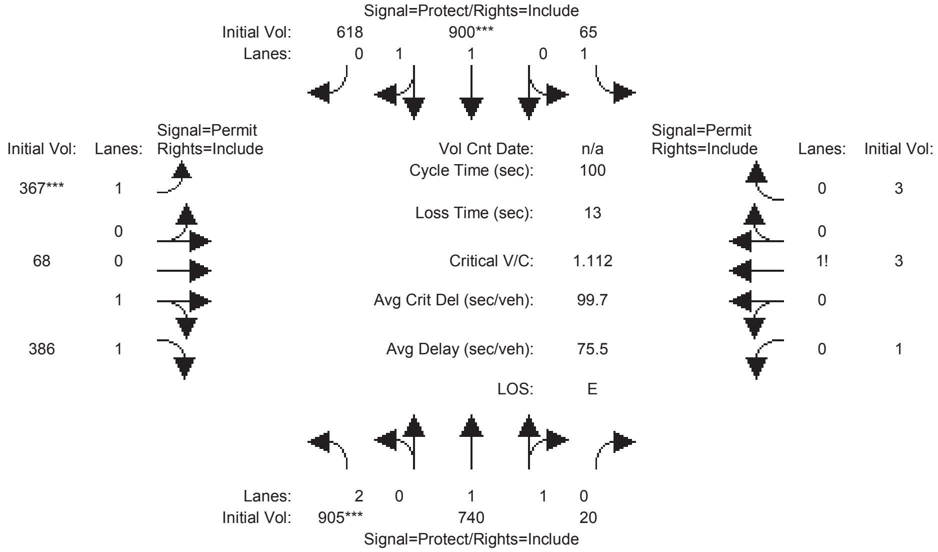
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 13
Critical V/C: 1.096
Avg Crit Del (sec/veh): 93.7
Avg Delay (sec/veh): 71.3
LOS: E

```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     905  730    20    65  881   604   361   68   386     1    3     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  905  730    20    65  881   604   361   68   386     1    3     3
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   905  730    20    65  881   604   361   68   386     1    3     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  905  730    20    65  881   604   361   68   386     1    3     3
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  905  730    20    65  881   604   361   68   386     1    3     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  0.95  0.95 0.89  0.87  0.75 0.87  0.83  0.92 0.93  0.92
Lanes:       2.00 1.95  0.05  1.00 1.18  0.82  1.00 0.29  1.71  0.14 0.43  0.43
Final Sat.:  3502 3500    96  1805 1993  1367  1425  476  2701   250  751   751
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.21  0.21  0.04 0.44  0.44  0.25 0.14  0.14  0.00 0.00  0.00
Crit Moves:  ****                  ****        ****
Green Time:  23.6 54.5  54.5   9.4 40.3  40.3  23.1 23.1  23.1  23.1 23.1  23.1
Volume/Cap:  1.10 0.38  0.38  0.38 1.10  1.10  1.10 0.62  0.62  0.02 0.02  0.02
Delay/Veh:   99.1 13.2  13.2  44.0 85.0  85.0 116.3 36.1  36.1  29.7 29.7  29.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  99.1 13.2  13.2  44.0 85.0  85.0 116.3 36.1  36.1  29.7 29.7  29.7
LOS by Move:    F    B     B     D    F     F     F    D     D     C    C     C
HCM2k95thQ:    39   13    13     5   58    57    32   14    14     0    0     0
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #3: Fremont & Central



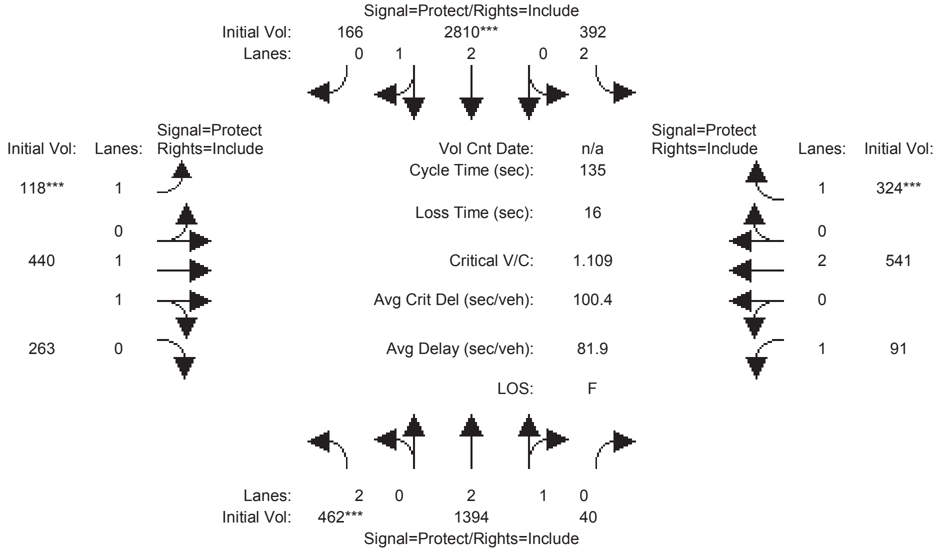
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 13
Critical V/C: 1.112
Avg Crit Del (sec/veh): 99.7
Avg Delay (sec/veh): 75.5
LOS: E

```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     905  740    20    65  900   618   367   68   386     1    3     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  905  740    20    65  900   618   367   68   386     1    3     3
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   905  740    20    65  900   618   367   68   386     1    3     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  905  740    20    65  900   618   367   68   386     1    3     3
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  905  740    20    65  900   618   367   68   386     1    3     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  0.95  0.95 0.89  0.87  0.75 0.87  0.83  0.92 0.93  0.92
Lanes:       2.00 1.95  0.05  1.00 1.18  0.82  1.00 0.29  1.71  0.14 0.43  0.43
Final Sat.:  3502 3501    95  1805 1992  1368  1426  476  2701   250  751   751
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.21  0.21  0.04 0.45  0.45  0.26 0.14  0.14  0.00 0.00  0.00
Crit Moves:  ****                  ****        ****
Green Time:  23.2 54.6  54.6   9.3 40.6  40.6  23.1 23.1  23.1  23.1 23.1  23.1
Volume/Cap:  1.11 0.39  0.39  0.39 1.11  1.11  1.11 0.62  0.62  0.02 0.02  0.02
Delay/Veh:  105.4 13.2  13.2  44.2 91.0  91.0 121.7 36.1  36.1  29.7 29.7  29.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 105.4 13.2  13.2  44.2 91.0  91.0 121.7 36.1  36.1  29.7 29.7  29.7
LOS by Move:    F    B     B     D    F     F     F    D     D     C    C     C
HCM2k95thQ:    40   13    13     5   61    60    33   14    14     0    0     0
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative AM

Intersection #4: Paseo Padre & Peralta



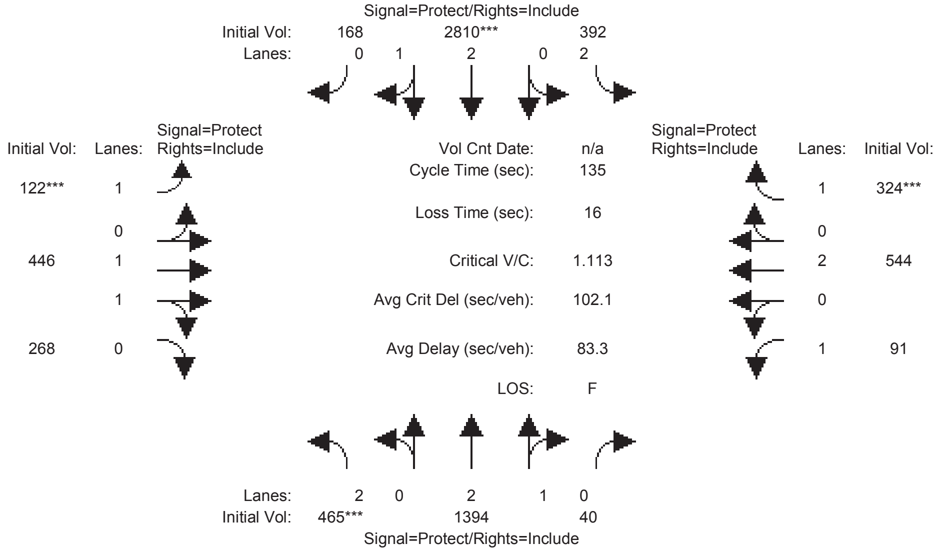
Vol Cnt Date: n/a
Cycle Time (sec): 135
Loss Time (sec): 16
Critical V/C: 1.109
Avg Crit Del (sec/veh): 100.4
Avg Delay (sec/veh): 81.9
LOS: F

```
Street Name:          Paseo Padre Pkwy                   Peralta Blvd
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     462 1394    40   392 2810   166   118  440   263    91  541   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  462 1394    40   392 2810   166   118  440   263    91  541   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   462 1394    40   392 2810   166   118  440   263    91  541   324
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  462 1394    40   392 2810   166   118  440   263    91  541   324
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  462 1394    40   392 2810   166   118  440   263    91  541   324
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.91  0.91  0.92 0.90  0.90  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       2.00 2.92  0.08  2.00 2.83  0.17  1.00 1.25  0.75  1.00 2.00  1.00
Final Sat.:  3502 5022   144  3502 4858   287  1805 2130  1273  1805 3610  1608
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.28  0.28  0.11 0.58  0.58  0.07 0.21  0.21  0.05 0.15  0.20
Crit Moves:  ****                  ****        ****                         ****
Green Time:  16.1 61.6  61.6  24.9 70.4  70.4   8.0 26.1  26.1   6.4 24.5  24.5
Volume/Cap:  1.11 0.61  0.61  0.61 1.11  1.11  1.11 1.07  1.07  1.07 0.82  1.11
Delay/Veh:  136.4 28.1  28.1  52.3 87.3  87.3 183.0  109 108.9 181.4 61.5 140.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 136.4 28.1  28.1  52.3 87.3  87.3 183.0  109 108.9 181.4 61.5 140.3
LOS by Move:    F    C     C     D    F     F     F    F     F     F    E     F
HCM2k95thQ:    28   28    28    16   93    93    17   37    37    14   24    35
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #4: Paseo Padre & Peralta



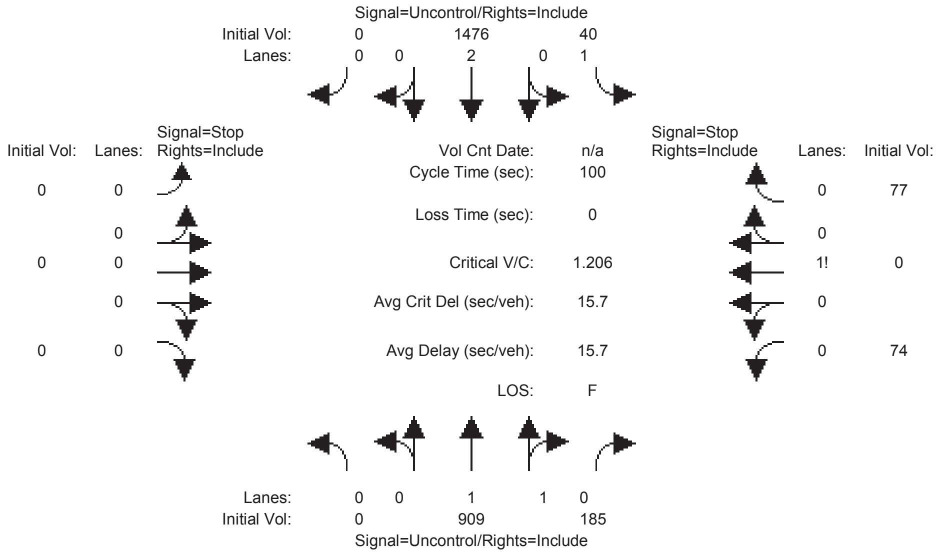
Vol Cnt Date: n/a
Cycle Time (sec): 135
Loss Time (sec): 16
Critical V/C: 1.113
Avg Crit Del (sec/veh): 102.1
Avg Delay (sec/veh): 83.3
LOS: F

```
Street Name:         Paseo Padre Pkwy                    Peralta Blvd
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     465 1394    40   392 2810   168   122  446   268    91  544   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  465 1394    40   392 2810   168   122  446   268    91  544   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   465 1394    40   392 2810   168   122  446   268    91  544   324
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  465 1394    40   392 2810   168   122  446   268    91  544   324
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  465 1394    40   392 2810   168   122  446   268    91  544   324
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.91  0.91  0.92 0.90  0.90  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       2.00 2.92  0.08  2.00 2.83  0.17  1.00 1.25  0.75  1.00 2.00  1.00
Final Sat.:  3502 5022   144  3502 4855   290  1805 2126  1277  1805 3610  1608
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.28  0.28  0.11 0.58  0.58  0.07 0.21  0.21  0.05 0.15  0.20
Crit Moves:  ****                   ****       ****                         ****
Green Time:  16.1 61.5  61.5  24.8 70.2  70.2   8.2 26.3  26.3   6.3 24.5  24.5
Volume/Cap:  1.11 0.61  0.61  0.61 1.11  1.11  1.11 1.08  1.08  1.08 0.83  1.11
Delay/Veh:  137.7 28.1  28.1  52.3 89.0  89.0 182.8  111 111.5 184.3 62.2 141.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 137.7 28.1  28.1  52.3 89.0  89.0 182.8  111 111.5 184.3 62.2 141.7
LOS by Move:    F    C     C     D    F     F     F    F     F     F    E     F
HCM2k95thQ:    28   28    28    16   93    93    17   38    38    14   24    35
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative AM

Intersection #5: Fremont & Parish

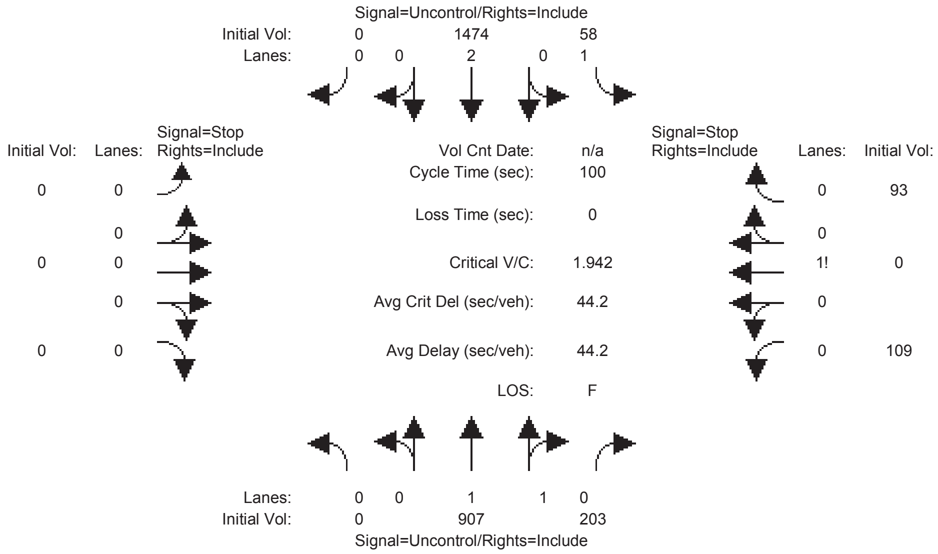


```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  909   185    40 1476     0     0    0     0    74    0    77
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  909   185    40 1476     0     0    0     0    74    0    77
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  909   185    40 1476     0     0    0     0    74    0    77
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  909   185    40 1476     0     0    0     0    74    0    77
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1101 xxxx xxxxx  xxxx xxxx xxxxx  1858 2565   554
Potent Cap.: xxxx xxxx xxxxx   642 xxxx xxxxx  xxxx xxxx xxxxx    67   27   481
Move Cap.:   xxxx xxxx xxxxx   638 xxxx xxxxx  xxxx xxxx xxxxx    61   25   478
Volume/Cap:  xxxx xxxx  xxxx  0.06 xxxx  xxxx  xxxx xxxx  xxxx  1.21 0.00  0.16
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  110 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.5 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  284 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            284.1
ApproachLOS:         *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #5: Fremont & Parish

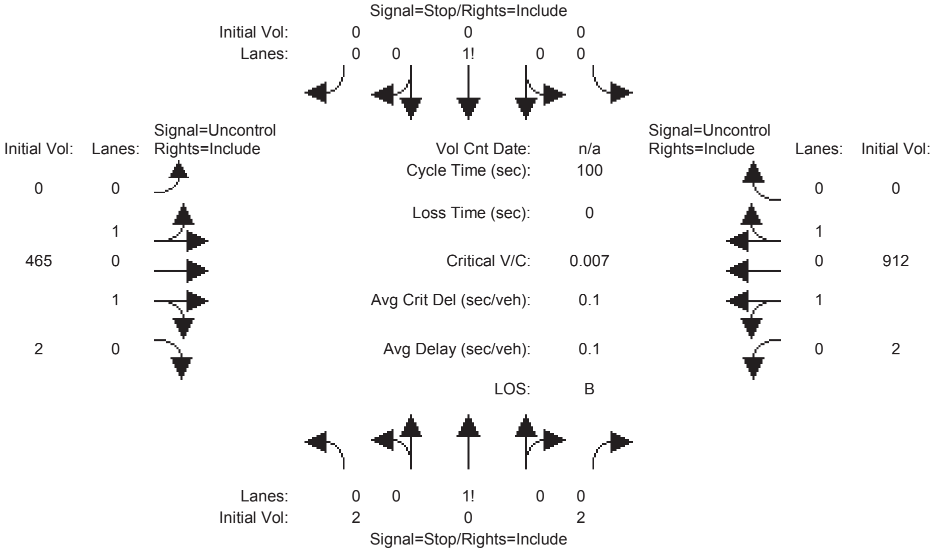


```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  907   203    58 1474     0     0    0     0   109    0    93
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  907   203    58 1474     0     0    0     0   109    0    93
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  907   203    58 1474     0     0    0     0   109    0    93
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  907   203    58 1474     0     0    0     0   109    0    93
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1117 xxxx xxxxx  xxxx xxxx xxxxx  1900 2606   562
Potent Cap.: xxxx xxxx xxxxx   633 xxxx xxxxx  xxxx xxxx xxxxx    62   25   475
Move Cap.:   xxxx xxxx xxxxx   629 xxxx xxxxx  xxxx xxxx xxxxx    56   23   473
Volume/Cap:  xxxx xxxx  xxxx  0.09 xxxx  xxxx  xxxx xxxx  xxxx  1.94 0.00  0.20
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   94 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 17.7 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  619 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            619.0
ApproachLOS:         *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative AM

Intersection #6: Jason & Peralta



Signal=Stop/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 1! 0 0

Signal=Uncontrol Rights=Include
Initial Vol: 0, 465, 2
Lanes: 0, 1, 0, 1, 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.007
Avg Crit Del (sec/veh): 0.1
Avg Delay (sec/veh): 0.1
LOS: B

