Village Green Mixed-Use Project

Final Addendum to the 2004 San Lorenzo Village Center Specific Plan EIR

Prepared for:
County of Alameda
Community Development Agency

Prepared by:

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January 2019

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Attachments

Project Characteristics

Project Title:	Village Green Apartments
Project Address:	Hesperian Blvd & Paseo Grande San Lorenzo, CA 94580
Land Use Designation:	San Lorenzo Specific Plan Area
Zoning:	SLVCSP-C-1
APNs:	412-39-1-3; 412-39-2; 412-39-3; 412-39-4-2; 412-42-113; 412-42-112
Project Size:	5.12 acres; 163 dwelling units; 12,184 sf retail
Applicant:	Demmon Partners 1451 River Park Drive, Suite 121 Sacramento, CA 95815
Attn:	Mitchell McKenzie 916-514-0426 mitchell@demmonpartners.com
Staff Contact:	Rodrigo Orduña, Assistant Planning Director Alameda County Community Development Agency 510-670-6503

Executive Summary

Demmon Partners (Project Applicant) is proposing development of a 5.12-acre property (Project), consisting of six parcels in San Lorenzo, an unincorporated part of Alameda County. The Project site is at the southwest intersection of Hesperian Blvd and Paseo Grande. The Applicant proposes to construct 163 multiple dwelling units in three residential buildings, as well as to provide 12,184 sf of retail space (11,524 sq. ft. of indoor retail, 660 sq. ft. of outdoor retail seating area). The Project will provide 327 spaces of vehicle parking, using a mix of private garage parking, standard uncovered surface parking, covered garage parking, and street parking on Via Arriba and Via Mercado. The existing Via Mercado will be relocated 150 feet south as part of the Project.

The proposed Project is located on three subareas identified for development in the San Lorenzo Village Center Specific Plan (SLVCSP), adopted by Alameda County in 2004. The Project site is zoned SLZSP-C1, meaning it is zoned Retail Business within the Specific Plan Area. Per the Specific Plan, residential uses are permitted in this zone as part of a project that also includes commercial development.

Along with adoption of the Specific Plan, an Environmental Impact Report (EIR) was certified for the SLVCSP in 2004 (hereafter referred to as the "Specific Plan EIR"). While the proposed Project is consistent overall with development proposed in the Specific Plan, some of the specific parameters of development differ from those analyzed in the Specific Plan EIR. In such circumstances, where the project details and environmental conditions are not the same as those analyzed in the program EIR, additional analysis of environmental impacts of the proposed project may be warranted.

For the reasons discussed in detail below, this CEQA document has been prepared as an Addendum to the Specific Plan EIR, because some changes or additions are necessary to the Specific Plan EIR but none of the following conditions calling for preparation of a subsequent EIR (detailed in CEQA Guidelines Section 15162) apply to the Project. The conditions require that a subsequent EIR be prepared if:

1. Substantial changes are proposed in the project which will require major revisions of the EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions of the EIR or Negative Declaration due to involvement of new significant environmental effects or a substantial increase in severity of previously identified significant effects; or
3. New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified or the Negative Declaration was adopted, shows the following:
    - A. The project will have one or more significant effects not discussed in the previous EIR or Negative Declaration.
    - B. Significant effects previously examined will be substantially more severe than previously shown in the previous EIR.
    - C. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project,

but the project proponents decline to adopt the mitigation measure or alternative; or

D. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponent decline to adopt the mitigation measure or alternative.

This Addendum demonstrates that no substantial changes have occurred with respect to the circumstances under which the prior EIR were certified, and there is no significant new relevant information which was not known and could not have been known at the time that the prior EIR was certified as complete. Further, the Project would not have any new significant effects not discussed in the previous EIR, and would not result in any significant effects that would be substantially more severe than previously shown in the previous EIR. Therefore, the County believes this Addendum is fully consistent with the requirements of Guidelines Sections 15162, 15163, and 15164.

Project Description

This section describes the proposed Project. It includes a description of the Project site, existing site conditions, the proposed development, and required Project approvals.

Project Setting

The Project site is an approximately 5.12-acre site located in San Lorenzo, an unincorporated community of Alameda County, California (see Figure 1). The Project is located along the west side of Hesperian Boulevard, bounded by Paseo Grande to the north and single-family homes to the west and to the south (see Figure 2). The proposed mixed-use development would consist of 163 multi-family dwelling units, with 12,184 square-feet of retail space (11,524 sq. ft. of indoor retail, 660 sq. ft. of outdoor retail seating area) located at the northwest corner of the development (the intersection of Hesperian and Paseo Grande). A vacant 4,000 square-foot building (formerly Kavanagh Liquors) and a 230-space surface parking lot currently occupy the site. The parking lot serves as overflow for neighboring businesses but there is ample parking along side streets and at adjacent retail locations, so the lot is infrequently used. The parking lot also houses a weekly food truck event from 5:00 to 9:00 PM every Thursday, and a Christmas Tree Lot during the holidays. The Project would replace the existing building and onsite parking lot.

The site is generally flat at mean sea level (msl) height of approximately 31'. It contains two streets that run through the property, Via Arriba running north-south from Paseo Grande and Via Mercado, running east-west from Hesperian Blvd. (this street would be relocated 150 feet south as part of the Project).

The Project is located within the planning area of the San Lorenzo Village Center Specific Plan (see Figure 3). In addition, the Hesperian Blvd corridor has been identified by the Alameda County Transportation Commission as a Planned Development Area. AC transit lines 93 and 97 provide service along Paseo Grande and Hesperian Boulevard, connecting San Lorenzo to Hayward, San Leandro, and Union City. Both lines provide service to BART. The nearest BART station is Bay Fair, which is approximately 1-1/2 miles north of the site. Regional access is provided by Interstate 880 (I-880) and Interstate 580 (I-580). In addition, the Transbay S line provides daily commute service to San Francisco (the S line does not serve any BART stations).