Signal=Uncontrol Rights=Include
Lanes: 0, 1, 0, 1, 0
Initial Vol: 0, 912, 2

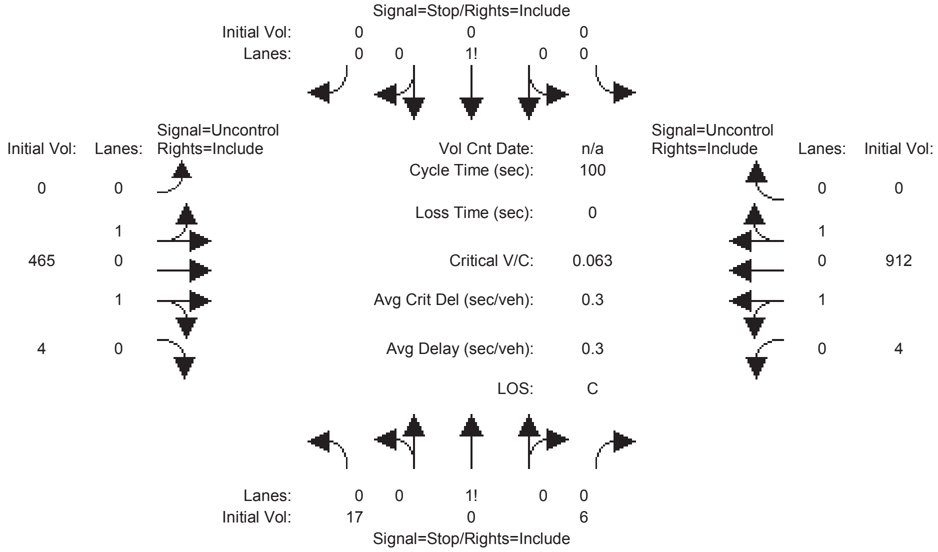
Lanes: 0 0 1! 0 0
Initial Vol: 2 0 2
Signal=Stop/Rights=Include

```
Street Name:            Jason Way                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       2    0     2     0    0     0     0  465     2     2  912     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2    0     2     0    0     0     0  465     2     2  912     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     2    0     2     0    0     0     0  465     2     2  912     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    2    0     2     0    0     0     0  465     2     2  912     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.8  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  926 1382   234  1149 1383   456  xxxx xxxx xxxxx   467 xxxx xxxxx
Potent Cap.:  271  145   775   156  145   557  xxxx xxxx xxxxx  1105 xxxx xxxxx
Move Cap.:    271  145   775   155  145   557  xxxx xxxx xxxxx  1105 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.00  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  401 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.0 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 14.1 xxxxx xxxxx xxxx xxxxx   7.2 xxxx xxxxx   8.3 xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     A    *     *
ApproachDel:      14.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #6: Jason & Peralta


Signal=Stop/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 1! 0 0

Signal=Uncontrol Rights=Include
Initial Vol: Lanes:
0 0
1
465 0
1
4 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.063
Avg Crit Del (sec/veh): 0.3
Avg Delay (sec/veh): 0.3
LOS: C

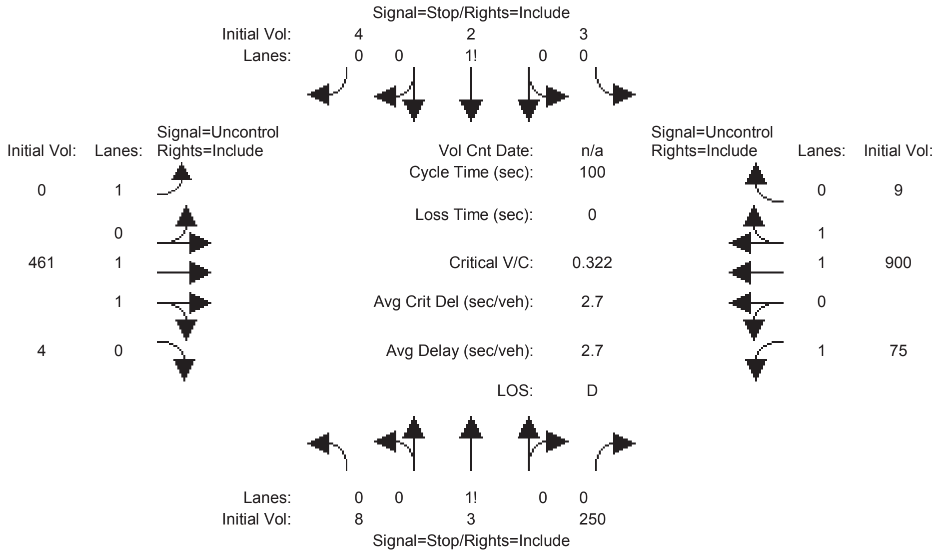
Signal=Uncontrol Rights=Include
Lanes: Initial Vol:
0 0
1
0 912
1
0 4

Lanes: 0 0 1! 0 0
Initial Vol: 17 0 6
Signal=Stop/Rights=Include

```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17    0     6     0    0     0     0  465     4     4  912     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17    0     6     0    0     0     0  465     4     4  912     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    17    0     6     0    0     0     0  465     4     4  912     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   17    0     6     0    0     0     0  465     4     4  912     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.8  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  931 1387   235  1153 1389   456  xxxx xxxx xxxxx   469 xxxx xxxxx
Potent Cap.:  269  144   773   155  144   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Move Cap.:    269  144   773   153  143   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Volume/Cap:  0.06 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  324 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 17.0 xxxxx xxxxx xxxx xxxxx   7.2 xxxx xxxxx   8.3 xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     A    *     *     A    *     *
ApproachDel:      17.0            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:         C                 *                 *                 *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative AM

Intersection #7: Parish & Peralta

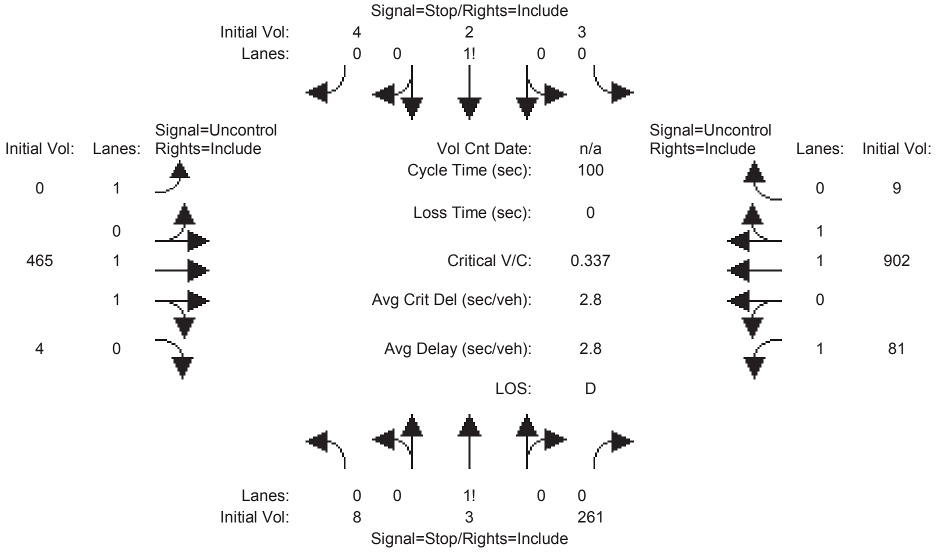


```
                         Signal=Stop/Rights=Include
                 Initial Vol:    4        2        3
                       Lanes:    0   0    1!   0   0

                Signal=Uncontrol                              Signal=Uncontrol
Initial Vol:  Lanes:  Rights=Include   Vol Cnt Date:       n/a   Rights=Include  Lanes:  Initial Vol:
                                       Cycle Time (sec):   100
     0          1                                                                  0        9
                                       Loss Time (sec):    0
                0                                                                  1
   461          1                      Critical V/C:       0.322                   1      900
                1                      Avg Crit Del (sec/veh): 2.7                 0
     4          0                      Avg Delay (sec/veh): 2.7                    1       75
                                       LOS:                D

                       Lanes:    0   0    1!   0   0
                 Initial Vol:    8        3        250
                         Signal=Stop/Rights=Include
```

```
Street Name:              Parish Ave                       Peralta Blvd
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8    3   250     3    2     4     0  461     4    75  900     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    3   250     3    2     4     0  461     4    75  900     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      8    3   250     3    2     4     0  461     4    75  900     9
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     8    3   250     3    2     4     0  461     4    75  900     9
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   7.5  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:   3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1064 1522   233  1287 1520   455  xxxx xxxx xxxxx   465 xxxx xxxxx
Potent Cap.:  180  120   776   124  120   558  xxxx xxxx xxxxx  1107 xxxx xxxxx
Move Cap.:    167  111   776    78  112   558  xxxx xxxx xxxxx  1107 xxxx xxxxx
Volume/Cap:  0.05 0.03  0.32  0.04 0.02  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  657 xxxxx  xxxx  141 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.9 xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.0 xxxxx xxxxx 32.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    B     *     *    D     *     *    *     *     *    *     *
ApproachDel:        14.0              32.2            xxxxxx            xxxxxx
ApproachLOS:           B                 D                 *                 *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #7: Parish & Peralta

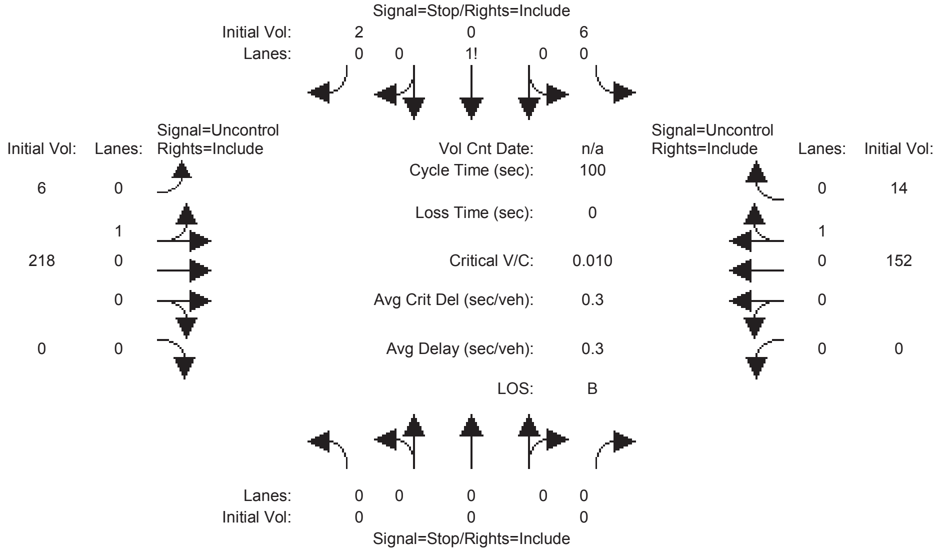


```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    3   261     3    2     4     0  465     4    81  902     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    3   261     3    2     4     0  465     4    81  902     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     8    3   261     3    2     4     0  465     4    81  902     9
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    8    3   261     3    2     4     0  465     4    81  902     9
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1081 1540   235  1303 1538   456  xxxx xxxx xxxxx   469 xxxx xxxxx
Potent Cap.:  175  117   773   120  117   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Move Cap.:    162  108   773    74  108   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Volume/Cap:  0.05 0.03  0.34  0.04 0.02  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  656 xxxxx  xxxx  136 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.0 xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.3 xxxxx xxxxx 33.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    D     *     *    *     *     *    *     *
ApproachDel:      14.3             33.4           xxxxxx           xxxxxx
ApproachLOS:         B                D                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative AM

Intersection #8: Jason & Parish



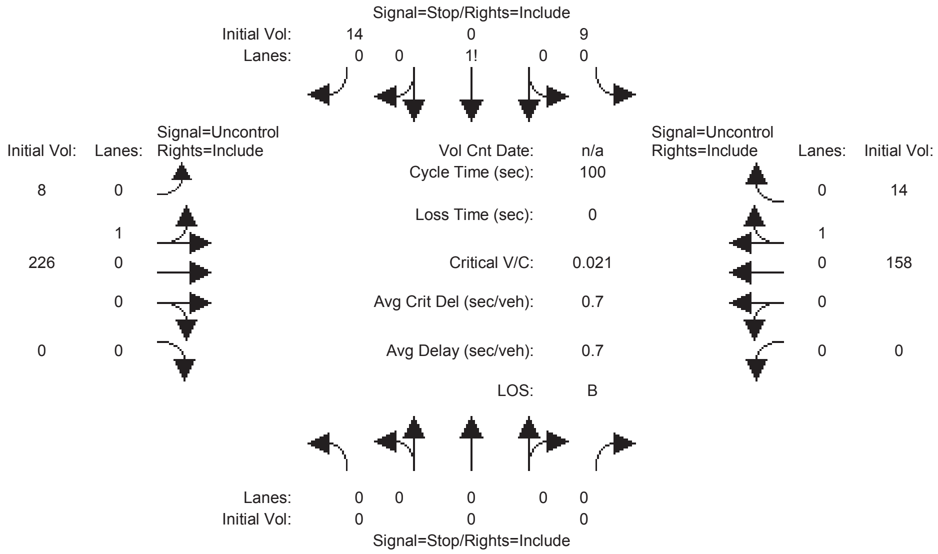
```
                         Signal=Stop/Rights=Include
            Initial Vol:      2          0          6
                 Lanes:       0    0     1!    0    0

                 Signal=Uncontrol                          Signal=Uncontrol
Initial Vol:  Lanes:  Rights=Include      Vol Cnt Date:      n/a   Rights=Include   Lanes:  Initial Vol:
                                       Cycle Time (sec):     100
     6          0                                                                     0        14
                                         Loss Time (sec):      0
                1                                                                     1
   218          0                          Critical V/C:   0.010                      0       152
                0                    Avg Crit Del (sec/veh):  0.3                     0
     0          0                       Avg Delay (sec/veh):  0.3                     0         0
                                                   LOS:        B

                 Lanes:       0    0     0     0    0
            Initial Vol:      0          0          0
                         Signal=Stop/Rights=Include
```

```
Street Name:            Jason Way                          Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     6    0     2     6  218     0     0  152    14
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     6    0     2     6  218     0     0  152    14
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     6    0     2     6  218     0     0  152    14
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     6    0     2     6  218     0     0  152    14
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   389  389   159   166 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   619  549   892  1424 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   617  547   892  1424 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  668 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.5 xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            10.5            xxxxxx            xxxxxx
ApproachLOS:         *               B                 *                 *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #8: Jason & Parish



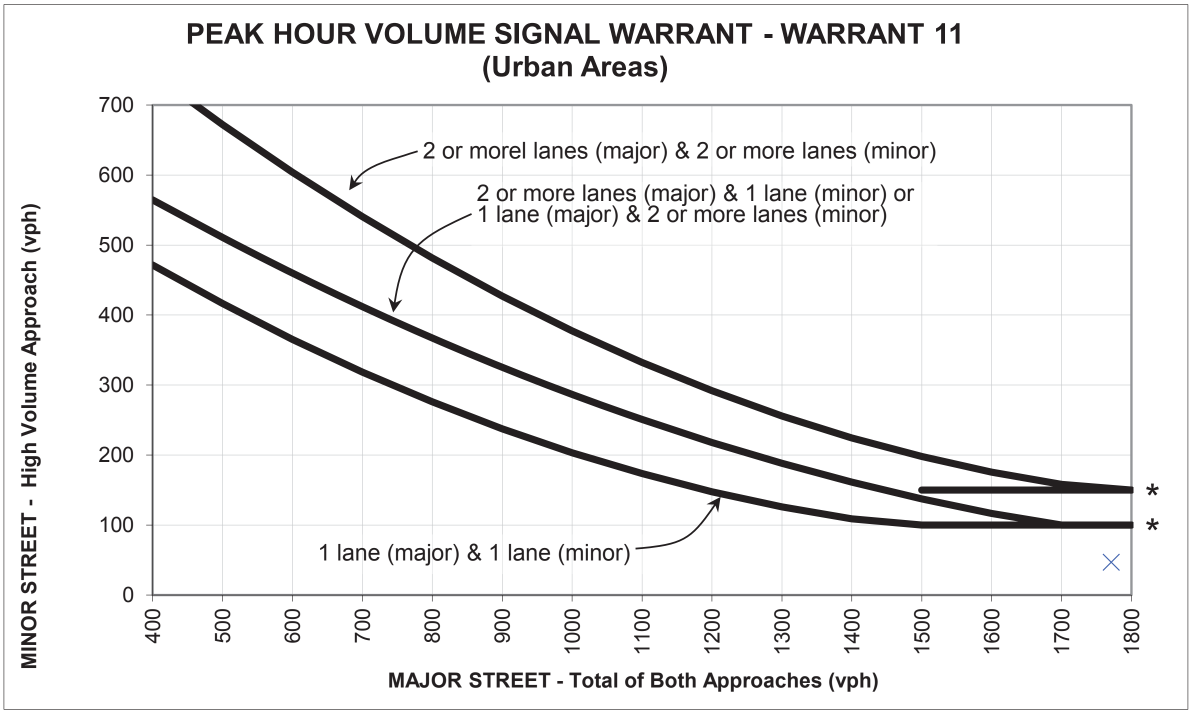
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.021
Avg Crit Del (sec/veh): 0.7
Avg Delay (sec/veh): 0.7
LOS: B

```
Street Name:            Jason Way                         Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     9    0    14     8  226     0     0  158    14
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     9    0    14     8  226     0     0  158    14
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82
PHF Volume:     0    0     0    11    0    17    10  276     0     0  193    17
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    11    0    17    10  276     0     0  193    17
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   496  496   201   210 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   537  478   845  1373 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   534  474   845  1373 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.02  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  688 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.5 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx             10.5           xxxxxx           xxxxxx
ApproachLOS:         *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Appendix C

Traffic Signal Warrant Calculations

Fremont Blvd & Main Site Driveway — Operations



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

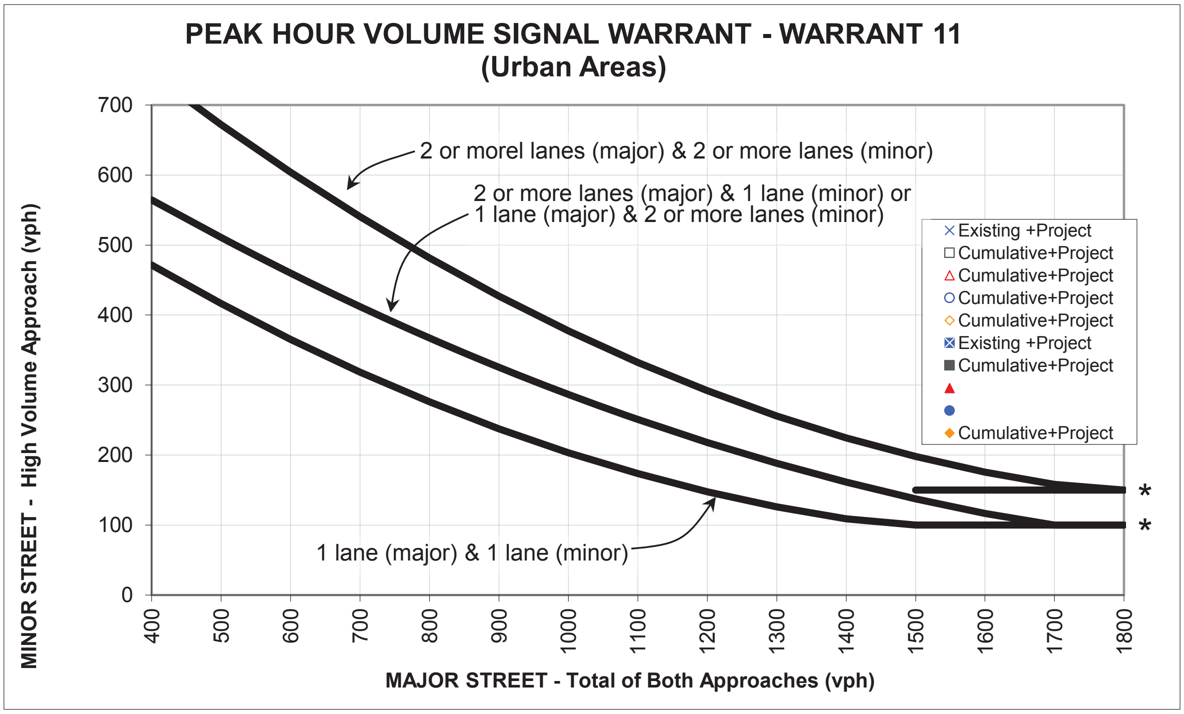
AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	1771	2508			
Minor Street - Highest Approach	Main Driveway	x		47	47			
			Warrant Met?	no	no			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	2083	2749			
Minor Street - Highest Approach	Main Driveway	x		41	41			
			Warrant Met?	no	no			

Fremont Blvd & Parish Ave **Operations**



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

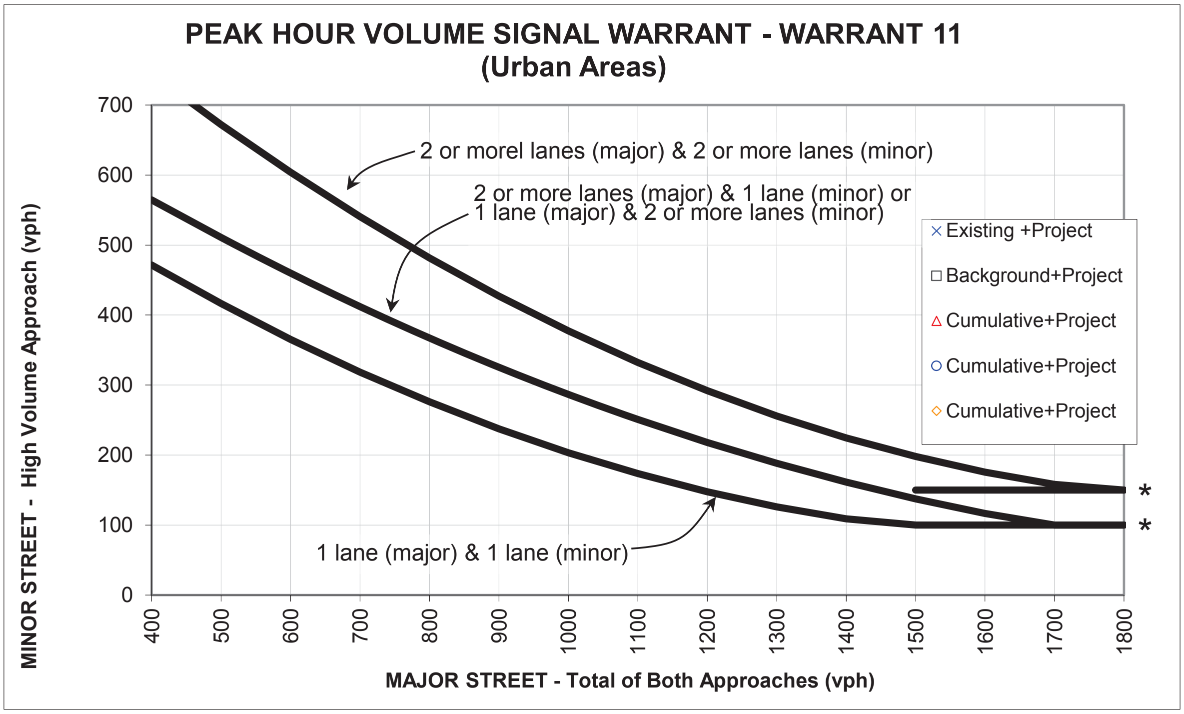
AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	1828	2637			
Minor Street - Highest Approach	Parish Ave	x		188	196			
		Warrant Met?		yes	yes			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	2186	2901			
Minor Street - Highest Approach	Parish Ave	x		70	74			
		Warrant Met?		no	no			

Fremont Blvd & Parish Ave **TIA**



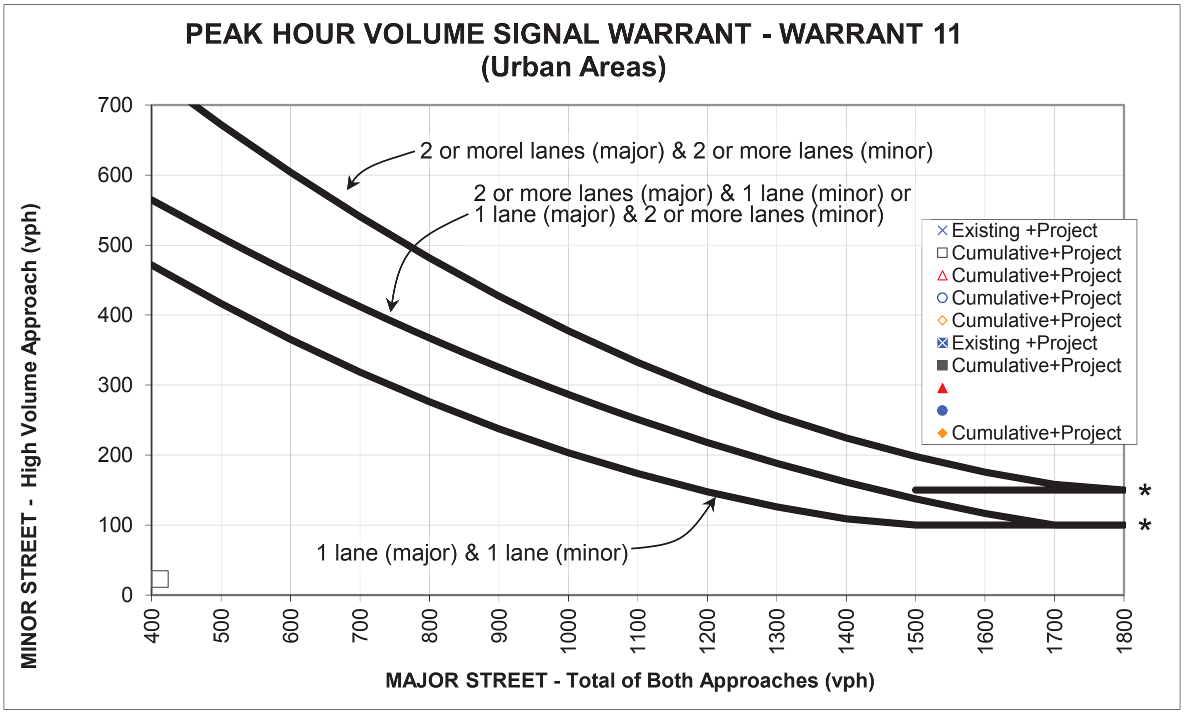
* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

		Approach Lanes		AM Peak Hour Volumes				
		One	2 or More	Existing +Project	Background +Project	Cumulative+ Project		
Major Street - Both Approaches	Fremont Blvd		x	1833	1887	2642		
Minor Street - Highest Approach	Parish Ave	x		191	203	202		
		Warrant Met?		yes	yes	yes		

		Approach Lanes		PM Peak Hour Volumes				
		One	2 or More					
Major Street - Both Approaches			x					
Minor Street - Highest Approach		x						
		Warrant Met?						

Jason Way & Parish Ave **Operations**



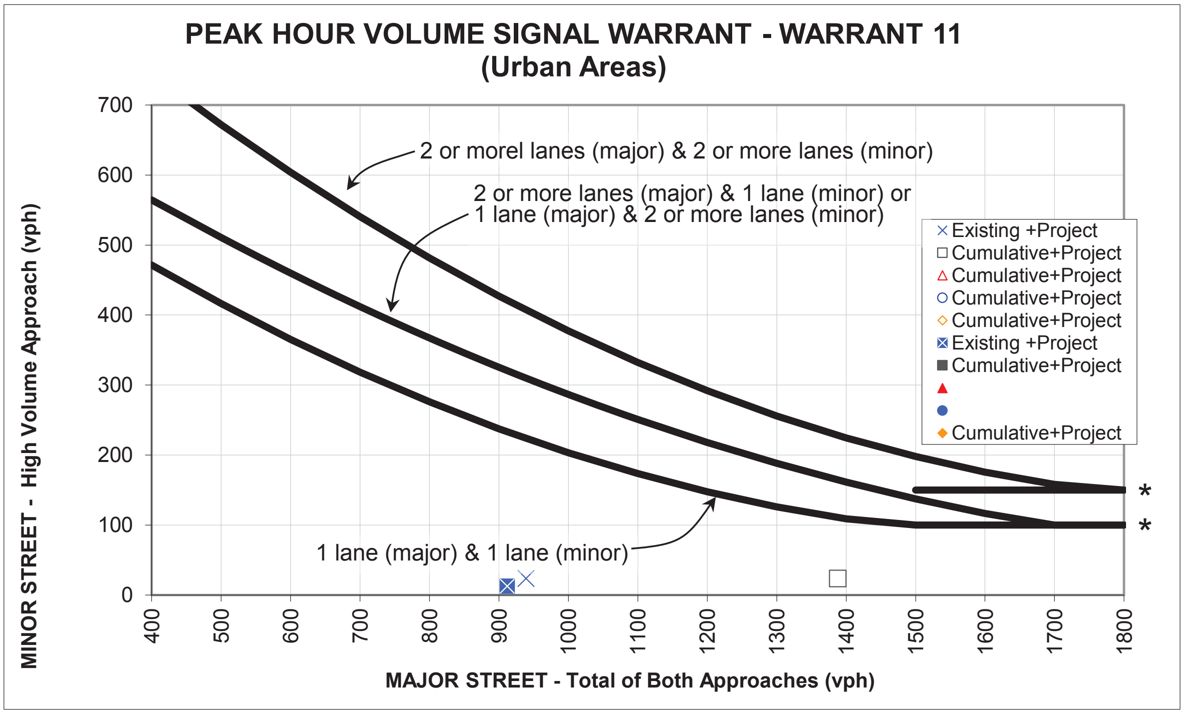
* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

		Approach Lanes One	Approach Lanes 2 or More	AM Peak Hour Volumes Existing +Project	AM Peak Hour Volumes Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		394	412			
Minor Street - Highest Approach	Jason Way	x		23	23			
			Warrant Met?	no	no			

		Approach Lanes One	Approach Lanes 2 or More	PM Peak Hour Volumes Existing +Project	PM Peak Hour Volumes Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		281	293			
Minor Street - Highest Approach	Jason Way	x		22	22			
			Warrant Met?	no	no			

Jason Way & Peralta Blvd	**Operations**



PEAK HOUR VOLUME SIGNAL WARRANT - WARRANT 11
(Urban Areas)

* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

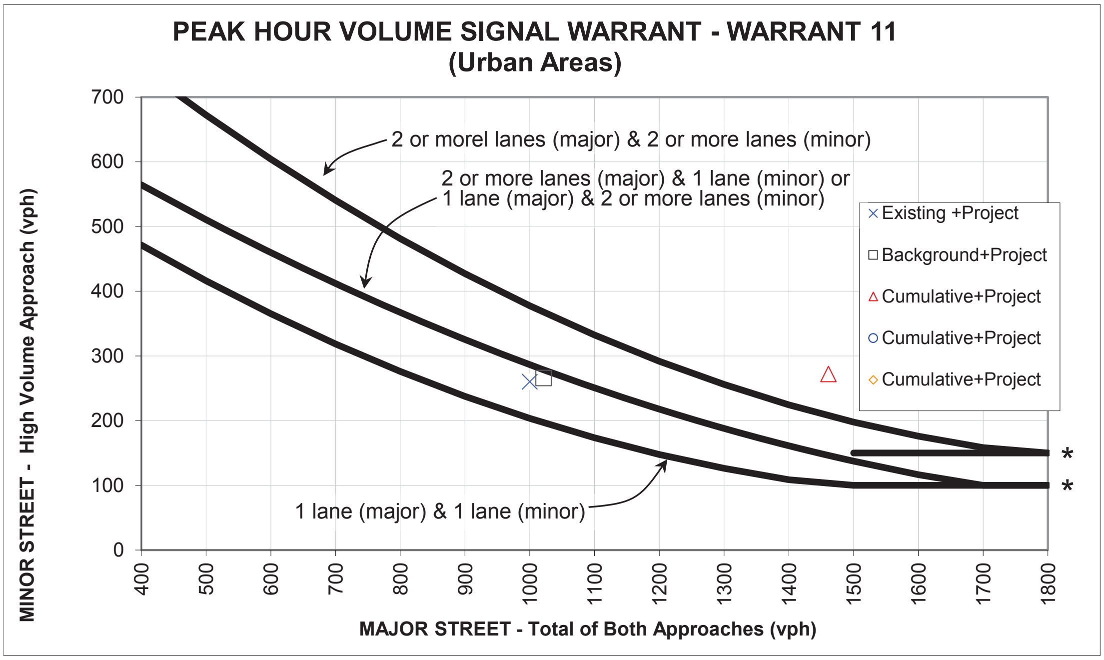
AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Peralta Blvd		x	939	1388			
Minor Street - Highest Approach	Jason Way	x		24	24			
			Warrant Met?	no	no			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Peralta Blvd		x	912	2147			
Minor Street - Highest Approach	Jason Way	x		13	13			
			Warrant Met?	no	no			

Parish Ave & Peralta Blvd **TIA**



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

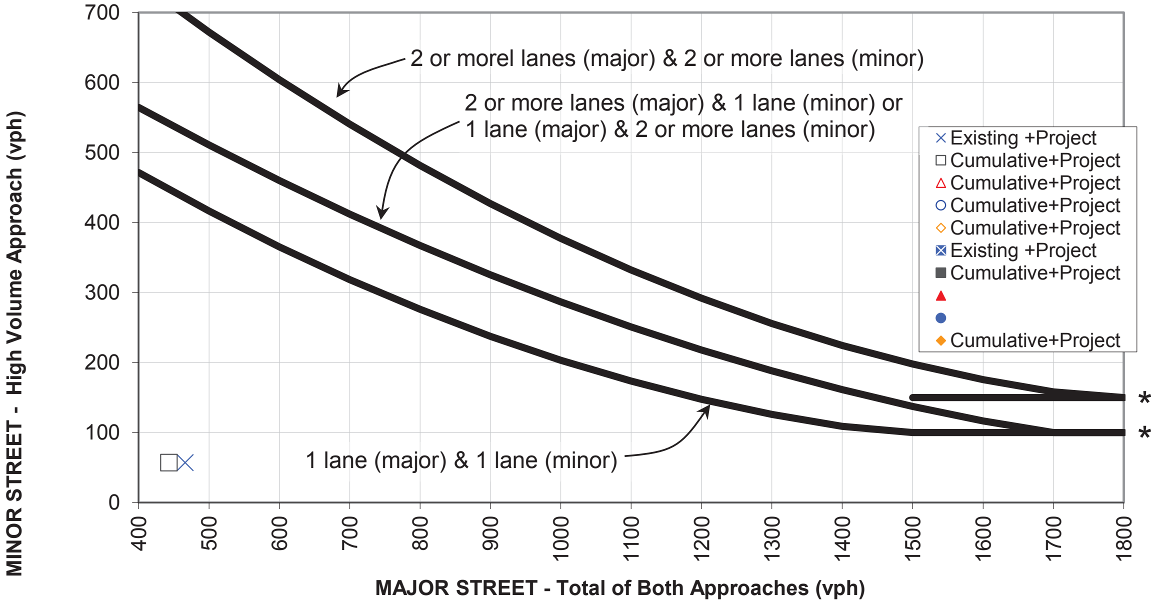
		Approach Lanes		AM Peak Hour Volumes				
		One	2 or More	*Existing +Project*	*Background +Project*	*Cumulative+ Project*		
Major Street - Both Approaches	Peralta Blvd		x	1000	1021	1461		
Minor Street - Highest Approach	Parish Ave	x		260	266	272		
	Warrant Met?			no*	no*	no*		

		Approach Lanes		PM Peak Hour Volumes				
		One	2 or More					
Major Street - Both Approaches			x					
Minor Street - Highest Approach		x						
	Warrant Met?							

*the traffic volumes on the Parish Ave (minor street) approach are 95% right turns: 249, 255 and 261 right turns under the existing, background and cumulative scenarios, respectively. The total, combined stopped-time delay for all vehicles on the (south) Parish approach in the AM peak hour would be no greater than 2.8 hours under all three scenarios. This is less than the 4 hours of total delay required to meet the warrant.