Figure 1. General Location

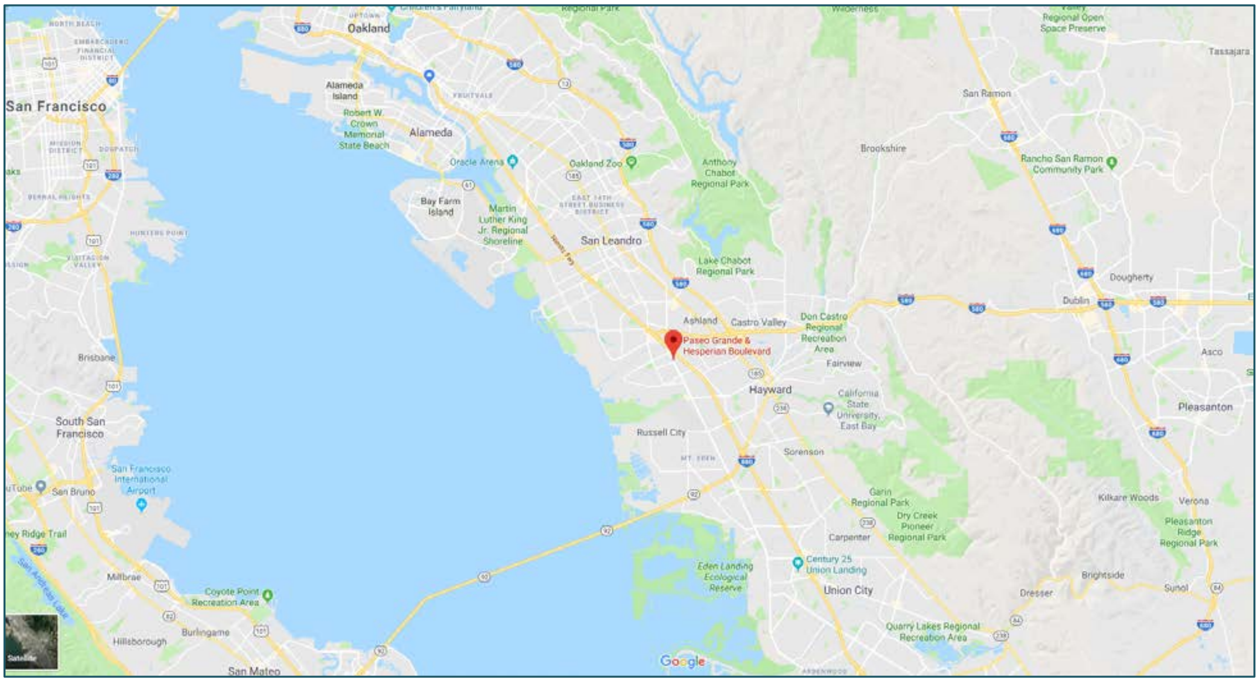

Figure 2. Project Site Vicinity—Village Green Apartments

Surrounding Land Uses

The site is surrounded to the immediate west and south by residential neighborhoods, primarily single-family homes. Across Paseo Grande to the north is a vacant lot, which is surrounded by residences to its north and west. Across Hesperian Boulevard at the southern edge of the property is the historic Lorenzo Theater. Because of its architecture and local importance, this theater is considered historically significant and is now listed on the State Registry of Historic Places. In addition, the theater also is within the Historical Preservation (H-P) District of the Zoning Ordinance. North and south of the Project site, Hesperian Blvd. is dominated by one- and two-story commercial uses.

The proposed Project site is not considered a local historic resource or a landmark.

General Plan and Zoning Designations

The proposed Project consists of three parcels--subareas 5B, 5C, and 5D--identified for development as part of the San Lorenzo Village Center Specific Plan (SLVCSP), which was adopted by Alameda County in 2004 (see Figure 4). The Project site is zoned SLZSP-C1, meaning it is zoned Retail Business within the Specific Plan Area. Per the Specific Plan, residential uses are permitted as part of a project that includes commercial development.

The Specific Plan limits residential density in the Plan Area overall to 19.66 dwelling units per acre (du/ac); within subareas 2, 4, and 5A through 5D, it limits the number of dwelling units to 450 total. The Specific Plan EIR, certified and approved by the County in June 2004, states that "densities may be shifted or reallocated among these subareas provided that the maximum number of units within these subareas does not exceed 450."[1] There has been one other residential development constructed within the subareas identified above: The Arbor at Hesperian, a 77-unit senior housing development in subarea 2, was approved in 2014 after an Initial Study/Mitigated Negative Declaration. Those 77 units added to the 163 proposed here by the Village Green project bring the total within subareas 2, 4, and 5A-5D to 240, well within the approved limit of 450 in the Specific Plan.

Proposed Project

The Applicant proposes redevelopment of the subject 5.12-acre property, including the following:

- Construction of 163 multiple dwelling units, density of 31.8 dwelling units/acre
    - Nine (9) 1-bedroom studio units
    - Eighty-two (82) 1-bedroom units
    - Sixty-six (66) 2-bedroom units
    - Six (6) 3-bedroom units
- 12,184 sf of retail space (11,524 sq. ft. of indoor retail, 660 sq. ft. of outdoor retail seating area), configured into six (6) retail spaces
- 326 vehicle parking spaces, provided as follows:

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[1] San Lorenzo Village Center Specific Plan Final EIR, June 2004. p. III-2.

- Private garage parking—50 spaces
- Residential parking (uncovered)—124 spaces
- Parallel on-street parking on Via Arriba and Via Mercado—16 spaces
- Perpendicular on-street parking on Via Arriba and Via Mercado—44 spaces
- Covered garage parking (first floor Building B)—5 spaces
- Stacked parking (first floor Building B)—27 spaces each, 2 levels—54 spaces total
- Retail parking (shared with residential)—33 spaces.

The proposed residential net floor space is approximately 243,958 sf, plus leasing/amenities space of 4,700 sf and utility space of ~850 sf. The footprints of all buildings total approximately 67,427 sf (including the parking garage) and will overlay 30% of the property (see Figures 5 through 20 for Project design details and views). The two portions of Building 1 are connected with a pedestrian bridge.

Maximum building height for the project would be 52’11” to the top of the parapet on Building A. Building B is 51’5” high to the top of the parapet. Building C (residences along Via Arriba) is proposed at a building height of 36’3” to the top of the parapet. All residential units have private decks with exterior frontage, ranging in size from 50 sf for studio apartments to 159 sf for a 3-bedroom unit. A 2,129-sf dog park is proposed for the northwest corner of the property along Paseo Grande at Paseo Largavista.

Table 1. Village Green Apartments--Development Summary

Development Parameter	Amount
Total site area	5.12 acres
Gross residential floor area, including services	243,958 sf
Open space	26,643 sf (12,755 sf private patio/balconies, 13,888 sf common open space)
Residential Units	163
Parking spaces provided	326, including street parking
Bicycle parking spaces	50 (9 short-term; 41 long-term)
Number of building levels	4
Maximum Building height	52’-11”
Retail space	12,184 sf (6 retail units: 11,524 sq. ft. of indoor retail, 660 sq. ft. of outdoor retail seating area)

Access

Full access to the Project site would be via four driveway locations:

- On Paseo Grande at Via Arriba
- Just south of Paseo Grande on Paseo Largavista
- On Hesperian Boulevard at Via Mercado

- On Via Arriba at Via Mercado

The Project proposes the following changes to roadway geometry and traffic control:

- Modify the existing Hesperian Boulevard/Via Mercado to eliminate the Via Mercado connection, but maintain the existing traffic signal to provide access to the existing shopping center driveway. Maintain the northbound left-turn lane to allow U-Turn movements.
- Relocate Via Mercado approximately 150 feet south, to align with Ducey Way and the proposed southern end of the Project site. The new intersection would be unsignalized with side-street stop control and right-turn in/right-turn out only access.
- Modify the stop-controlled northbound approach of the existing Via Arriba/Paseo Grande intersection to provide separate left-turn and right-turn lanes.