South Site Driveway & Parish Ave **Operations**

PEAK HOUR VOLUME SIGNAL WARRANT - WARRANT 11
(Urban Areas)



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		466	443			
Minor Street - Highest Approach	South Driveway	x		57	57			
			Warrant Met?	no	no			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		368	325			
Minor Street - Highest Approach	South Driveway	x		45	45			
			Warrant Met?	no	no			

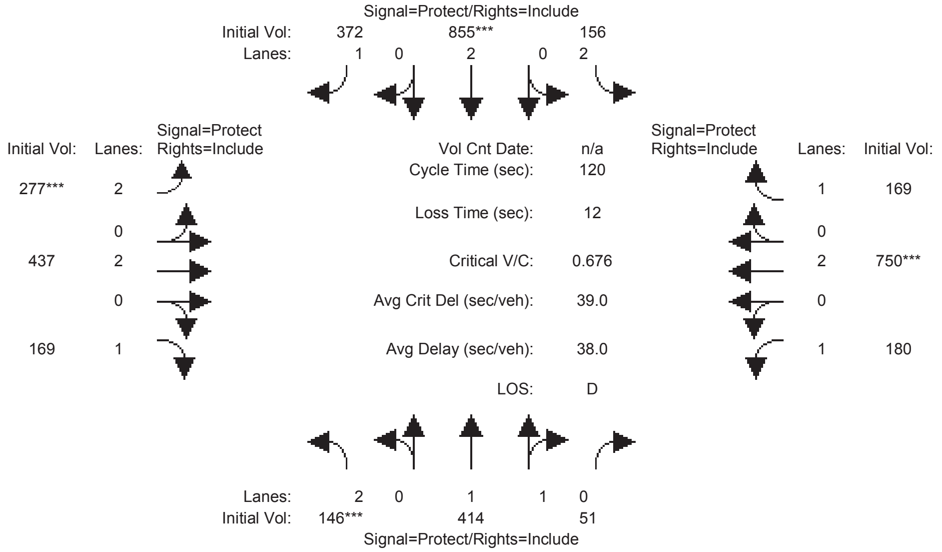
Appendix D

Project Variant

LOS and Signal Warrant Calculations

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #1: Fremont & Thornton



Signal=Protect/Rights=Include
Initial Vol: 372 855*** 156
Lanes: 1 0 2 0 2

Signal=Protect
Rights=Include
Initial Vol: Lanes:
277*** 2
0
437 2
0
169 1

Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 12
Critical V/C: 0.676
Avg Crit Del (sec/veh): 39.0
Avg Delay (sec/veh): 38.0
LOS: D

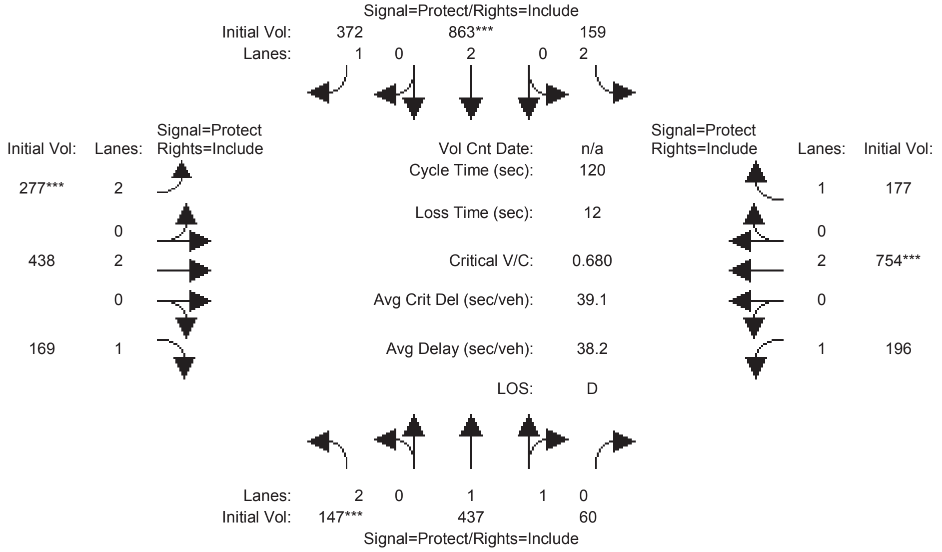
Signal=Protect
Rights=Include
Lanes: Initial Vol:
1 169
0
2 750***
0
1 180

Lanes: 2 0 1 1 0
Initial Vol: 146*** 414 51
Signal=Protect/Rights=Include

```
Street Name:           Fremont Blvd                      Thornton Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     146  414    51   156  855   372   277  437   169   180  750   169
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  146  414    51   156  855   372   277  437   169   180  750   169
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   157  445    55   168  919   400   298  470   182   194  806   182
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  157  445    55   168  919   400   298  470   182   194  806   182
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  157  445    55   168  919   400   298  470   182   194  806   182
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.84  0.92 0.95  0.83  0.95 0.95  0.84
Lanes:       2.00 1.78  0.22  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3162   390  3502 3610  1591  3502 3610  1569  1805 3610  1589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.14  0.14  0.05 0.25  0.25  0.09 0.13  0.12  0.11 0.22  0.11
Crit Moves:  ****                  ****        ****                  ****
Green Time:   8.0 39.7  39.7  13.5 45.2  45.2  15.1 30.0  30.0  24.8 39.7  39.7
Volume/Cap:  0.68 0.43  0.43  0.43 0.68  0.67  0.68 0.52  0.46  0.52 0.68  0.35
Delay/Veh:   62.4 31.5  31.5  50.4 32.6  34.0  54.2 39.3  39.0  43.7 36.2  30.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.4 31.5  31.5  50.4 32.6  34.0  54.2 39.3  39.0  43.7 36.2  30.7
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   14    14     7   27    23    13   15    12    13   25    10
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #1: Fremont & Thornton



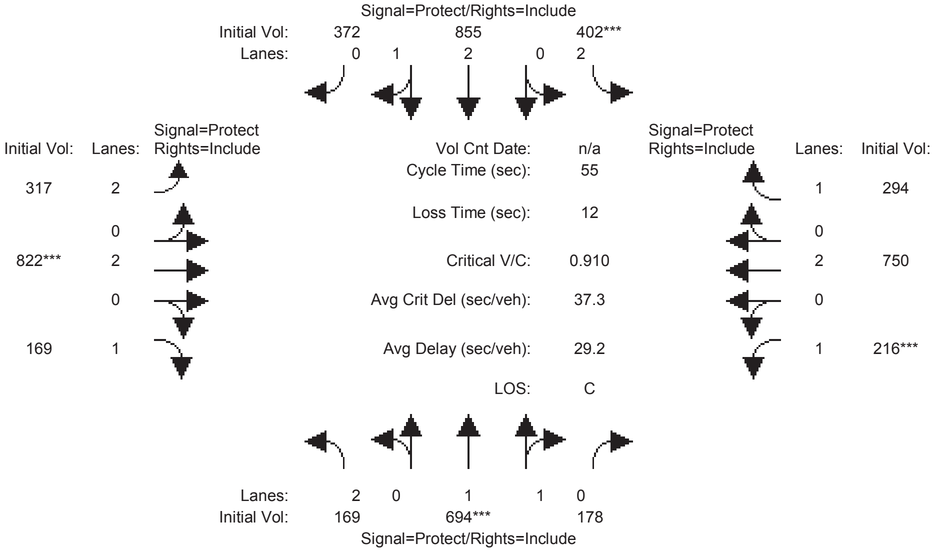
```
                        Signal=Protect/Rights=Include
         Initial Vol:     372        863***          159
               Lanes:        1    0     2       0    2

                 Signal=Protect                                Signal=Protect
Initial Vol:  Lanes:  Rights=Include      Vol Cnt Date:    n/a   Rights=Include   Lanes:  Initial Vol:
                                       Cycle Time (sec):   120
  277***        2                                                                   1        177
                                        Loss Time (sec):    12
                0                                                                   0
   438          2                          Critical V/C:   0.680                    2        754***
                0                   Avg Crit Del (sec/veh):  39.1                   0
   169          1                      Avg Delay (sec/veh):  38.2                   1        196
                                                    LOS:    D

               Lanes:        2    0     1       1    0
         Initial Vol:   147***         437           60
                        Signal=Protect/Rights=Include
```

```
Street Name:               Fremont Blvd                       Thornton Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     147  437    60   159  863   372   277  438   169   196  754   177
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  147  437    60   159  863   372   277  438   169   196  754   177
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   158  470    65   171  928   400   298  471   182   211  811   190
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  158  470    65   171  928   400   298  471   182   211  811   190
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  158  470    65   171  928   400   298  471   182   211  811   190
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.93  0.93  0.92 0.95  0.84  0.92 0.95  0.83  0.95 0.95  0.84
Lanes:       2.00 1.76  0.24  2.00 2.00  1.00  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3502 3117   428  3502 3610  1591  3502 3610  1569  1805 3610  1589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.15  0.15  0.05 0.26  0.25  0.09 0.13  0.12  0.12 0.22  0.12
Crit Moves:  ****                    ****        ****                   ****
Green Time:   8.0 40.3  40.3  13.0 45.4  45.4  15.0 28.8  28.8  25.8 39.6  39.6
Volume/Cap:  0.68 0.45  0.45  0.45 0.68  0.66  0.68 0.54  0.48  0.54 0.68  0.36
Delay/Veh:   62.7 31.4  31.4  51.0 32.6  33.8  54.5 40.5  40.1  43.4 36.3  31.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  62.7 31.4  31.4  51.0 32.6  33.8  54.5 40.5  40.1  43.4 36.3  31.0
LOS by Move:    E    C     C     D    C     C     D    D     D     D    D     C
HCM2k95thQ:     8   15    15     7   27    23    13   16    12    14   25    10
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #1: Fremont & Thornton



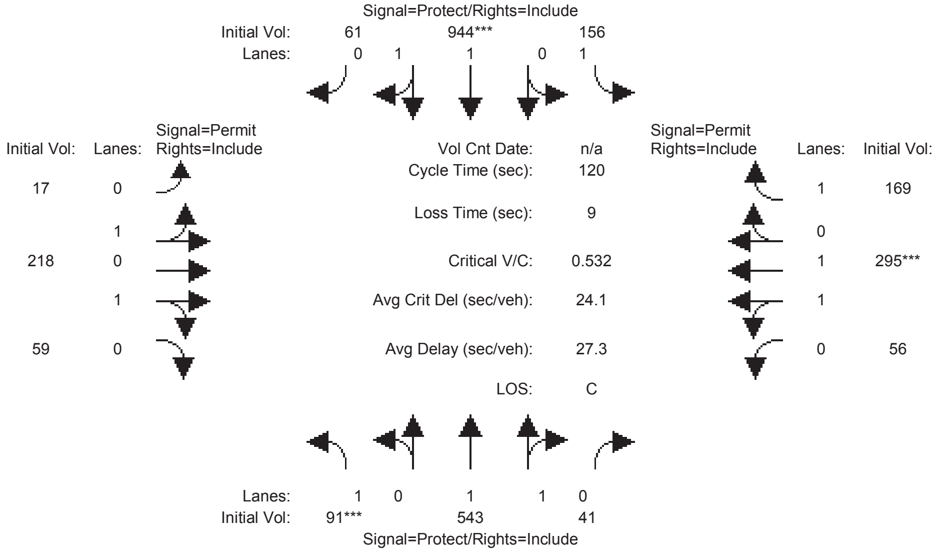
Vol Cnt Date: n/a
Cycle Time (sec): 55
Loss Time (sec): 12
Critical V/C: 0.910
Avg Crit Del (sec/veh): 37.3
Avg Delay (sec/veh): 29.2
LOS: C

```
Street Name:            Fremont Blvd                        Thornton Ave
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:    4   10    10     4   10    10     4   10    10     4   10    10
Y+R:         4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    169  694   178   402  855   372   317  822   169   216  750   294
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 169  694   178   402  855   372   317  822   169   216  750   294
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  169  694   178   402  855   372   317  822   169   216  750   294
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 169  694   178   402  855   372   317  822   169   216  750   294
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 169  694   178   402  855   372   317  822   169   216  750   294
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.92 0.92  0.92  0.92 0.87  0.87  0.92 0.95  0.84  0.95 0.95  0.84
Lanes:      2.00 1.59  0.41  2.00 2.09  0.91  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.: 3502 2784   714  3502 3450  1501  3502 3610  1596  1805 3610  1603
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.05 0.25  0.25  0.11 0.25  0.25  0.09 0.23  0.11  0.12 0.21  0.18
Crit Moves:      ****        ****                    ****        ****
Green Time:  5.0 15.1  15.1   6.9 17.0  17.0   6.4 13.8  13.8   7.2 14.6  14.6
Volume/Cap: 0.53 0.91  0.91  0.91 0.80  0.80  0.78 0.91  0.42  0.91 0.78  0.69
Delay/Veh:  25.6 31.8  31.8  46.4 20.6  20.6  33.1 33.1  18.0  58.7 22.9  22.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 25.6 31.8  31.8  46.4 20.6  20.6  33.1 33.1  18.0  58.7 22.9  22.9
LOS by Move:   C    C     C     D    C     C     C    C     B     E    C     C
HCM2k95thQ:    5   22    22    14   18    18    10   21     6    14   16    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #2: Fremont & Peralta



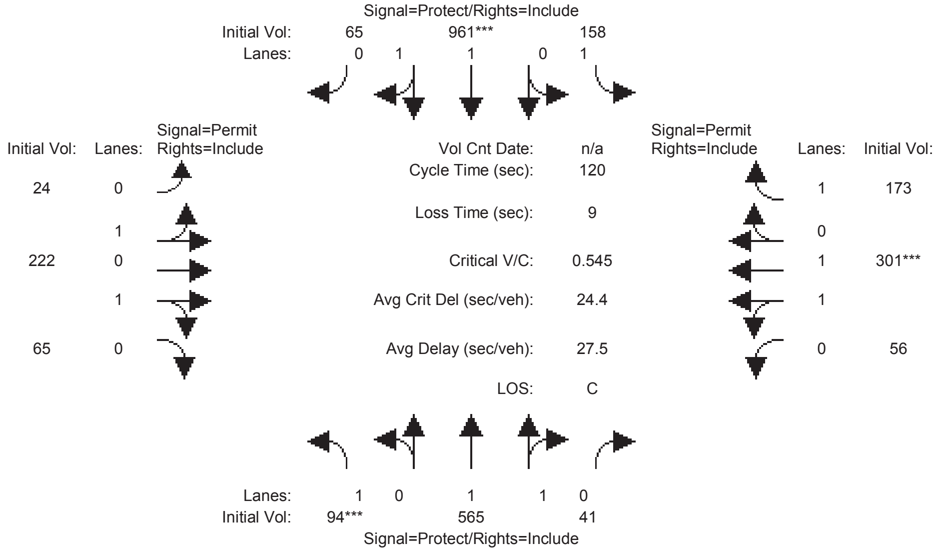
```
                         Signal=Protect/Rights=Include
             Initial Vol:      61          944***        156
                   Lanes:       0     1      1       0     1

             Signal=Permit                                      Signal=Permit
Initial Vol:  Lanes:  Rights=Include     Vol Cnt Date:    n/a   Rights=Include    Lanes:  Initial Vol:
                                      Cycle Time (sec):   120
    17          0                                                                    1        169
                                       Loss Time (sec):     9
                1                                                                    0
   218          0                         Critical V/C:   0.532                      1        295***
                1                   Avg Crit Del (sec/veh):  24.1                    1
    59          0                       Avg Delay (sec/veh):  27.3                   0         56
                                                  LOS:      C

                   Lanes:       1     0      1       1     0
             Initial Vol:     91***         543           41
                         Signal=Protect/Rights=Include
```

```
Street Name:            Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      91  543    41   156  944    61    17  218    59    56  295   169
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   91  543    41   156  944    61    17  218    59    56  295   169
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:    99  590    45   170 1026    66    18  237    64    61  321   184
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   99  590    45   170 1026    66    18  237    64    61  321   184
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   99  590    45   170 1026    66    18  237    64    61  321   184
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.85 0.85  0.84  0.76 0.76  0.84
Lanes:       1.00 1.86  0.14  1.00 1.88  0.12  0.12 1.48  0.40  0.32 1.68  1.00
Final Sat.:  1805 3323   251  1805 3360   217   186 2382   645   461 2427  1588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.18  0.18  0.09 0.31  0.31  0.10 0.10  0.10  0.13 0.13  0.12
Crit Moves:  ****                   ****                              ****
Green Time:  12.4 53.1  53.1  28.1 68.8  68.8  29.8 29.8  29.8  29.8 29.8  29.8
Volume/Cap:  0.53 0.40  0.40  0.40 0.53  0.53  0.40 0.40  0.40  0.53 0.53  0.47
Delay/Veh:   54.0 22.8  22.8  39.5 16.0  16.0  38.0 38.0  38.0  39.8 39.8  39.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.0 22.8  22.8  39.5 16.0  16.0  38.0 38.0  38.0  39.8 39.8  39.2
LOS by Move:    D    C     C     D    B     B     D    D     D     D    D     D
HCM2k95thQ:     8   15    15    11   23    23    10   10    10    13   13    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #2: Fremont & Peralta



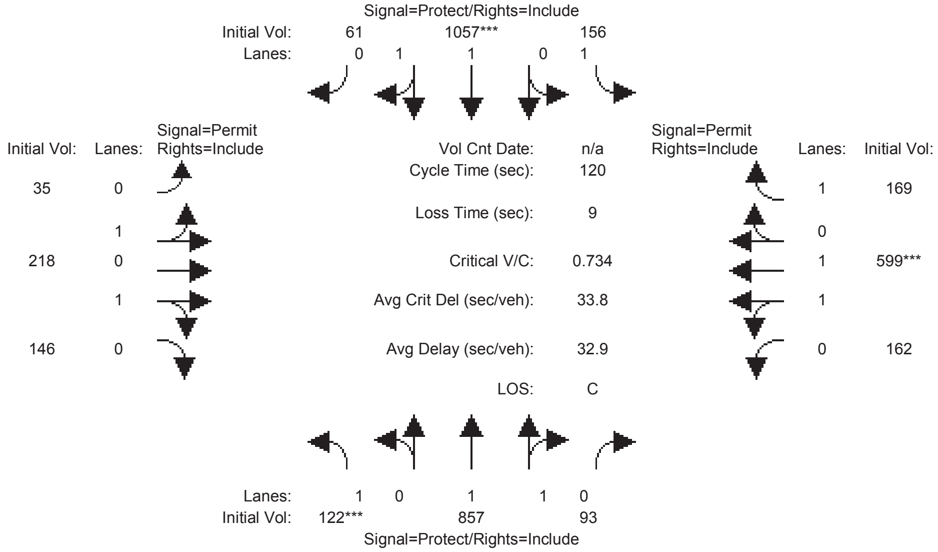
```
                         Signal=Protect/Rights=Include
                Initial Vol:    65        961***          158
                      Lanes:     0    1      1       0     1

                 Signal=Permit                                          Signal=Permit
Initial Vol:  Lanes:  Rights=Include        Vol Cnt Date:      n/a     Rights=Include     Lanes:  Initial Vol:
                                          Cycle Time (sec):    120
     24         0                                                                        1        173
                                           Loss Time (sec):      9
                1                                                                        0
    222         0                            Critical V/C:   0.545                       1        301***
                1                      Avg Crit Del (sec/veh):  24.4                     1
     65         0                        Avg Delay (sec/veh):   27.5                     0         56
                                                      LOS:      C

                      Lanes:     1    0      1       1     0
                Initial Vol:  94***         565            41
                         Signal=Protect/Rights=Include
```

```
Street Name:            Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:    4    6     6     4    6     6     4    4     4     4    4     4
Y+R:         4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     94  565    41   158  961    65    24  222    65    56  301   173
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  94  565    41   158  961    65    24  222    65    56  301   173
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:  102  614    45   172 1045    71    26  241    71    61  327   188
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 102  614    45   172 1045    71    26  241    71    61  327   188
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 102  614    45   172 1045    71    26  241    71    61  327   188
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.83 0.83  0.83  0.75 0.75  0.84
Lanes:       1.00 1.86  0.14  1.00 1.87  0.13  0.15 1.43  0.42  0.31 1.69  1.00
Final Sat.:  1805 3332   242  1805 3351   227   243 2250   659   448 2407  1588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.18  0.10 0.31  0.31  0.11 0.11  0.11  0.14 0.14  0.12
Crit Moves:  ****                  ****                              ****
Green Time:  12.5 53.5  53.5  27.6 68.6  68.6  29.9 29.9  29.9  29.9 29.9  29.9
Volume/Cap:  0.55 0.41  0.41  0.41 0.55  0.55  0.43 0.43  0.43  0.55 0.55  0.47
Delay/Veh:   54.4 22.8  22.8  40.0 16.3  16.3  38.3 38.3  38.3  40.0 40.0  39.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.4 22.8  22.8  40.0 16.3  16.3  38.3 38.3  38.3  40.0 40.0  39.3
LOS by Move:    D    C     C     D    B     B     D    D     D     D    D     D
HCM2k95thQ:     9   16    16    11   24    24    11   11    11    13   13    12
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #2: Fremont & Peralta



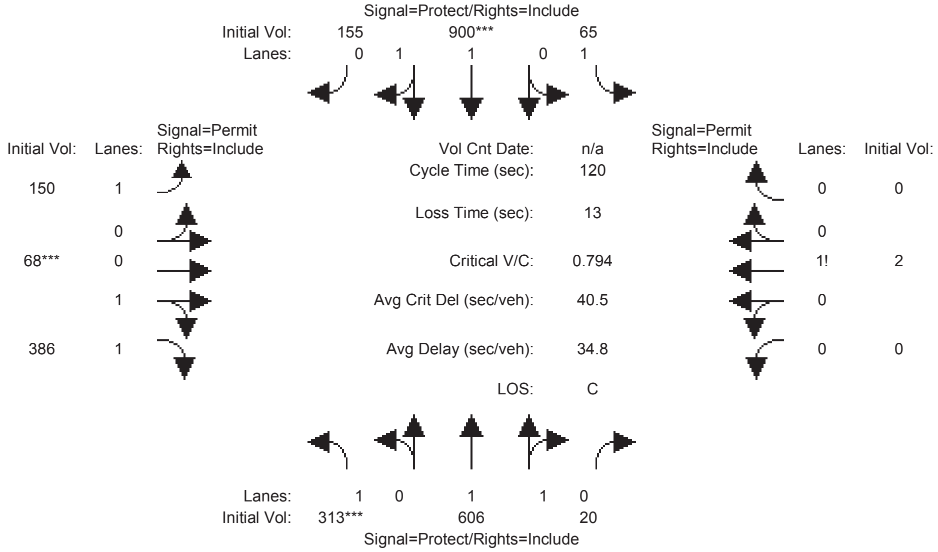
```
                        Signal=Protect/Rights=Include
         Initial Vol:     61        1057***        156
               Lanes:      0    1      1      0     1

            Signal=Permit                                  Signal=Permit
Initial Vol:  Lanes:  Rights=Include     Vol Cnt Date:    n/a    Rights=Include   Lanes:  Initial Vol:
                                      Cycle Time (sec):   120
   35          0                                                                    1        169
                                       Loss Time (sec):     9
               1                                                                    0
  218          0                          Critical V/C:  0.734                      1        599***
               1                   Avg Crit Del (sec/veh):  33.8                    1
  146          0                      Avg Delay (sec/veh):  32.9                    0        162
                                                   LOS:     C

               Lanes:      1    0      1      1     0
         Initial Vol:    122***       857          93
                        Signal=Protect/Rights=Include
```

```
Street Name:           Fremont Blvd                      Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4    6     6     4    6     6     4    4     4     4    4     4
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     122  857    93   156 1057    61    35  218   146   162  599   169
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  122  857    93   156 1057    61    35  218   146   162  599   169
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   122  857    93   156 1057    61    35  218   146   162  599   169
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  122  857    93   156 1057    61    35  218   146   162  599   169
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  122  857    93   156 1057    61    35  218   146   162  599   169
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.94  0.94  0.95 0.94  0.94  0.74 0.74  0.74  0.67 0.67  0.84
Lanes:       1.00 1.80  0.20  1.00 1.89  0.11  0.18 1.09  0.73  0.43 1.57  1.00
Final Sat.:  1805 3208   348  1805 3386   195   246 1535  1028   542 2003  1598
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.27  0.27  0.09 0.31  0.31  0.14 0.14  0.14  0.30 0.30  0.11
Crit Moves:  ****                  ****                              ****
Green Time:  11.1 46.9  46.9  15.2 51.0  51.0  48.9 48.9  48.9  48.9 48.9  48.9
Volume/Cap:  0.73 0.68  0.68  0.68 0.73  0.73  0.35 0.35  0.35  0.73 0.73  0.26
Delay/Veh:   68.6 31.8  31.8  58.4 30.7  30.7  24.7 24.7  24.7  32.8 32.8  23.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  68.6 31.8  31.8  58.4 30.7  30.7  24.7 24.7  24.7  32.8 32.8  23.8
LOS by Move:    E    C     C     E    C     C     C    C     C     C    C     C
HCM2k95thQ:    12   28    28    13   32    32    10   10    10    24   24     8
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

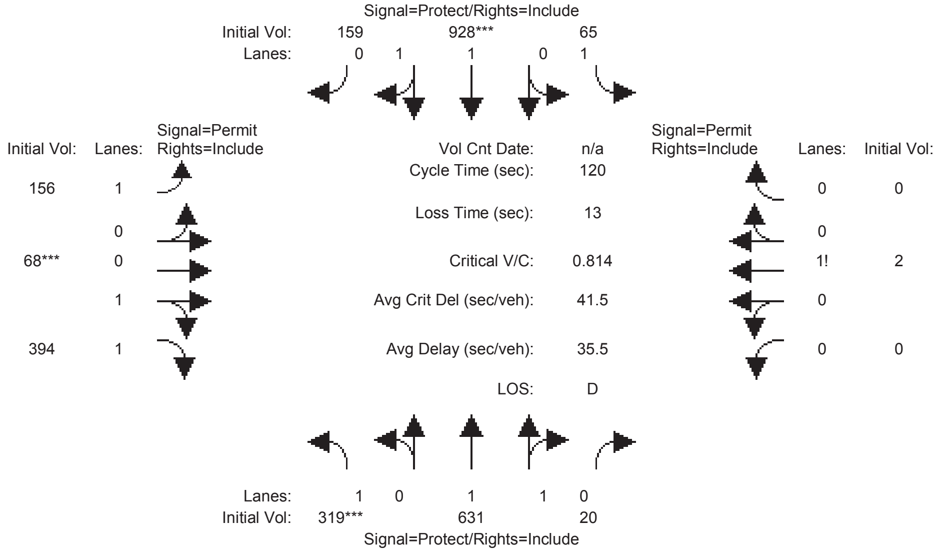
Intersection #3: Fremont & Central



```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     313  606    20    65  900   155   150   68   386     0    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  313  606    20    65  900   155   150   68   386     0    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   360  697    23    75 1034   178   172   78   444     0    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  360  697    23    75 1034   178   172   78   444     0    2     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  360  697    23    75 1034   178   172   78   444     0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.93  0.92  0.75 0.87  0.82  1.00 1.00  1.00
Lanes:       1.00 1.94  0.06  1.00 1.70  0.30  1.00 0.29  1.71  0.00 1.00  0.00
Final Sat.:  1805 3477   115  1805 3009   518  1430  473  2687     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.20  0.20  0.04 0.34  0.34  0.12 0.17  0.17  0.00 0.00  0.00
Crit Moves:  ****                  ****             ****
Green Time:  30.1 68.0  68.0  14.1 51.9  51.9  24.9 24.9  24.9   0.0 24.9   0.0
Volume/Cap:  0.79 0.35  0.35  0.35 0.79  0.79  0.58 0.79  0.79  0.00 0.01  0.00
Delay/Veh:   51.4 14.2  14.2  49.8 32.4  32.4  45.7 51.7  51.7   0.0 37.7   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  51.4 14.2  14.2  49.8 32.4  32.4  45.7 51.7  51.7   0.0 37.7   0.0
LOS by Move:    D    B     B     D    C     C     D    D     D     A    D     A
HCM2k95thQ:    25   14    14     6   36    36    12   21    20     0    0     0
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #3: Fremont & Central



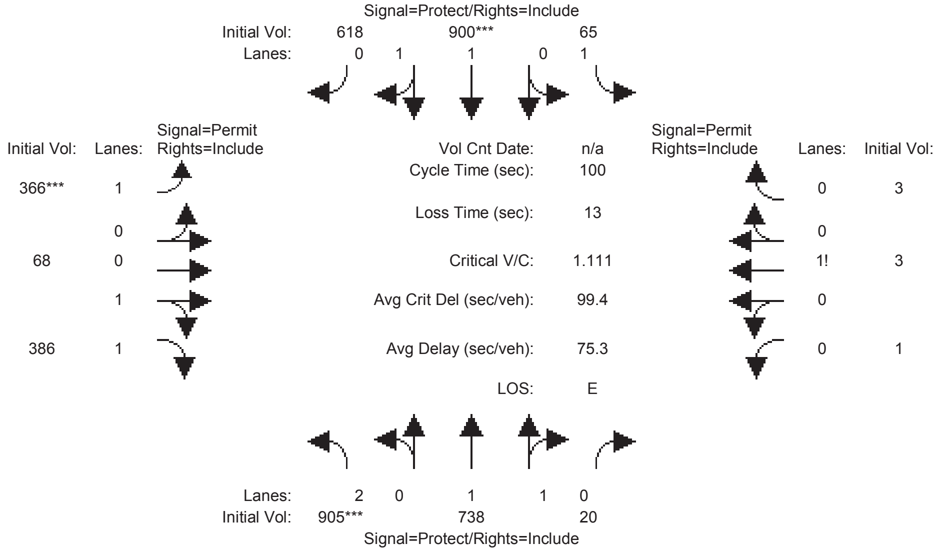
Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 13
Critical V/C: 0.814
Avg Crit Del (sec/veh): 41.5
Avg Delay (sec/veh): 35.5
LOS: D

```
Street Name:               Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     319  631    20   65  928   159  156   68   394    0    2     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  319  631    20   65  928   159  156   68   394    0    2     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87 0.87 0.87  0.87 0.87 0.87  0.87 0.87 0.87  0.87
PHF Volume:   367  725    23   75 1067   183  179   78   453    0    2     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  367  725    23   75 1067   183  179   78   453    0    2     0
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  367  725    23   75 1067   183  179   78   453    0    2     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.95 0.95  0.95 0.95 0.93  0.92 0.75 0.87  0.82 1.00 1.00  1.00
Lanes:       1.00 1.94  0.06 1.00 1.71  0.29 1.00 0.28  1.72 0.00 1.00  0.00
Final Sat.:  1805 3482   110 1805 3011   516 1430  464  2691    0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.21  0.21 0.04 0.35  0.35 0.13 0.17  0.17 0.00 0.00  0.00
Crit Moves:  ****                 ****             ****
Green Time:  30.0 68.6  68.6 13.6 52.2  52.2 24.8 24.8  24.8  0.0 24.8   0.0
Volume/Cap:  0.81 0.36  0.36 0.36 0.81  0.81 0.61 0.81  0.81 0.00 0.01  0.00
Delay/Veh:   53.3 14.0  14.0 50.3 33.1  33.1 46.7 53.1  53.1  0.0 37.8   0.0
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  53.3 14.0  14.0 50.3 33.1  33.1 46.7 53.1  53.1  0.0 37.8   0.0
LOS by Move:    D    B     B    D    C     C    D    D     D    A    D     A
HCM2k95thQ:    26   15    15    6   38    38   13   22    21    0    0     0
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

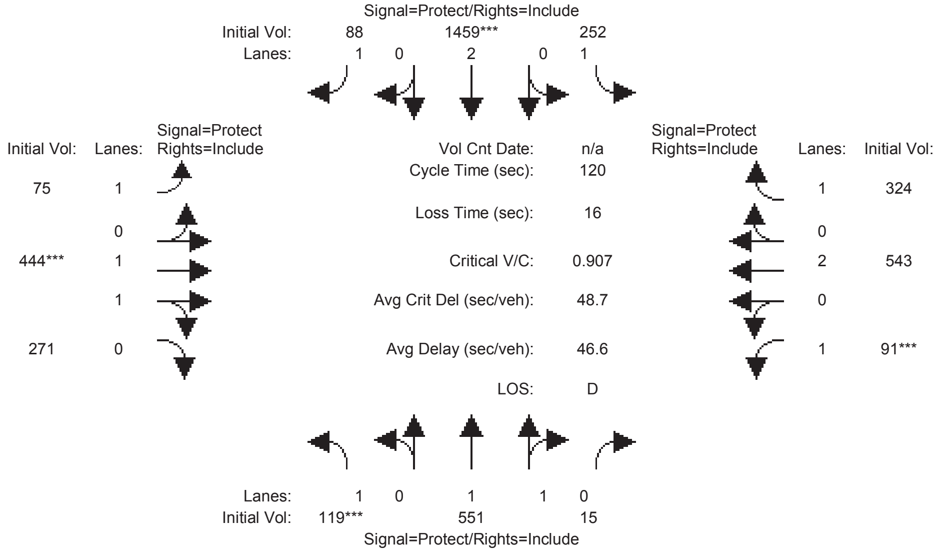
Intersection #3: Fremont & Central



```
Street Name:           Fremont Blvd                      Central Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     905  738    20    65  900   618   366   68   386     1    3     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  905  738    20    65  900   618   366   68   386     1    3     3
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   905  738    20    65  900   618   366   68   386     1    3     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  905  738    20    65  900   618   366   68   386     1    3     3
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  905  738    20    65  900   618   366   68   386     1    3     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  0.95  0.95 0.89  0.87  0.75 0.87  0.83  0.92 0.93  0.92
Lanes:       2.00 1.95  0.05  1.00 1.18  0.82  1.00 0.29  1.71  0.14 0.43  0.43
Final Sat.:  3502 3501    95  1805 1992  1368  1425  476  2701   250  751   751
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.21  0.21  0.04 0.45  0.45  0.26 0.14  0.14  0.00 0.00  0.00
Crit Moves:  ****                  ****        ****
Green Time:  23.3 54.6  54.6   9.3 40.6  40.6  23.1 23.1  23.1  23.1 23.1  23.1
Volume/Cap:  1.11 0.39  0.39  0.39 1.11  1.11  1.11 0.62  0.62  0.02 0.02  0.02
Delay/Veh:  105.1 13.2  13.2  44.1 90.6  90.6 121.5 36.1  36.1  29.7 29.7  29.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 105.1 13.2  13.2  44.1 90.6  90.6 121.5 36.1  36.1  29.7 29.7  29.7
LOS by Move:    F    B     B     D    F     F     F    D     D     C    C     C
HCM2k95thQ:    40   13    13     5   61    60    33   14    14     0    0     0
Note: Queue reported is the number of cars per lane.
```

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing + Project AM

Intersection #4: Paseo Padre & Peralta



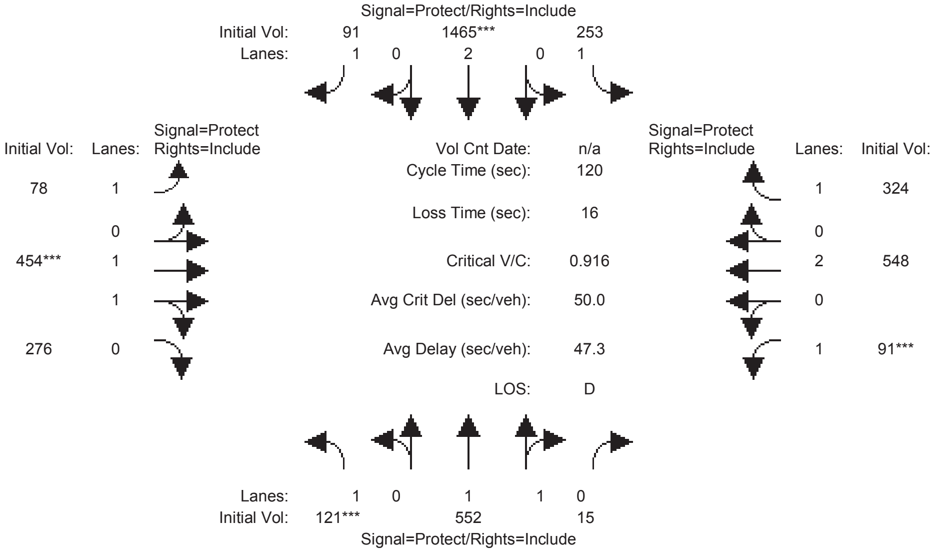
Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 16
Critical V/C: 0.907
Avg Crit Del (sec/veh): 48.7
Avg Delay (sec/veh): 46.6
LOS: D

```
Street Name:         Paseo Padre Pkwy                    Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10    10     4   10    10     4   10    10     4   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     119  551    15   252 1459    88    75  444   271    91  543   324
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  119  551    15   252 1459    88    75  444   271    91  543   324
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   128  592    16   271 1569    95    81  477   291    98  584   348
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  128  592    16   271 1569    95    81  477   291    98  584   348
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  128  592    16   271 1569    95    81  477   291    98  584   348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.95  0.95 0.95  0.83  0.95 0.90  0.89  0.95 0.95  0.85
Lanes:       1.00 1.95  0.05  1.00 2.00  1.00  1.00 1.24  0.76  1.00 2.00  1.00
Final Sat.:  1805 3500    95  1805 3610  1586  1805 2110  1288  1805 3610  1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.17  0.15 0.43  0.06  0.04 0.23  0.23  0.05 0.16  0.22
Crit Moves:  ****                  ****             ****        ****
Green Time:   9.4 35.4  35.4  31.4 57.5  57.5   6.3 29.9  29.9   7.2 30.8  30.8
Volume/Cap:  0.91 0.57  0.57  0.57 0.91  0.12  0.85 0.91  0.91  0.91 0.63  0.85
Delay/Veh:  103.7 36.6  36.6  40.2 36.1  17.4 102.9 57.0  57.0 114.1 41.0  57.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 103.7 36.6  36.6  40.2 36.1  17.4 102.9 57.0  57.0 114.1 41.0  57.2
LOS by Move:    F    D     D     D    D     B     F    E     E     F    D     E
HCM2k95thQ:    14   19    19    17   51     4    10   31    31    12   20    26
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background + Project AM

Intersection #4: Paseo Padre & Peralta



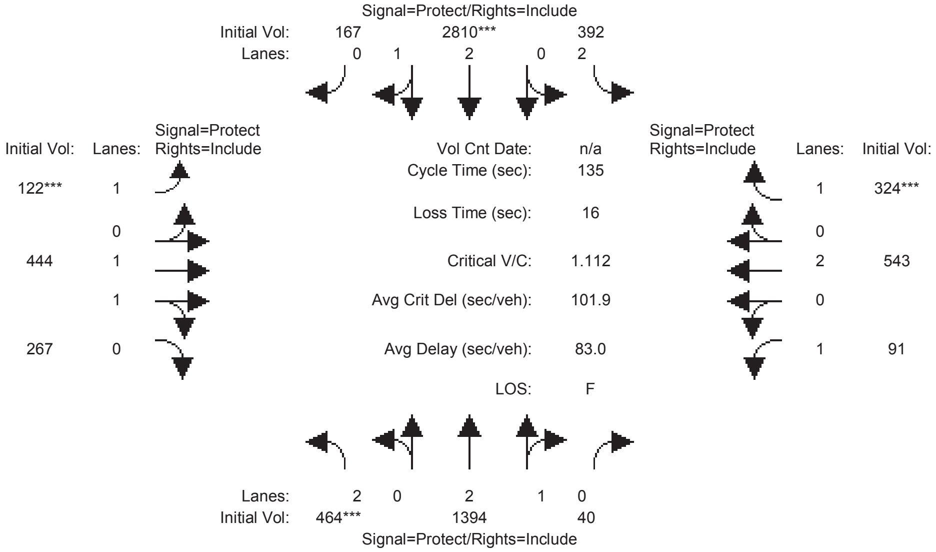
Vol Cnt Date: n/a
Cycle Time (sec): 120
Loss Time (sec): 16
Critical V/C: 0.916
Avg Crit Del (sec/veh): 50.0
Avg Delay (sec/veh): 47.3
LOS: D