The Project proposes the following on-site parking supply:

- 233 off-street parking spaces for Village Green Apartment residents, including 124 surface parking spaces and 109 garage spaces
- 33 off-street surface parking spaces for the retail portion of the site
- 60 parallel and perpendicular on-street spaces along Via Arriba and Via Mercado.

Landscaping

There are 12 existing street trees on the Project site. All are proposed for removal. Three of the trees are within the County's public Right-of-Way at the corner of Paseo Grande and Hesperian Blvd. Pursuant to Section 12.11 of the Alameda County Municipal Code, removal of trees within the County's public right-of-way will require an encroachment permit authorized by the Director of the Alameda County Public Works Agency or his or her designee. The Project will comply with the requirements of the Tree Ordinance for securing encroachment permits to remove three trees within the County right-of-way.

The Project's landscape plan calls for street trees along Hesperian Blvd. where not in conflict with existing underground utilities (Eight Eastern Redbuds, 24" box) and Paseo Grande (Twelve Crape Myrtles, 24" box). A 6' parkway between Hesperian and the separated sidewalk provides a landscape buffer which will provide space for enhanced planting and street trees where possible. A second row of columnar accent trees will be located in the landscape strip between Building 1 and the separated sidewalk along Hesperian Blvd. In addition, Via Arriba and Via Mercado will be lined with 24" box trees on both sides (see Section A, sheet L.4, Landscape Plan). Trees will also be planted along the drive aisles of the site interior, along the Project perimeter, on the rooftop terrace (small trees in pots), around the pool courtyard and entry courts, and in the common landscape areas. There will also be a landscaped strip running approximately 14' wide along the eastern edge of Buildings 3&4, consisting of shrubs and vertical accent trees. The 4th floor rooftop terrace above Building 2 will include approximately 19 trees and a row of hedges in pots.

In addition, landscaping and fencing is proposed along the western and southern perimeters of the Project site to help reduce the amount of light spilling onto adjacent properties.

Utilities

A utility relocation plan has been prepared for the Project. It includes:

- Removing and capping the existing sanitary sewer main that runs along the existing Via Mercado;
- Removing the existing sanitary sewer lateral along the existing Via Mercado, and relocating the domestic water main along the proposed Via Mercado (EBMUD);
- Relocating the gas line from existing Via Mercado to proposed Via Mercado, and connecting it to existing gas line along Hesperian Blvd. (PG&E)
- Removing an existing electrical line along existing Via Mercado that serviced the building to be demolished
- Remove existing utility structures (water meters, electrical boxes) within existing Via Mercado
- Coordination with Alameda County Public Works Agency of joint trench services and other improvements along Hesperian Blvd.

Electrical service will be provided overhead to all buildings from existing poles. Utility services will use existing public services in the right-of-way, and existing easements on the property site for gas, sewer, electric and water. Existing civil infrastructure (fire hydrants, electrical stub, storm drains and cleanouts, storm sewer manholes, gas valves) will be protected in place to the extent possible, except for the relocations noted above. The Project will require new laterals for service connections.

The proposed Project will create or replace 185,624 sf of impervious surface, equivalent to 83% of the total area of the site. As such, it is a regulated project under Provision C.3 of the Municipal Regional Stormwater Permit issued under the National Pollutant Discharge Elimination System (NPDES). The Project's preliminary Stormwater Control Plan creates 23 Drainage Management Areas (DMAs)/Integrated Management Practice Areas (IMPs) across the site; sixteen (16) of these will include some pervious areas, for a total of 31,093 sf of pervious area. The site will include fifteen (15) bioretention areas, ranging in size from 125 sf[2] to 640 sf[3]. The typical bioretention area consists of approximately 18 inches of biotreatment soil mix underlain by approximately 12" of permeable rock over an impermeable liner, draining to a 6" perforated pipe connected to the storm sewer network.[4] Eight of the DMAs include roof areas, which will drain to a stormwater media filter.

The Applicant's proposed site design measures and source control measures are detailed in Section 9: Hydrology and Water Quality. The Project qualifies as a Special Project Category C under Provision C.3. Based on its density and proximity to transit, it qualifies to treat up to 60% of its stormwater runoff using non-Low Impact Development (LID) treatment measures, Because the total amount of replaced impervious surface is greater than 50 percent of the pre-project impervious surface, stormwater

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[2] Bioretention areas were sized using the "4 percent method" flow-based sizing criteria in the 2013 Alameda County C.3 Technical Guidance Handbook.

[3] Bioretention areas were sized using the "4 percent method" flow-based sizing criteria in the 2013 Alameda County C.3 Technical Guidance Handbook.

[4] Impermeable liner will be used where the bioretention area is not structurally contained by wall footing.

treatment requirements apply to the whole site, with the exception of the Via Arriba area, which is a public street within the Project area and therefore subject to the stormwater control jurisdiction of the County Public Works Agency.

Project Construction

The Project would be constructed over approximately 24 months and is anticipated to start in 2019. The current site is a mix of dirt, paved surface parking lot, and the existing vacant building south of Via Mercado.

Construction activities would consist of demolition of the existing building, excavation and grading for new foundation construction, and construction of the residential and retail buildings. The existing driveways will be removed. Excavation and grading are anticipated to occur over the course of 1-2 months. Construction of footings and foundation slab and utility connections are expected to take between 2-3 months.

Surface improvements are generally being constructed at existing grade. Excavation for foundation will be no more than three feet; utility trench excavation could reach maximum cut value of nine feet. Site excavation and grading are anticipated to occur over the course of 2-4 months. Temporary fencing will be erected around the construction area. The site will be cleared of asphalt and concrete. Soil that is unsuitable for re-use on site will be removed and disposed of at an offsite permitted landfill. Base rock will be imported to the site; decomposed granite, gravel and landscape soil will be imported as required. Construction of footings and foundation slab and utility connections are expected to take between 2-4 months. There will be 1,600 cubic yards (cy) of soil cut and 2,900 cy of soil fill during Project construction activities, resulting in a net import of 1,300 cy of soil. Depth to groundwater is approximately 6 to 18 feet below ground surface (bgs), and the flow direction is to the southwest. Groundwater is not expected to impact proposed construction. The Project foundation would involve conventional spread footings and concrete mat.

Typical equipment used during construction would include an excavator, skid-steer loader, backhoe, trencher, crane, rough terrain forklift, paver, and paving equipment. Staging would primarily occur within the Project site, except in certain instances, such as deliveries or removal of large quantities of material, when parking lanes on one or more of the street frontages may be temporarily closed.

Depending on the construction phase, the number of on-site construction workers could range from approximately 5 – 20 workers per day. The maximum number of workers would be present during framing, rough-in, and interior finish, as well as the exterior work during the building construction phase. The minimum number of workers would be present during grading, excavation, and site preparation.