```
Street Name:          Paseo Padre Pkwy                 Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10     10     4   10     10     4   10     10     4   10     10
Y+R:          4.0  4.0    4.0   4.0  4.0    4.0   4.0  4.0    4.0   4.0  4.0    4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     121  552     15   253 1465     91    78  454    276    91  548    324
Growth Adj:  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Initial Bse:  121  552     15   253 1465     91    78  454    276    91  548    324
User Adj:    1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
PHF Adj:     0.93 0.93   0.93  0.93 0.93   0.93  0.93 0.93   0.93  0.93 0.93   0.93
PHF Volume:   130  594     16   272 1575     98    84  488    297    98  589    348
Reduct Vol:     0    0      0     0    0      0     0    0      0     0    0      0
Reduced Vol:  130  594     16   272 1575     98    84  488    297    98  589    348
PCE Adj:     1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
MLF Adj:     1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
FinalVolume:  130  594     16   272 1575     98    84  488    297    98  589    348
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900  1900 1900   1900  1900 1900   1900  1900 1900   1900
Adjustment:  0.95 0.95   0.95  0.95 0.95   0.83  0.95 0.90   0.89  0.95 0.95   0.85
Lanes:       1.00 1.95   0.05  1.00 2.00   1.00  1.00 1.24   0.76  1.00 2.00   1.00
Final Sat.:  1805 3500     95  1805 3610   1586  1805 2113   1285  1805 3610   1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17   0.17  0.15 0.44   0.06  0.05 0.23   0.23  0.05 0.16   0.22
Crit Moves:  ****                   ****                **** ****
Green Time:   9.4 35.3   35.3  31.4 57.2   57.2   6.6 30.3   30.3   7.1 30.8   30.8
Volume/Cap:  0.92 0.58   0.58  0.58 0.92   0.13  0.85 0.92   0.92  0.92 0.64   0.85
Delay/Veh:  105.8 36.8   36.8  40.3 37.3   17.6 101.4 58.0   58.0 117.0 41.1   57.2
User DelAdj: 1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
AdjDel/Veh: 105.8 36.8   36.8  40.3 37.3   17.6 101.4 58.0   58.0 117.0 41.1   57.2
LOS by Move:    F    D      D     D    D      B     F    E      E     F    D      E
HCM2k95thQ:    14   19     19    17   51      4    10   32     32    12   20     26
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Cumulative + Project AM

Intersection #4: Paseo Padre & Peralta



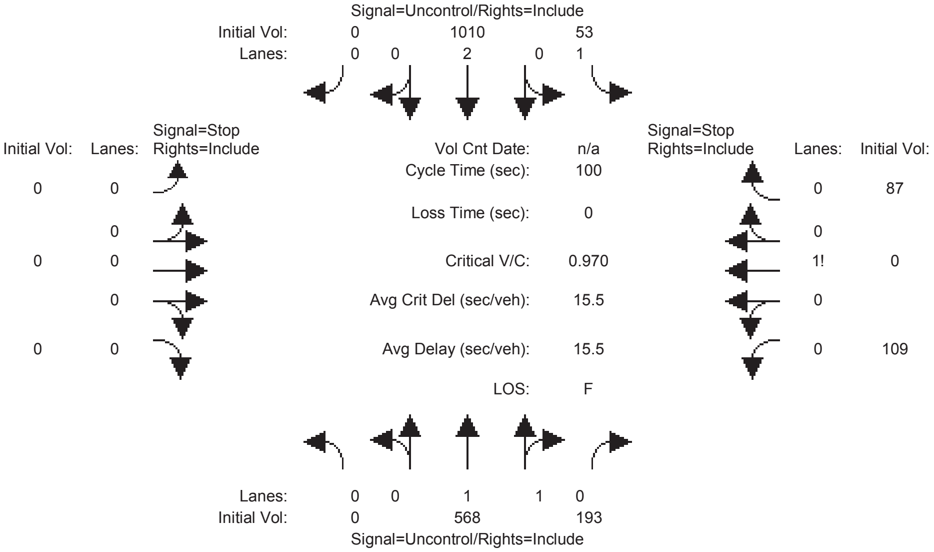
Vol Cnt Date: n/a
Cycle Time (sec): 135
Loss Time (sec): 16
Critical V/C: 1.112
Avg Crit Del (sec/veh): 101.9
Avg Delay (sec/veh): 83.0
LOS: F

```
Street Name:         Paseo Padre Pkwy                    Peralta Blvd
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     4   10     10    4   10     10    4   10     10    4   10     10
Y+R:          4.0  4.0    4.0  4.0  4.0    4.0  4.0  4.0    4.0  4.0  4.0    4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     464 1394     40  392 2810    167  122  444    267   91  543    324
Growth Adj:  1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
Initial Bse:  464 1394     40  392 2810    167  122  444    267   91  543    324
User Adj:    1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
PHF Adj:     1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
PHF Volume:   464 1394     40  392 2810    167  122  444    267   91  543    324
Reduct Vol:     0    0      0    0    0      0    0    0      0    0    0      0
Reduced Vol:  464 1394     40  392 2810    167  122  444    267   91  543    324
PCE Adj:     1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
MLF Adj:     1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
FinalVolume:  464 1394     40  392 2810    167  122  444    267   91  543    324
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900 1900 1900   1900 1900 1900   1900 1900 1900   1900
Adjustment:  0.92 0.91   0.91 0.92 0.90   0.90 0.95 0.90   0.89 0.95 0.95   0.85
Lanes:       2.00 2.92   0.08 2.00 2.83   0.17 1.00 1.25   0.75 1.00 2.00   1.00
Final Sat.:  3502 5022    144 3502 4857    289 1805 2125   1278 1805 3610   1608
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.28   0.28 0.11 0.58   0.58 0.07 0.21   0.21 0.05 0.15   0.20
Crit Moves:  ****                  ****        ****                          ****
Green Time:  16.1 61.5   61.5 24.8 70.2   70.2  8.2 26.3   26.3  6.4 24.5   24.5
Volume/Cap:  1.11 0.61   0.61 0.61 1.11   1.11 1.11 1.07   1.07 1.07 0.83   1.11
Delay/Veh:  137.5 28.2   28.2 52.3 88.8   88.8 182.6  110  110.1 182.9 62.0  141.5
User DelAdj: 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
AdjDel/Veh: 137.5 28.2   28.2 52.3 88.8   88.8 182.6  110  110.1 182.9 62.0  141.5
LOS by Move:    F    C      C    D    F      F    F    F      F    F    E      F
HCM2k95thQ:    28   28     28   16   93     93   17   38     38   14   24     35
Note: Queue reported is the number of cars per lane.
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #5: Fremont & Parish



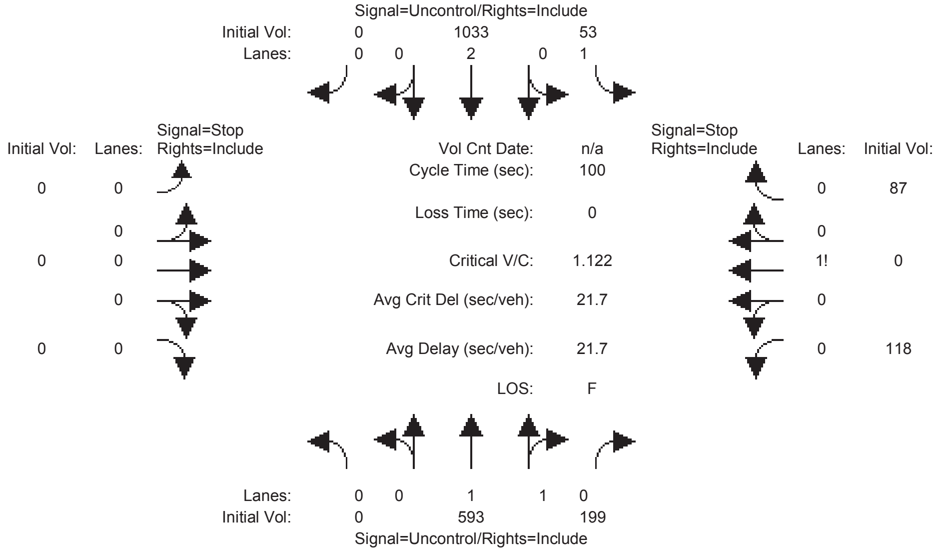
```
                              Signal=Uncontrol/Rights=Include
                   Initial Vol:    0         1010         53
                        Lanes:     0    0      2      0    1

                  Signal=Stop                                         Signal=Stop
Initial Vol:  Lanes:  Rights=Include     Vol Cnt Date:       n/a      Rights=Include    Lanes:  Initial Vol:
                                     Cycle Time (sec):       100
     0         0                                                                           0        87
                                      Loss Time (sec):         0
               0                                                                           0
     0         0                          Critical V/C:    0.970                           1!        0
               0                Avg Crit Del (sec/veh):     15.5                           0
     0         0                     Avg Delay (sec/veh):   15.5                           0       109
                                                  LOS:       F

                        Lanes:     0    0      1      1    0
                   Initial Vol:    0          568         193
                              Signal=Uncontrol/Rights=Include
```

```
Street Name:           Fremont Blvd                         Parish Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  568   193    53 1010     0     0    0     0   109    0    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0  568   193    53 1010     0     0    0     0   109    0    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:      0  611   208    57 1086     0     0    0     0   117    0    94
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0  611   208    57 1086     0     0    0     0   117    0    94
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   825 xxxx xxxxx  xxxx xxxx xxxxx  1410 1922   416
Potent Cap.: xxxx xxxx xxxxx   814 xxxx xxxxx  xxxx xxxx xxxxx   132   68   591
Move Cap.:   xxxx xxxx xxxxx   809 xxxx xxxxx  xxxx xxxx xxxxx   121   63   588
Volume/Cap:  xxxx xxxx  xxxx  0.07 xxxx  xxxx  xxxx xxxx  xxxx  0.97 0.00  0.16
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  187 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.5 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  157 xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:     xxxxxx            xxxxxx            xxxxxx           156.6
ApproachLOS:          *                 *                 *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #5 Fremont & Parish
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #5: Fremont & Parish

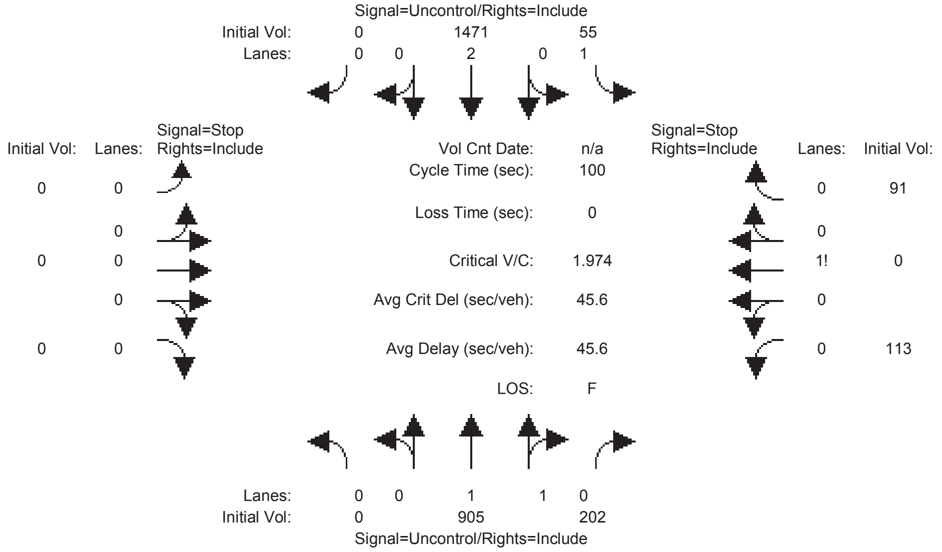


```
                    Signal=Uncontrol/Rights=Include
          Initial Vol:   0        1033       53
               Lanes:    0    0     2     0   1

                  Signal=Stop                                        Signal=Stop
Initial Vol:  Lanes:  Rights=Include      Vol Cnt Date:     n/a      Rights=Include   Lanes:  Initial Vol:
                                        Cycle Time (sec):    100
     0          0                                                                        0        87
                                         Loss Time (sec):      0
                0                                                                        0
     0          0                           Critical V/C:  1.122                         1!        0
                0                   Avg Crit Del (sec/veh):   21.7                        0
     0          0                        Avg Delay (sec/veh):   21.7                      0       118
                                                     LOS:      F

               Lanes:    0    0     1     1   0
          Initial Vol:   0         593       199
                    Signal=Uncontrol/Rights=Include
```

```
Street Name:           Fremont Blvd                          Parish Ave
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  593   199    53 1033     0     0    0     0   118    0    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  593   199    53 1033     0     0    0     0   118    0    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  638   214    57 1111     0     0    0     0   127    0    94
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  638   214    57 1111     0     0    0     0   127    0    94
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   859 xxxx xxxxx  xxxx xxxx xxxxx  1452 1976   433
Potent Cap.: xxxx xxxx xxxxx   791 xxxx xxxxx  xxxx xxxx xxxxx   124   63   577
Move Cap.:   xxxx xxxx xxxxx   786 xxxx xxxxx  xxxx xxxx xxxxx   113   58   573
Volume/Cap:  xxxx xxxx  xxxx  0.07 xxxx  xxxx  xxxx xxxx  xxxx  1.12 0.00  0.16
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx   9.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  172 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.6 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  218 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx            xxxxxx            xxxxxx            217.5
ApproachLOS:         *                 *                 *                F
Note: Queue reported is the number of cars per lane.
                    Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #5: Fremont & Parish



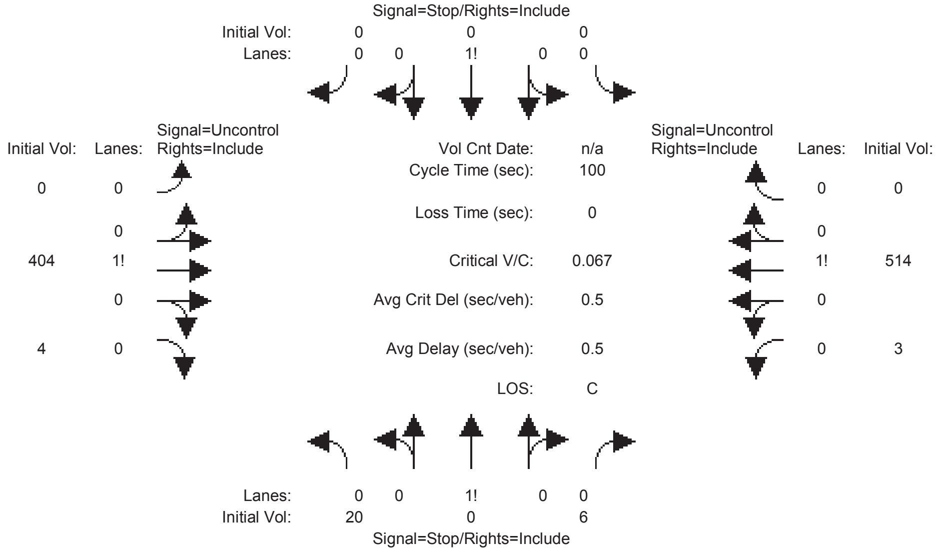
```
                              Signal=Uncontrol/Rights=Include
                   Initial Vol:   0        1471        55
                         Lanes:   0   0      2     0   1

             Signal=Stop                                          Signal=Stop
Initial Vol:  Lanes:  Rights=Include    Vol Cnt Date:      n/a    Rights=Include   Lanes:  Initial Vol:
                                    Cycle Time (sec):      100
    0          0                                                                     0         91
                                     Loss Time (sec):        0
               0                                                                     0
    0          0                         Critical V/C:     1.974                     1!         0
               0                  Avg Crit Del (sec/veh):   45.6                     0
    0          0                     Avg Delay (sec/veh):   45.6                     0        113
                                                   LOS:      F

                         Lanes:   0   0      1     1   0
                   Initial Vol:   0         905       202
                              Signal=Uncontrol/Rights=Include
```

```
Street Name:           Fremont Blvd                       Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  905   202     55 1471     0     0    0     0    113    0    91
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  905   202     55 1471     0     0    0     0    113    0    91
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  905   202     55 1471     0     0    0     0    113    0    91
Reduct Vol:     0    0     0      0    0     0     0    0     0      0    0     0
FinalVolume:    0  905   202     55 1471     0     0    0     0    113    0    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9
FollowUpTim:xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1114 xxxx xxxxx  xxxx xxxx xxxxx  1890 2594   561
Potent Cap.: xxxx xxxx xxxxx   634 xxxx xxxxx  xxxx xxxx xxxxx    63   25   476
Move Cap.:   xxxx xxxx xxxxx   631 xxxx xxxxx  xxxx xxxx xxxxx    57   23   474
Volume/Cap:  xxxx xxxx  xxxx  0.09 xxxx  xxxx  xxxx xxxx  xxxx  1.97 0.00  0.19
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   94 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 18.0 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  631 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            631.2
ApproachLOS:         *                *                *                F
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Fremont & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #6: Jason & Peralta



Signal=Stop/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 1! 0 0

Signal=Uncontrol
Rights=Include
Initial Vol: 0, 404, 4
Lanes: 0, 0, 1!, 0, 0

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.067
Avg Crit Del (sec/veh): 0.5
Avg Delay (sec/veh): 0.5
LOS: C

Signal=Uncontrol
Rights=Include
Lanes: 0, 0, 1!, 0, 0
Initial Vol: 0, 514, 3

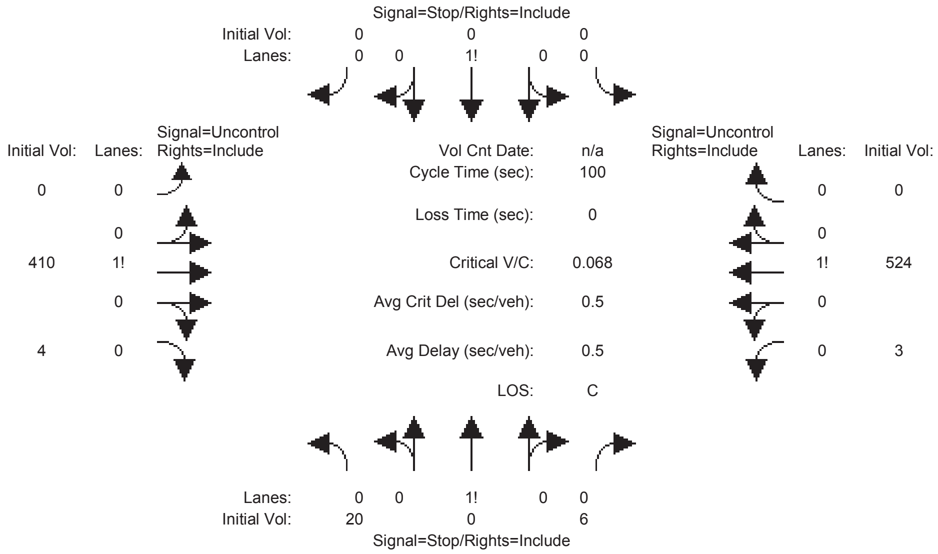
Lanes: 0 0 1! 0 0
Initial Vol: 20 0 6
Signal=Stop/Rights=Include

```
Street Name:             Jason Way                         Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    0     6     0    0     0     0  404     4     3  514     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20    0     6     0    0     0     0  404     4     3  514     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    20    0     6     0    0     0     0  404     4     3  514     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   20    0     6     0    0     0     0  404     4     3  514     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  926  926   406   929  928   514  xxxx xxxx xxxxx   408 xxxx xxxxx
Potent Cap.:  301  271   649   250  270   564  xxxx xxxx xxxxx  1162 xxxx xxxxx
Move Cap.:    300  270   649   247  269   564  xxxx xxxx xxxxx  1162 xxxx xxxxx
Volume/Cap:  0.07 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  343 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 16.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     A    *     *
ApproachDel:      16.4            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                 *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #6: Jason & Peralta

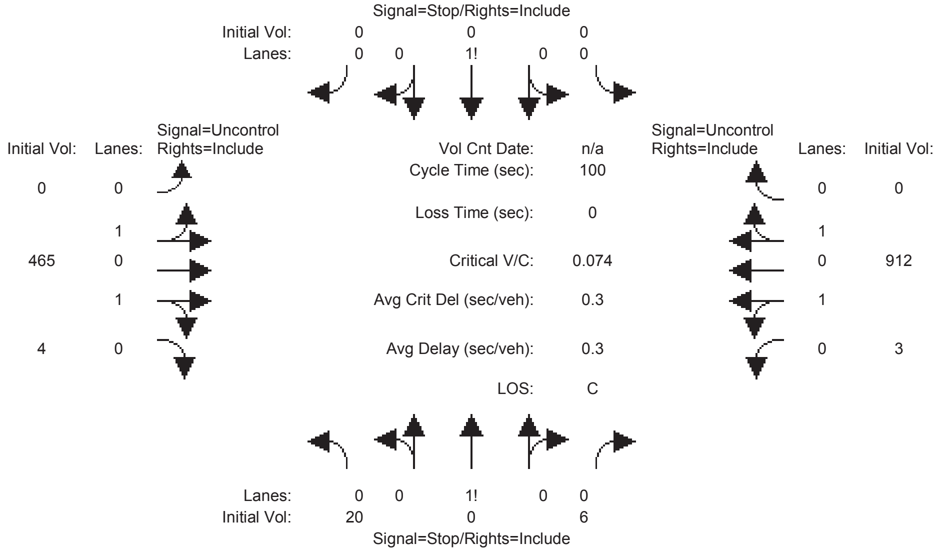


```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    0     6     0    0     0     0  410     4     3  524     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20    0     6     0    0     0     0  410     4     3  524     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    20    0     6     0    0     0     0  410     4     3  524     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   20    0     6     0    0     0     0  410     4     3  524     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  942  942   412   945  944   524  xxxx xxxx xxxxx   414 xxxx xxxxx
Potent Cap.:  294  265   644   244  264   557  xxxx xxxx xxxxx  1156 xxxx xxxxx
Move Cap.:    294  264   644   241  264   557  xxxx xxxx xxxxx  1156 xxxx xxxxx
Volume/Cap:  0.07 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  336 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 16.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     A    *     *
ApproachDel:      16.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #6: Jason & Peralta

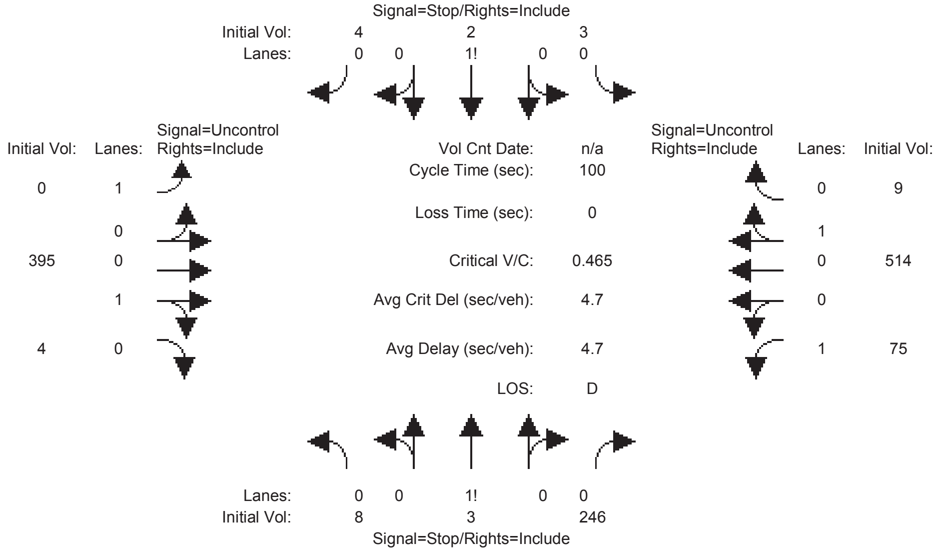


```
Street Name:            Jason Way                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    0     6     0    0     0     0  465     4     3  912     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20    0     6     0    0     0     0  465     4     3  912     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    20    0     6     0    0     0     0  465     4     3  912     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   20    0     6     0    0     0     0  465     4     3  912     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.8  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  929 1385   235  1151 1387   456  xxxx xxxx xxxxx   469 xxxx xxxxx
Potent Cap.:  270  145   773   156  144   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Move Cap.:    270  144   773   154  144   557  xxxx xxxx xxxxx  1103 xxxx xxxxx
Volume/Cap:  0.07 0.00  0.01  0.00 0.00  0.00  xxxx xxxx  xxxx  0.00 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  317 xxxxx  xxxx    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx 17.4 xxxxx xxxxx xxxx xxxxx   7.2 xxxx xxxxx   8.3 xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     A    *     *     A    *     *
ApproachDel:      17.4           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                *                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Jason & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #7: Parish & Peralta

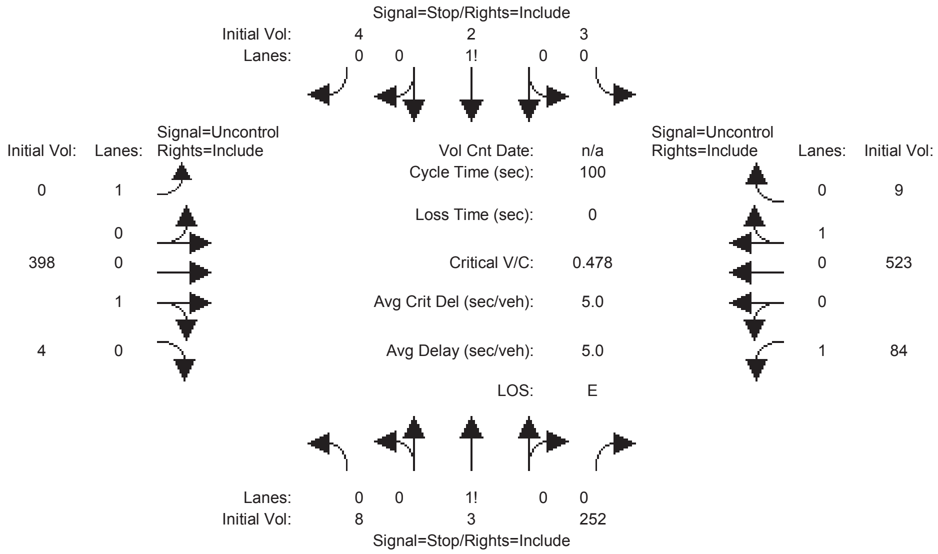


```
Street Name:             Parish Ave                        Peralta Blvd
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8    3   246     3    2     4     0  395     4    75  514     9
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    3   246     3    2     4     0  395     4    75  514     9
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:      9    3   283     3    2     5     0  454     5    86  591    10
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    3   283     3    2     5     0  454     5    86  591    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1228 1230   456  1368 1227   596  xxxx xxxx xxxxx   459 xxxx xxxxx
Potent Cap.:  156  179   608   125  180   507  xxxx xxxx xxxxx  1113 xxxx xxxxx
Move Cap.:    144  165   608    62  166   507  xxxx xxxx xxxxx  1113 xxxx xxxxx
Volume/Cap:  0.06 0.02  0.46  0.06 0.01  0.01  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  538 xxxxx  xxxx  132 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.3 xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 19.6 xxxxx xxxxx 34.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    C     *     *    D     *     *    *     *     *    *     *
ApproachDel:       19.6              34.6            xxxxxx            xxxxxx
ApproachLOS:          C                 D                *                 *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #7: Parish & Peralta

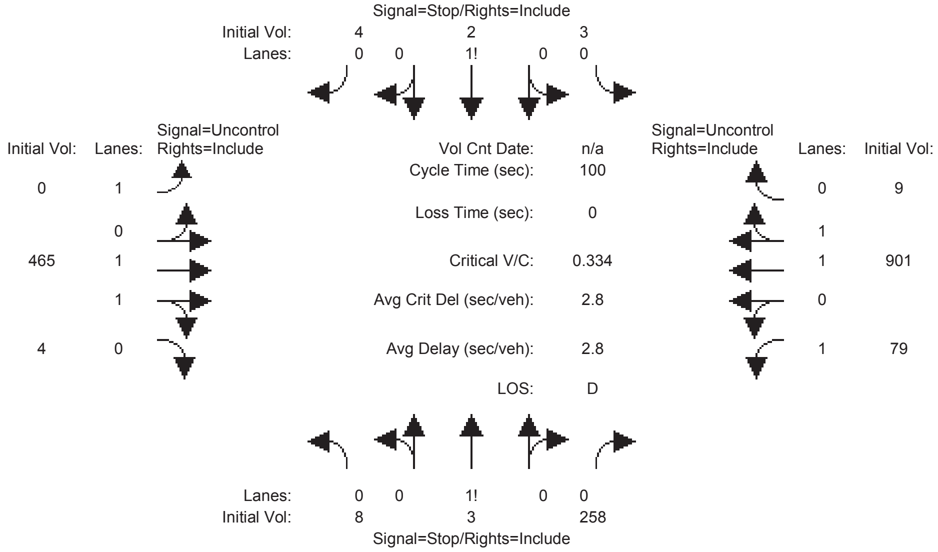


```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    3   252     3    2     4     0  398     4    84  523     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    3   252     3    2     4     0  398     4    84  523     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:     9    3   290     3    2     5     0  457     5    97  601    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    3   290     3    2     5     0  457     5    97  601    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1263 1264   460  1406 1261   606  xxxx xxxx xxxxx   462 xxxx xxxxx
Potent Cap.:  148  171   606   118  172   500  xxxx xxxx xxxxx  1110 xxxx xxxxx
Move Cap.:    135  156   606    56  157   500  xxxx xxxx xxxxx  1110 xxxx xxxxx
Volume/Cap:  0.07 0.02  0.48  0.06 0.01  0.01  xxxx xxxx  xxxx  0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  532 xxxxx  xxxx  122 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.5 xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 20.3 xxxxx xxxxx 37.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    E     *     *    *     *     *    *     *
ApproachDel:      20.3             37.3           xxxxxx           xxxxxx
ApproachLOS:         C                E                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #7: Parish & Peralta

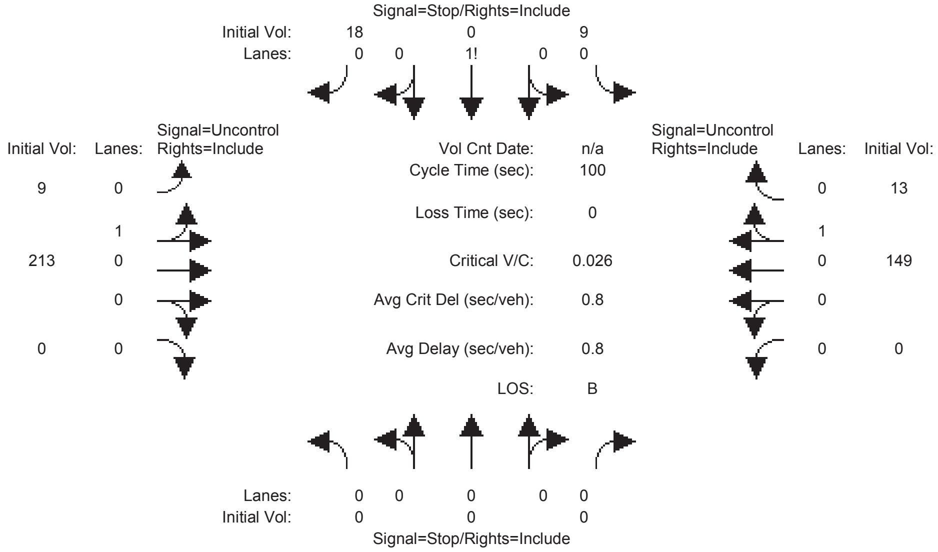


```
Street Name:            Parish Ave                       Peralta Blvd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8    3   258     3    2     4     0  465     4    79  901     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    3   258     3    2     4     0  465     4    79  901     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      8    3   258     3    2     4     0  465     4    79  901     9
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     8    3   258     3    2     4     0  465     4    79  901     9
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1077 1535   235  1298 1533   455  xxxx xxxx xxxxx   469 xxxx xxxxx
Potent Cap.:  176  117   773   121  118   558  xxxx xxxx xxxxx  1103 xxxx xxxxx
Move Cap.:    163  109   773    75  109   558  xxxx xxxx xxxxx  1103 xxxx xxxxx
Volume/Cap:  0.05 0.03  0.33  0.04 0.02  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  656 xxxxx  xxxx  137 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.0 xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.3 xxxxx xxxxx 33.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    D     *     *    *     *     *    *     *
ApproachDel:      14.3             33.1           xxxxxx           xxxxxx
ApproachLOS:         B                D                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #7 Parish & Peralta
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Existing + Project AM

Intersection #8: Jason & Parish

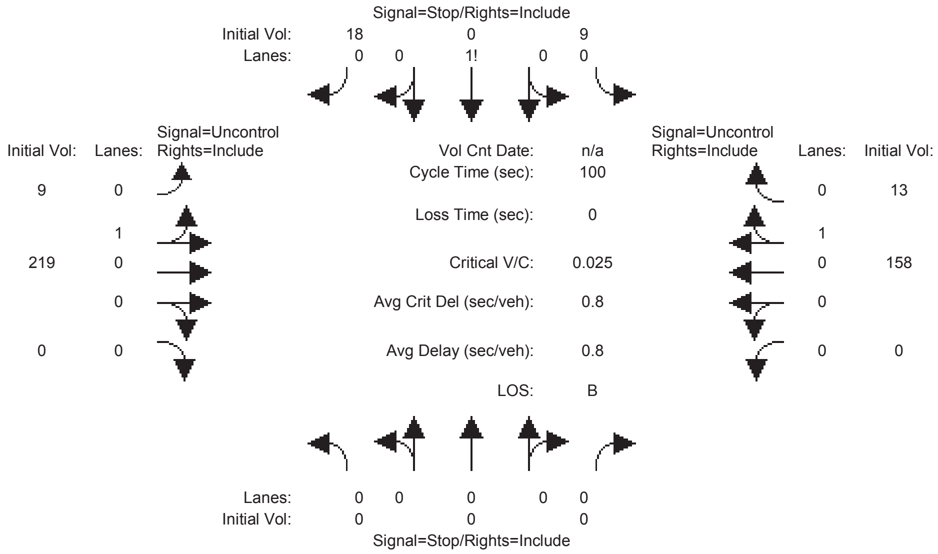


```
Street Name:            Jason Way                         Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     9    0    18     9  213     0     0  149    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     9    0    18     9  213     0     0  149    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82
PHF Volume:     0    0     0    11    0    22    11  260     0     0  182    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    11    0    22    11  260     0     0  182    16
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   471  471   190   198 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   555  494   857  1387 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   551  490   857  1387 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.03  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  723 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx             10.2            xxxxxx            xxxxxx
ApproachLOS:         *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Silicon Sage Mixed-Use Project

Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Background + Project AM

Intersection #8: Jason & Parish



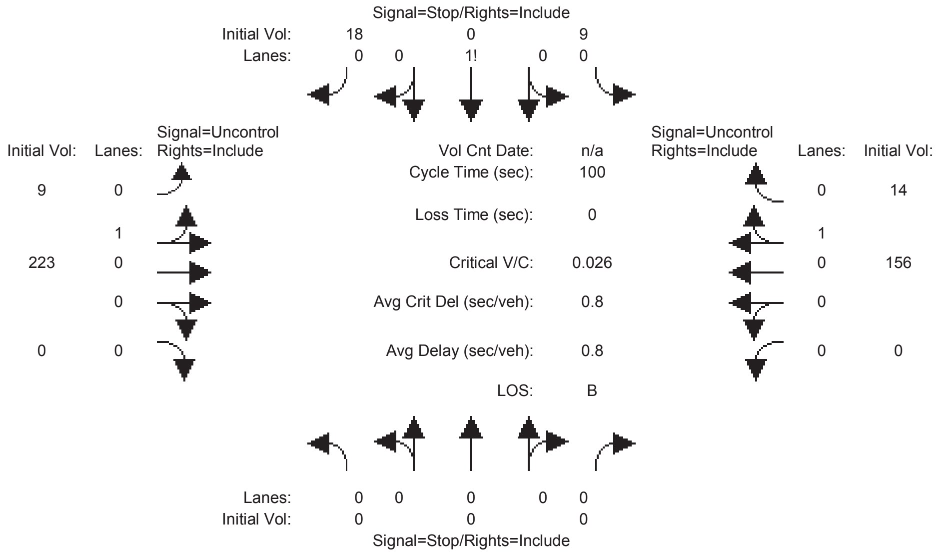
Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 0
Critical V/C: 0.025
Avg Crit Del (sec/veh): 0.8
Avg Delay (sec/veh): 0.8
LOS: B