Project Approvals

The following approvals would be required from the County to implement the Project:

- Certification of this Addendum to the Village Center Specific Plan EIR
- Tentative Map approval (pursuant to the County's Subdivision Ordinance)
- Design Review approval (pursuant to the County's Residential Design Standards and Guidelines)

In addition to the above requests, before development of the Project could take place, the Project would be required to obtain subsequent County permits including a Grading Permit, a Building Permit and Encroachment Permit for work done in the County right-of-way. Therefore, the "Project" as defined in this EIR Addendum is the approval of the discretionary actions itemized above, as well as subsequent associated site development, including demolition, clearing, grading, infrastructure improvements, paving, building, landscaping and all other necessary actions to develop, lease and occupy the proposed homes.

Actions by Other Agencies

- Regional Water Quality Control Board (RWQCB)--Waste Discharge Requirements or NPDES permit
- East Bay Municipal Utility District (EBMUD)--Approval of new service requests and water meter installation.
- Pacific Gas & electric (PG&E)—Approval of new service requests

Figure 3

Figure 1
SPECIFIC PLAN AREA BY SUBAREA
San Lorenzo Village Center Specific Plan

🟧 Bohannon

🟦 San Lorenzo Village Homes

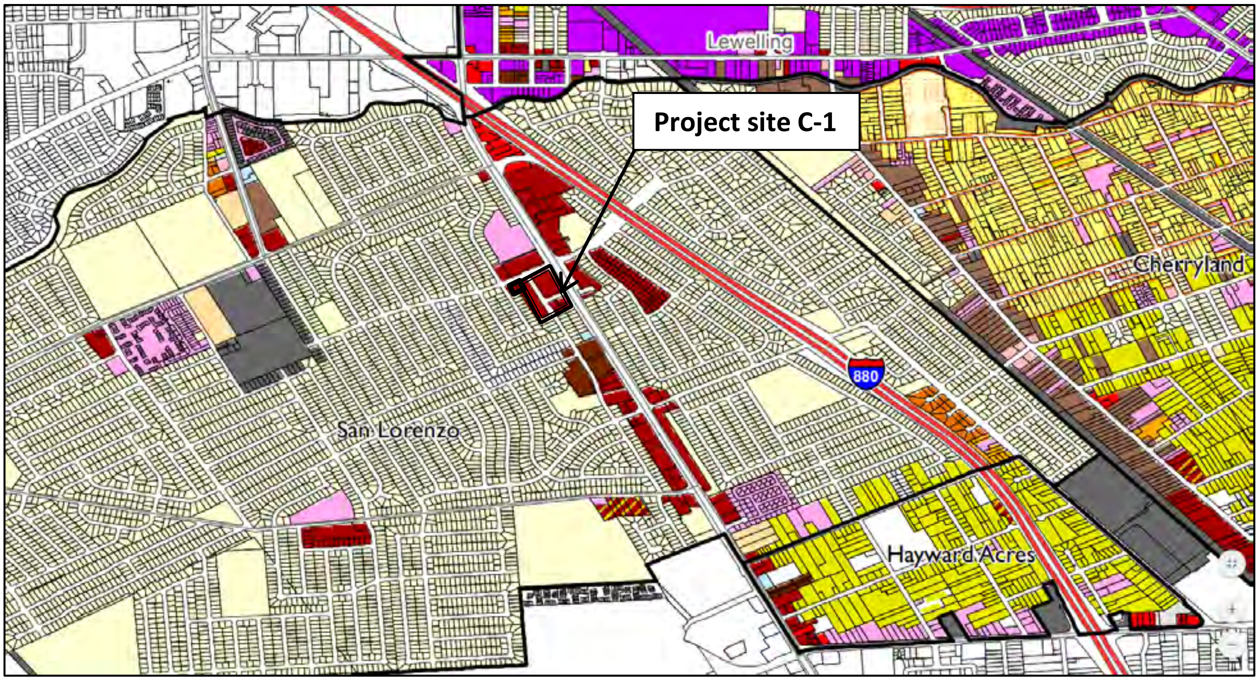
🟩 Other

Entire Site Including Storage

Area 1:	119,408 s.f.
Area 2:	468,098 s.f.
Area 3:	136,474 s.f.
Area 4:	81,667 s.f.
Area 5A:	99,797 s.f.
Area 5B:	69,306 s.f.
Area 5C:	72,328 s.f.
Area 5D:	30,776 s.f.
Area 6:	209,915 s.f.