```
Street Name:                Jason Way                          Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     9    0    18     9  219     0     0  158    13
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     9    0    18     9  219     0     0  158    13
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85
PHF Volume:      0    0     0    11    0    21    11  258     0     0  186    15
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    11    0    21    11  258     0     0  186    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   472  472   194   201 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   554  493   853  1383 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   551  489   853  1383 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.02  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  721 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx             10.2             xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
```

Silicon Sage Mixed-Use Project

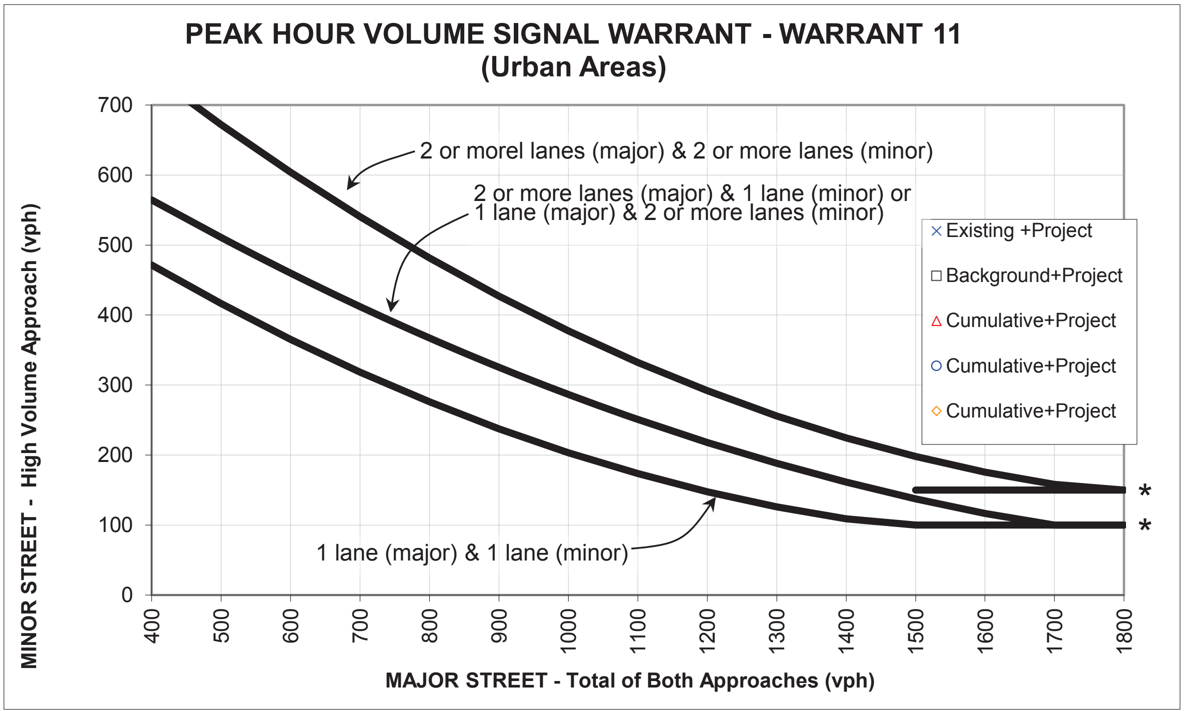
Level Of Service Computation Report
2000 HCM Unsignalized (Base Volume Alternative)
Cumulative + Project AM

Intersection #8: Jason & Parish



```
Street Name:             Jason Way                          Parish Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     9    0    18     9  223     0     0  156    14
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     9    0    18     9  223     0     0  156    14
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82
PHF Volume:     0    0     0    11    0    22    11  272     0     0  190    17
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    11    0    22    11  272     0     0  190    17
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   493  493   199   207 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   539  480   847  1376 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   536  476   847  1376 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.03  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  710 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:    xxxxxx             10.3            xxxxxx           xxxxxx
ApproachLOS:         *                B                 *                *
Note: Queue reported is the number of cars per lane.
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #8 Jason & Parish
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

Fremont Blvd & Parish Ave	**TIA**



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

AM Peak Hour Volumes

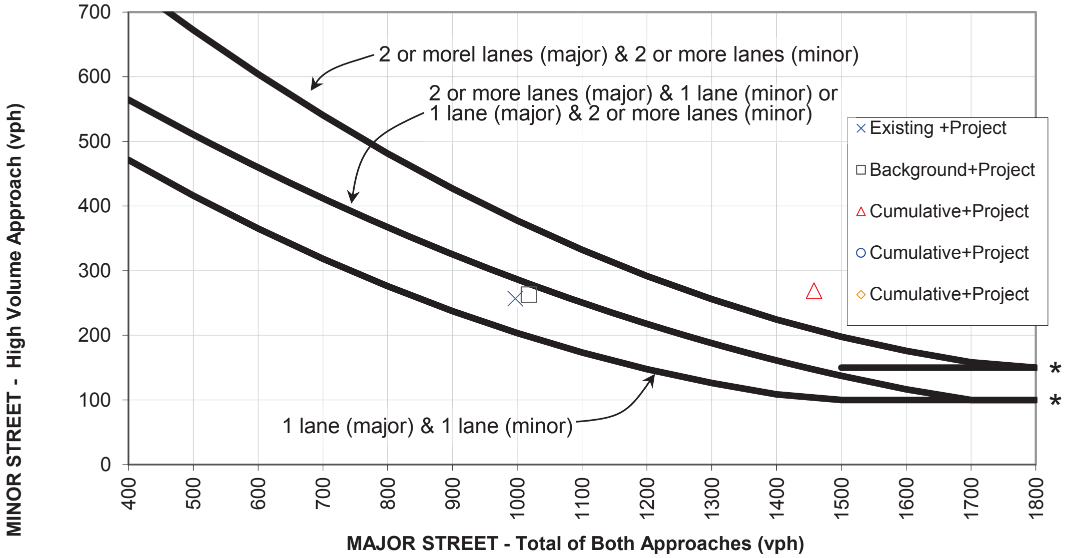
		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Background +Project	Cumulative+ Project		
Major Street - Both Approaches	Fremont Blvd		x	1824	1878	2633		
Minor Street - Highest Approach	Parish Ave	x		193	205	204		
		Warrant Met?		yes	yes	yes		

PM Peak Hour Volumes

	Approach Lanes One	Approach Lanes 2 or More					
Major Street - Both Approaches		x					
Minor Street - Highest Approach	x						
	Warrant Met?						

Parish Ave & Peralta Blvd TIA

PEAK HOUR VOLUME SIGNAL WARRANT - WARRANT 11
(Urban Areas)



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

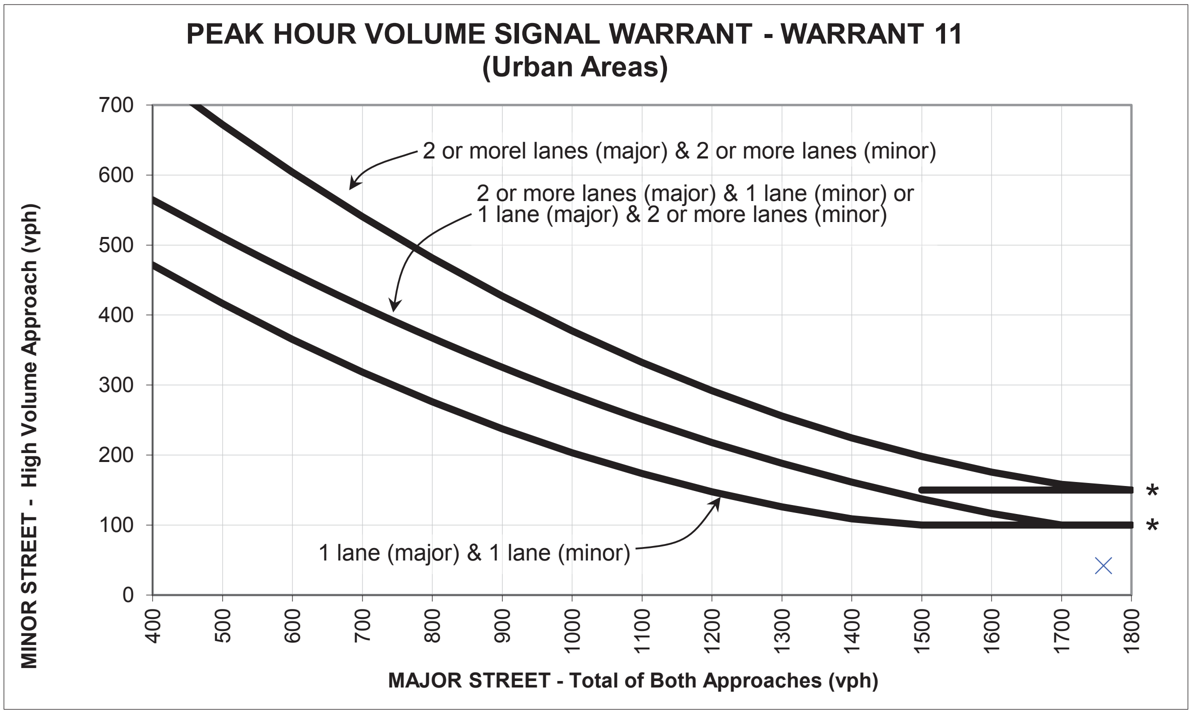
WARRANT 11 - Peak Hour Volume

		Approach Lanes		AM Peak Hour Volumes				
		One	2 or More	Existing +Project	Background +Project	Cumulative+ Project		
Major Street - Both Approaches	Peralta Blvd		x	997	1018	1458		
Minor Street - Highest Approach	Parish Ave	x		257	263	269		
		Warrant Met?		no*	no*	no*		

	Approach Lanes		PM Peak Hour Volumes				
	One	2 or More					
Major Street - Both Approaches		x					
Minor Street - Highest Approach	x						
	Warrant Met?						

*the traffic volumes on the Parish Ave (minor street) approach are 95% right turns: 249, 255 and 261 right turns under the existing, background and cumulative scenarios, respectively. The total, combined stopped-time delay for all vehicles on the (south) Parish approach in the AM peak hour would be no greater than 2.8 hours under all three scenarios. This is less than the 4 hours of total delay required to meet the warrant.

Fremont Blvd & Main Site Driveway	**Operations**



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

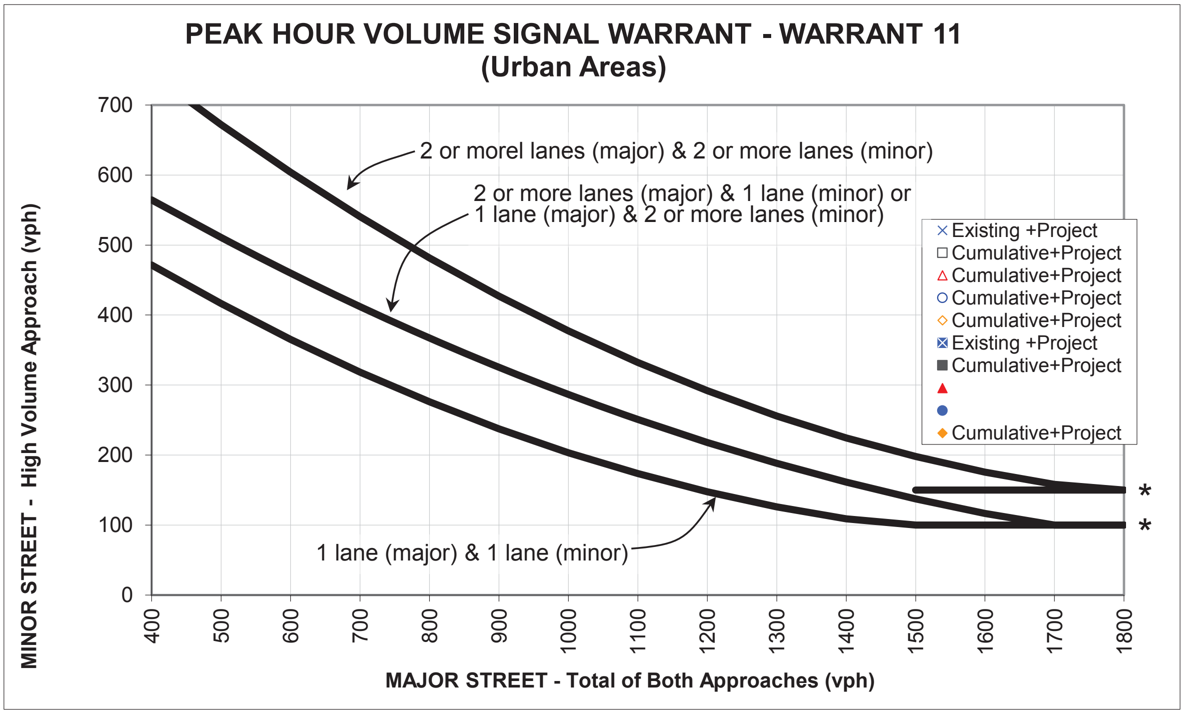
AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	1760	2497			
Minor Street - Highest Approach	Main Driveway	x		42	42			
			Warrant Met?	no	no			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	2076	2742			
Minor Street - Highest Approach	Main Driveway	x		36	36			
			Warrant Met?	no	no			

Fremont Blvd & Parish Ave	**Operations**



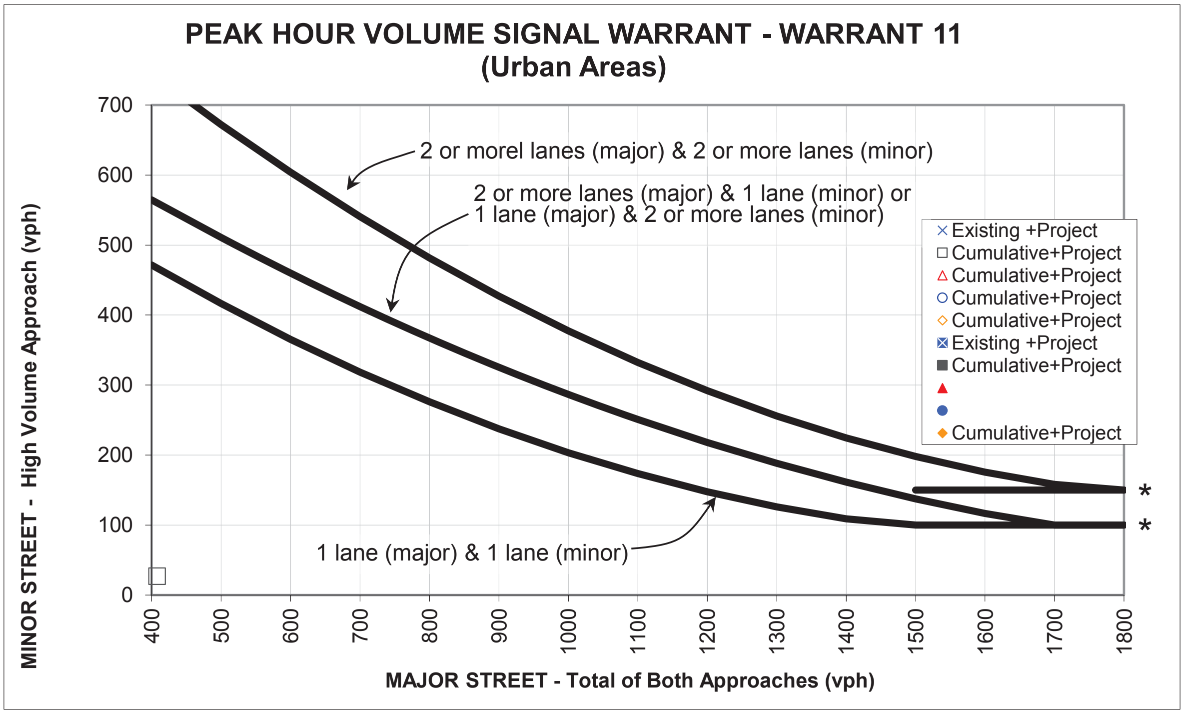
* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

		Approach Lanes		AM Peak Hour Volumes				
		One	2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	1819	2628			
Minor Street - Highest Approach	Parish Ave	x		190	198			
			Warrant Met?	yes	yes			

		Approach Lanes		PM Peak Hour Volumes				
		One	2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Fremont Blvd		x	2182	2897			
Minor Street - Highest Approach	Parish Ave	x		68	72			
			Warrant Met?	no	no			

Jason Way & Parish Ave **Operations**



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

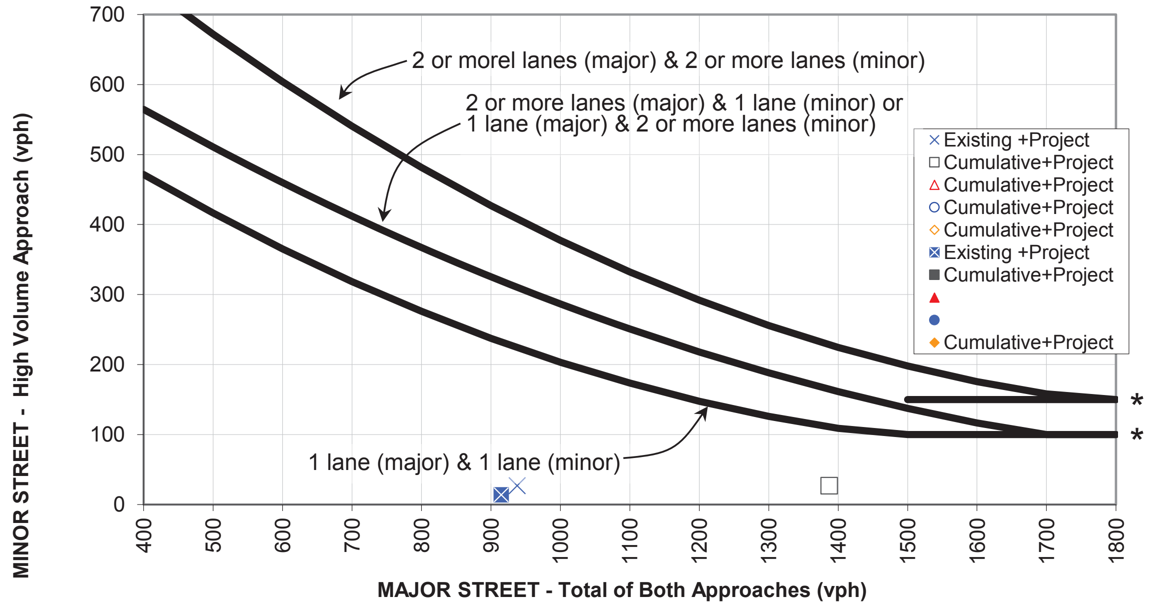
WARRANT 11 - Peak Hour Volume

		Approach Lanes		AM Peak Hour Volumes				
		One	2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		390	408			
Minor Street - Highest Approach	Jason Way	x		27	27			
			Warrant Met?	no	no			

		Approach Lanes		PM Peak Hour Volumes				
		One	2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Parish Ave	x		282	294			
Minor Street - Highest Approach	Jason Way	x		23	23			
			Warrant Met?	no	no			

Jason Way & Peralta Blvd **Operations**

PEAK HOUR VOLUME SIGNAL WARRANT - WARRANT 11
(Urban Areas)



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

WARRANT 11 - Peak Hour Volume

AM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Peralta Blvd		x	938	1387			
Minor Street - Highest Approach	Jason Way	x		27	27			
			Warrant Met?	no	no			

PM Peak Hour Volumes

		Approach Lanes One	Approach Lanes 2 or More	Existing +Project	Cumulative+ Project			
Major Street - Both Approaches	Peralta Blvd		x	915	2150			
Minor Street - Highest Approach	Jason Way	x		14	14			
			Warrant Met?	no	no			

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