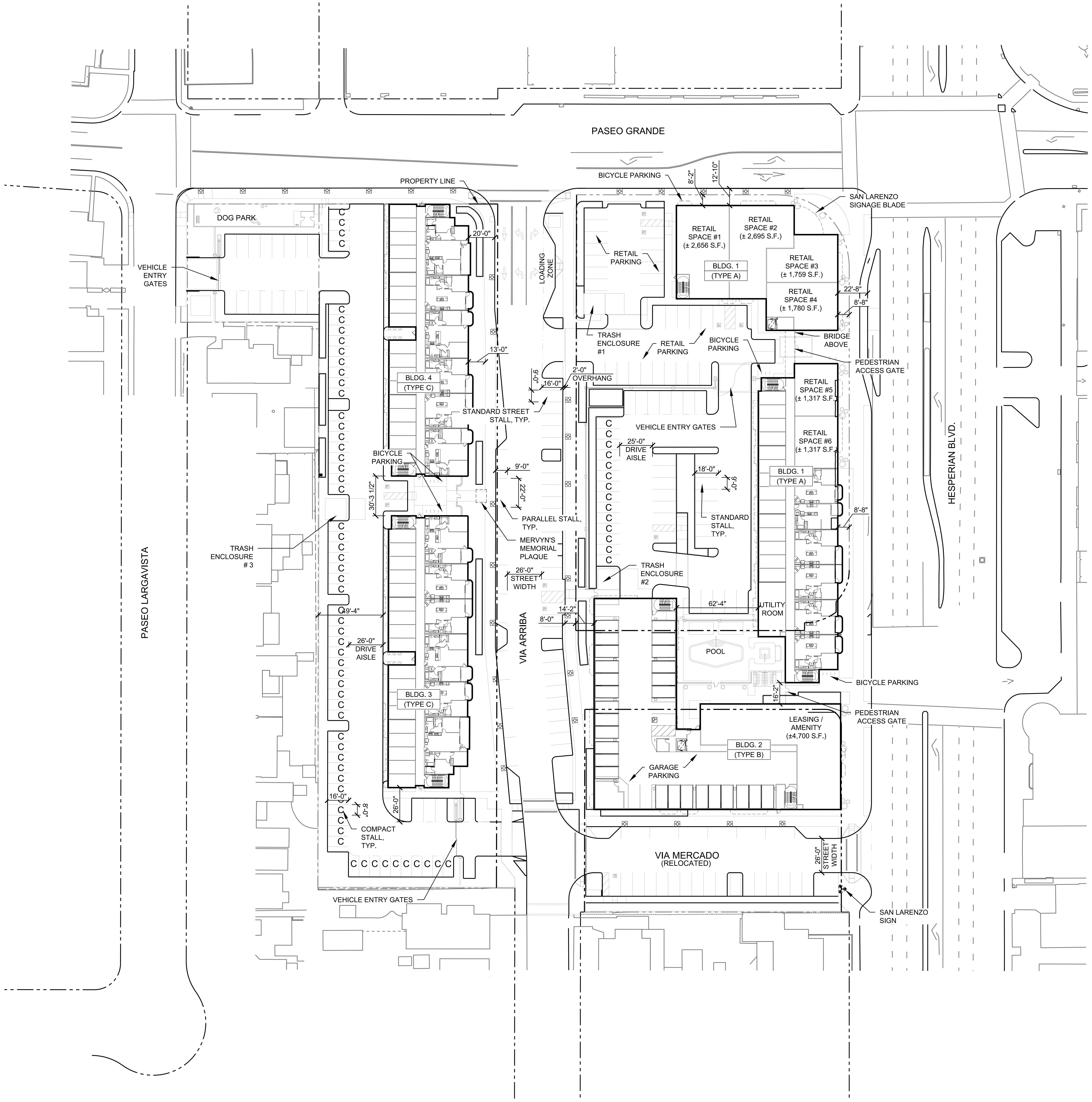
Total Area: 1,287,769 s.f. = 29.5 acres

Figure 4—Zoning Map—San Lorenzo, Unincorporated Alameda County



🟥 C1 (Retail Business)

Figure 5--Village Green Site Plan



PARKING REQUIRED			
	REQUIRED RATIO[1]	NO OF UNITS	STALLS REQUIRED
RESIDENT	2 STALL PER DWELLING UNIT	163	326
COMMERCIAL	REFER TO PARKING DEMAND STUDY FOR REQUIRED PARKING ANALYSIS AND SHARED PARKING METHODOLOGY		
	TOTAL PARKING REQUIRED		326

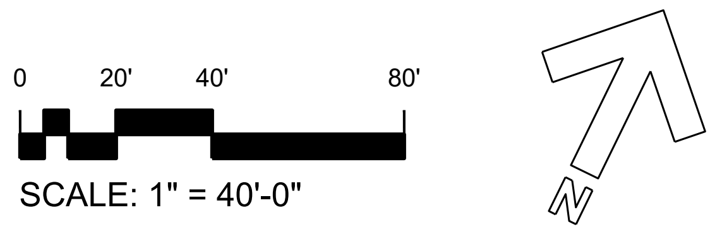
[1] AS STATED IN THE SPECIFIC PLAN, THE PARKING REQUIREMENT IS 2 STALLS PER DWELLING UNIT OR AS DETERMINED BY A PARKING DEMAND STUDY, WHICH EVER IS GREATER. REFER TO PARKING DEMAND STUDY FOR REQUIRED PARKING ANALYSIS AND SHARED METHODOLOGY.

PARKING PROVIDED (REFER TO PARKING DEMAND STUDY FOR REQUIRED PARKING ANALYSIS AND SHARED PARKING METHODOLOGY)		
	PARKING TYPE	TOTAL
OFF-SITE: STREET PARKING (NON-EXCLUSIVE RESIDENTIAL AND COMMERCIAL)[3]		
	STANDARD STALLS	41
	PARALLEL STALLS	16
	STD. ACCESSIBLE STALLS	2
	VAN ACCESSIBLE STALLS	1
	SUBTOTAL	*60*
ON-SITE: PARKING (NON-EXCLUSIVE RESIDENTIAL AND COMMERCIAL)[4]		
	STANDARD STALLS	29
	STD. ACCESSIBLE STALLS	3
	VAN ACCESSIBLE STALLS	1
	SUBTOTAL	*33*
ON SITE: GARAGE PARKING (EXCLUSIVELY RESIDENTIAL)		
	PRIVATE GARAGE STALLS	50
	STANDARD BLDG. B GARAGE STALLS	4
	AUTOMATED BLDG. B GARAGE STALLS	54
	VAN ACCESSIBLE STALLS	1
	SUBTOTAL	*109*
ON SITE: RESIDENTIAL PARKING (EXCLUSIVELY RESIDENTIAL)		
	STANDARD UNCOVERED	47
	COMPACT STALLS[2]	74
	STD. ACCESSIBLE STALLS	3
	SUBTOTAL	*124*
TOTAL PARKING PROVIDED		326

[2] COMPACT STALLS ARE ALLOWED UP TO 25% OF TOTAL PARKING PROVIDED. 74 COMPACT STALLS ARE PROPOSED WHICH IS 23% OF THE TOTAL PARKING AND WITHIN THE REQUIRED LIMITS.

[3] STREET PARKING IS NON-EXCLUSIVE AND SERVES BOTH COMMERCIAL AND RESIDENTIAL USES.

[4] SOME ON-SITE PARKING IS NON-EXCLUSIVE AND SERVES BOTH RESIDENTIAL AND COMMERCIAL USES.



SITE PLAN 1

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Project Manager: Chris Weimholt

Client

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VILLAGE GREEN

SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL 11/30/2017

1ST SUBMITTAL 04/09/2018

2ND SUBMITTAL 08/15/2018

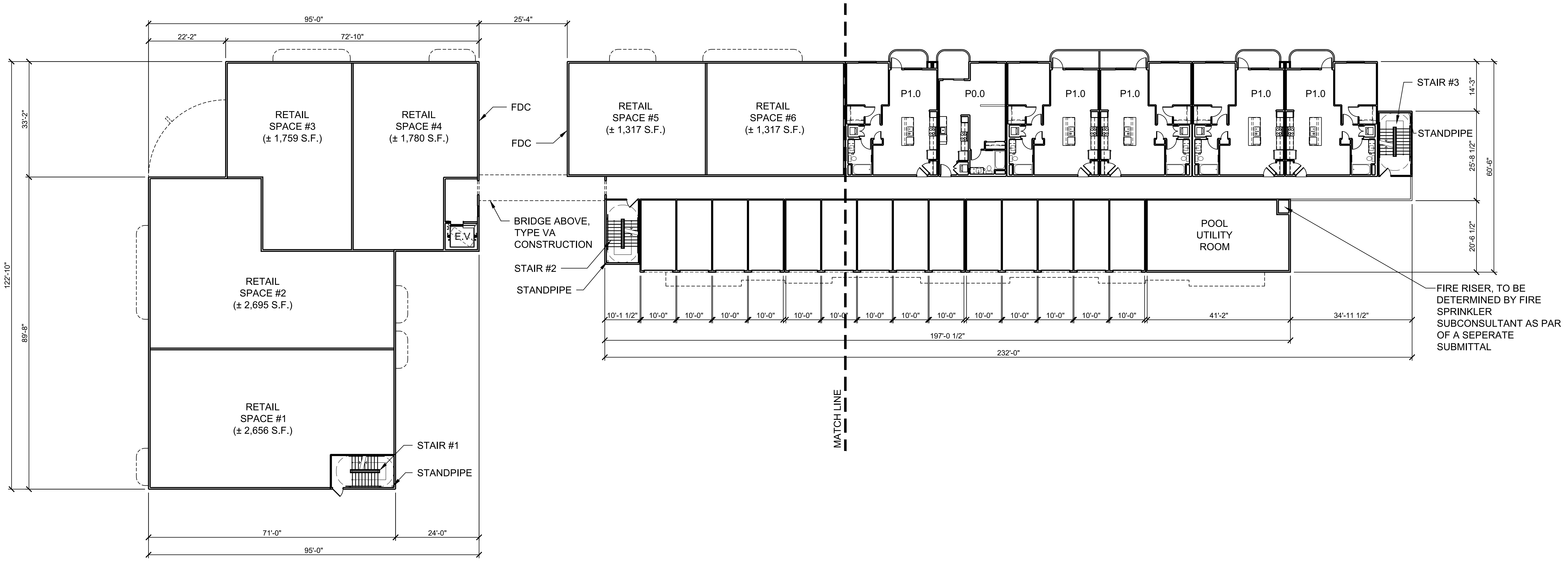
3RD SUBMITTAL 11/12/2018

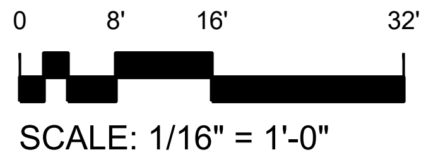
4TH SUBMITTAL 01/21/2019

SITE PLAN

A1.0

Figure 6--Building 1 (Type A)--First Floor Plan--Overall





BLDG. 1 (TYPE A) - FIRST FLOOR PLAN - OVERALL 1

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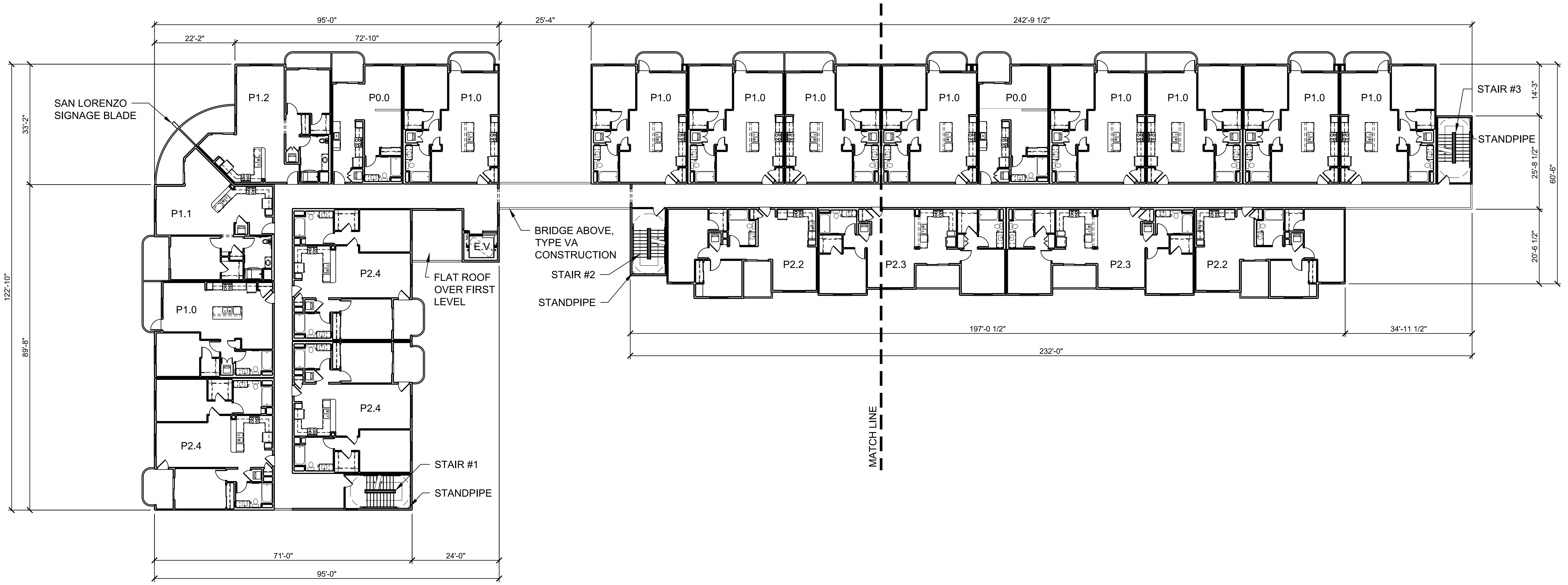
4TH SUBMITTAL 01/21/2019

BLDG. 1 (TYPE A) - FIRST FLOOR PLAN - OVERALL

A2.1

Figure 7--Building 1 (Type A)--Second through Fourth Floor Plan Overall



0 8' 16' 32'

SCALE: 1/16" = 1'-0"

BLDG. 1 (TYPE A) - SECOND - FOURTH FLOOR PLAN - OVERALL 1

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3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

BLDG. 1 (TYPE A) - SECOND - FOURTH FLOOR PLAN - OVERALL

A2.3

Figure 8--Building 1 (Type A)--Exterior Elevations

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. 1 (TYPE A) - FRONT ELEVATION - PART 2 2

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. 1 (TYPE A) - FRONT ELEVATION - PART 1 1

MATERIAL LEGEND

1	EXTERIOR PLASTER
2	FOAM TRIM
3	METAL CLAD TRIM
4	METAL GUARDRAIL
5	EXTERIOR ACCENT TILE
6	METAL CLAD AWNING
7	STOREFRONT WINDOW SYSTEM
8	PAINTED METAL GUARDRAIL AND GATE
9	PAINTED METAL SCREEN
10	PLASTER SCREEDS
11	METAL CLAD SIGNAGE BLADE
12	3" PLASTER CHANNEL REVEAL

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VILLAGE GREEN

SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL 11/30/2017

1ST SUBMITTAL 04/09/2018

2ND SUBMITTAL 08/15/2018

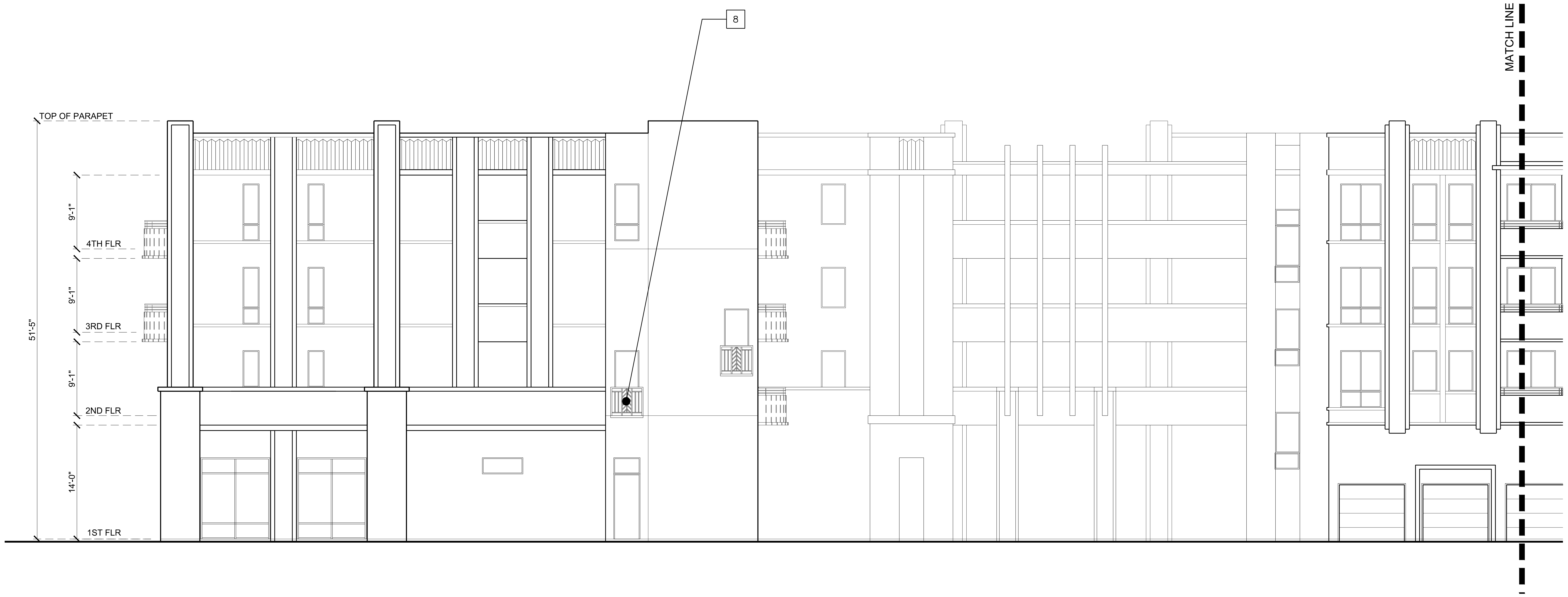
3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

BLDG. 1 (TYPE A) -
EXTERIOR
ELEVATIONS

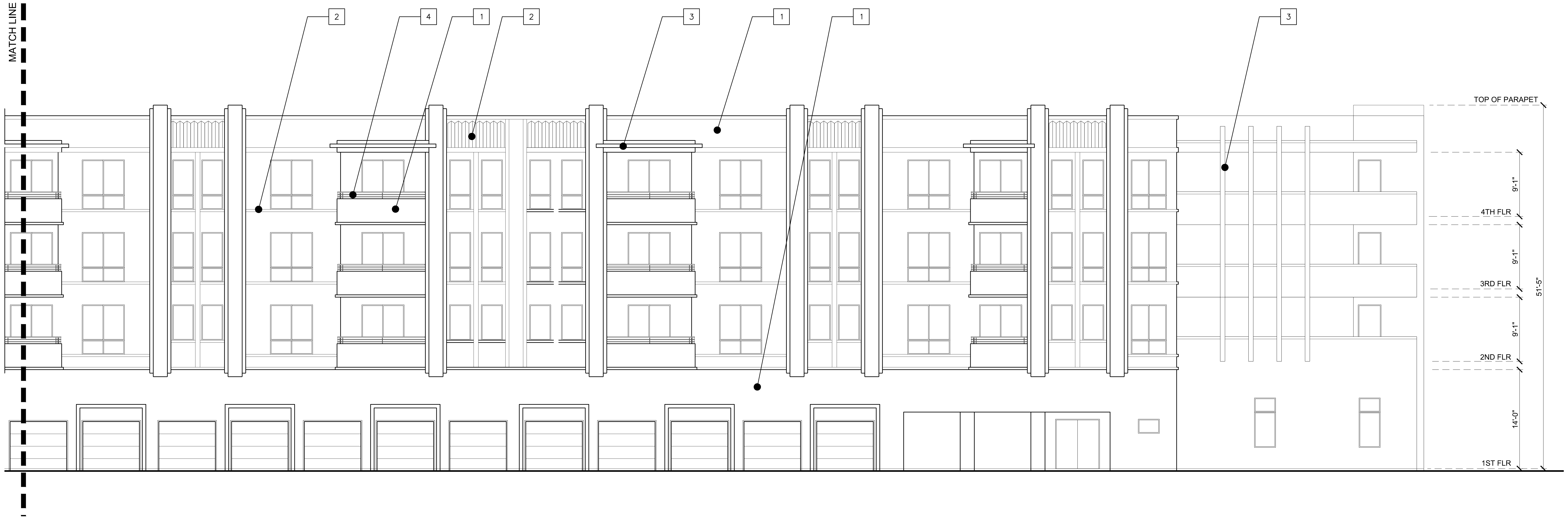
A2.7

Figure 9--Building 1 (Type A)--Exterior Elevations



0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. A - REAR ELEVATION - PART 2 2



0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. A - REAR ELEVATION - PART 1 1

MATERIAL LEGEND

1	EXTERIOR PLASTER
2	FOAM TRIM
3	METAL CLAD TRIM
4	METAL GUARDRAIL
5	EXTERIOR ACCENT TILE
6	METAL CLAD AWNING
7	STOREFRONT WINDOW SYSTEM
8	PAINTED METAL GUARDRAIL AND GATE
9	PAINTED METAL SCREEN
10	PLASTER SCREEDS
11	METAL CLAD SIGNAGE BLADE
12	3" PLASTER CHANNEL REVEAL

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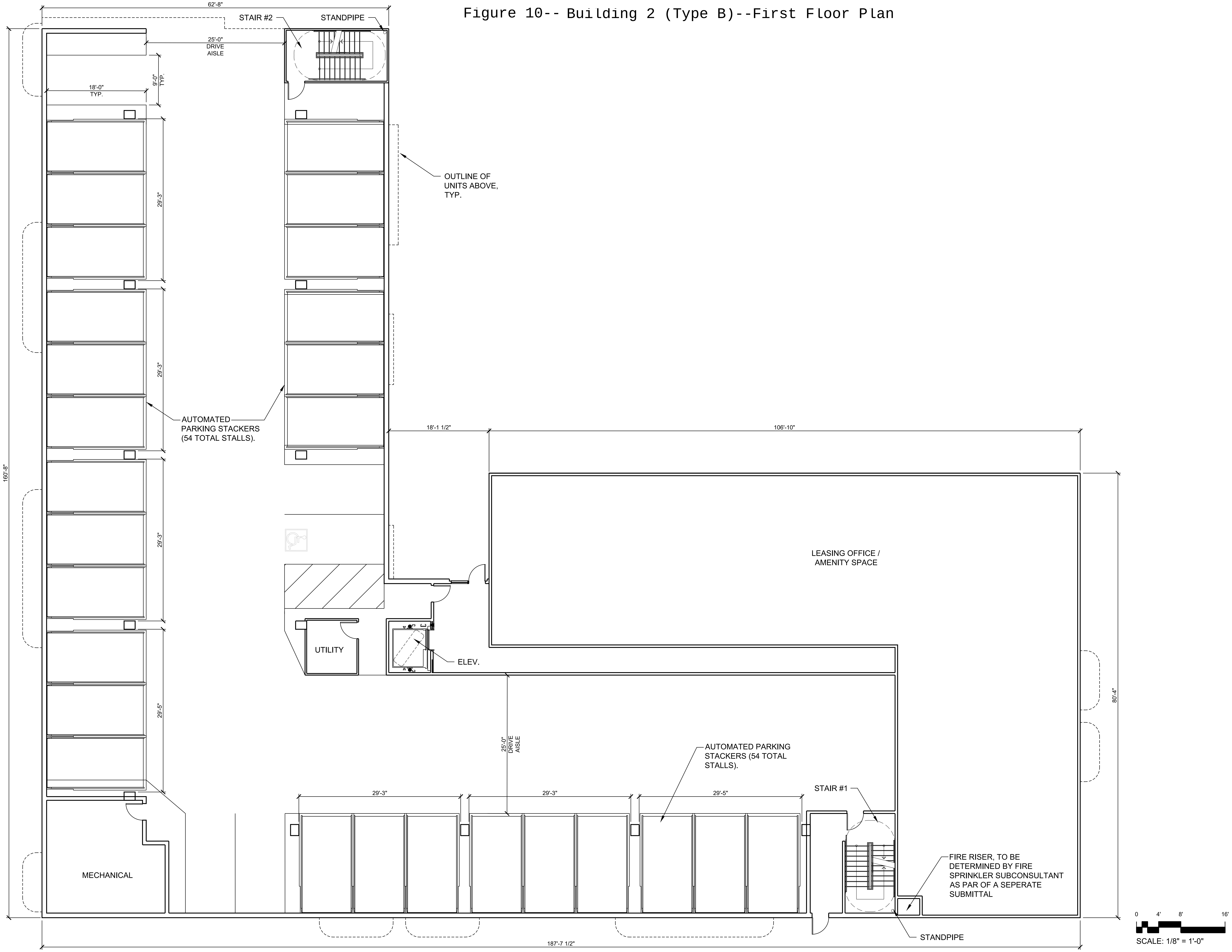
BLDG. A -
EXTERIOR
ELEVATIONS

A2.8

Figure 10-- Building 2 (Type B)--First Floor Plan



BLDG. 2 (TYPE B) - FIRST FLOOR PLAN 1

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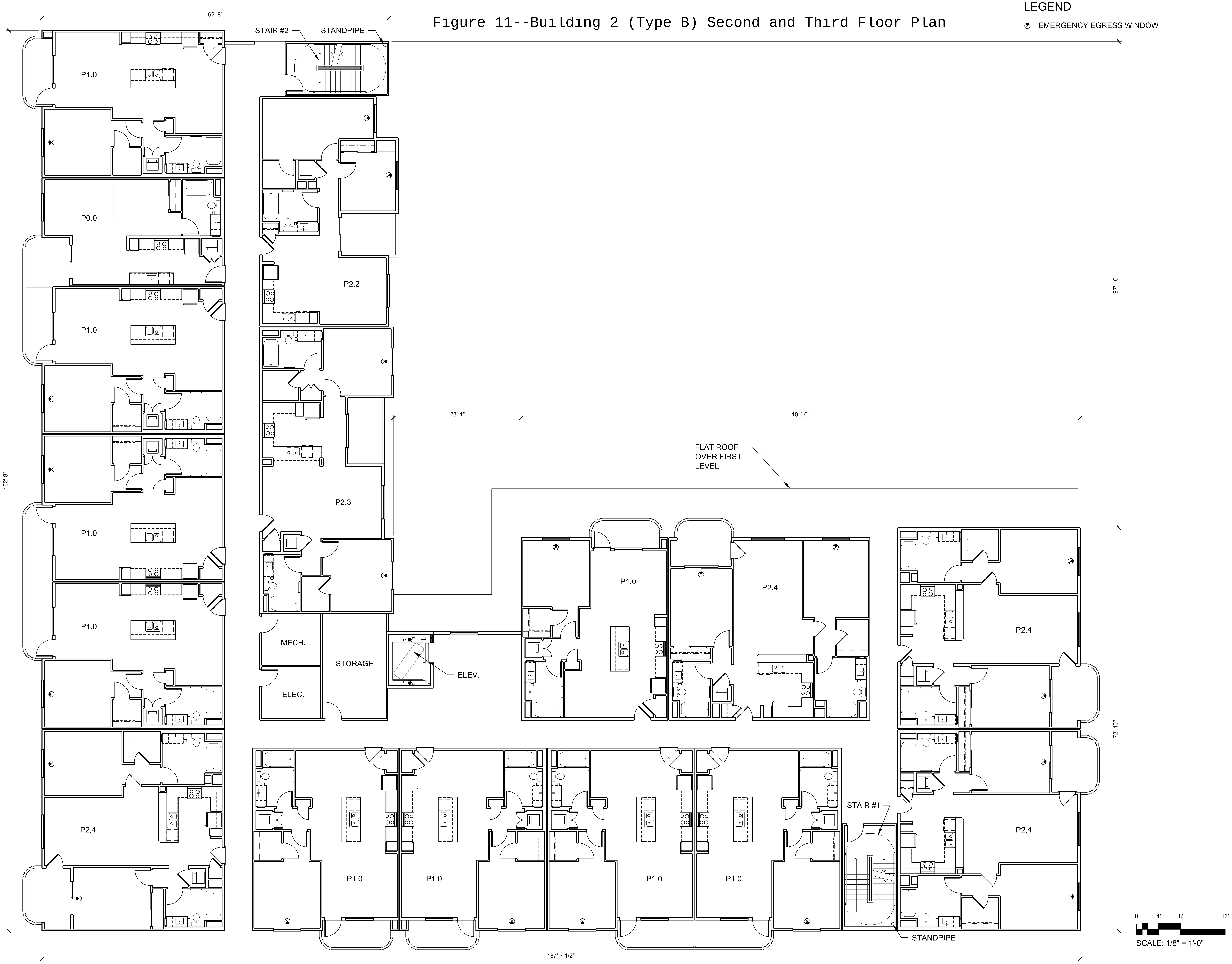
3RD SUBMITTAL	11/12/2018
4TH SUBMITTAL	01/21/2019

BLDG. 2 (TYPE B) -
FIRST FLOOR
PLAN

A3.1

Figure 11--Building 2 (Type B) Second and Third Floor Plan



BLDG. B - SECOND AND THIRD FLOOR PLAN 1

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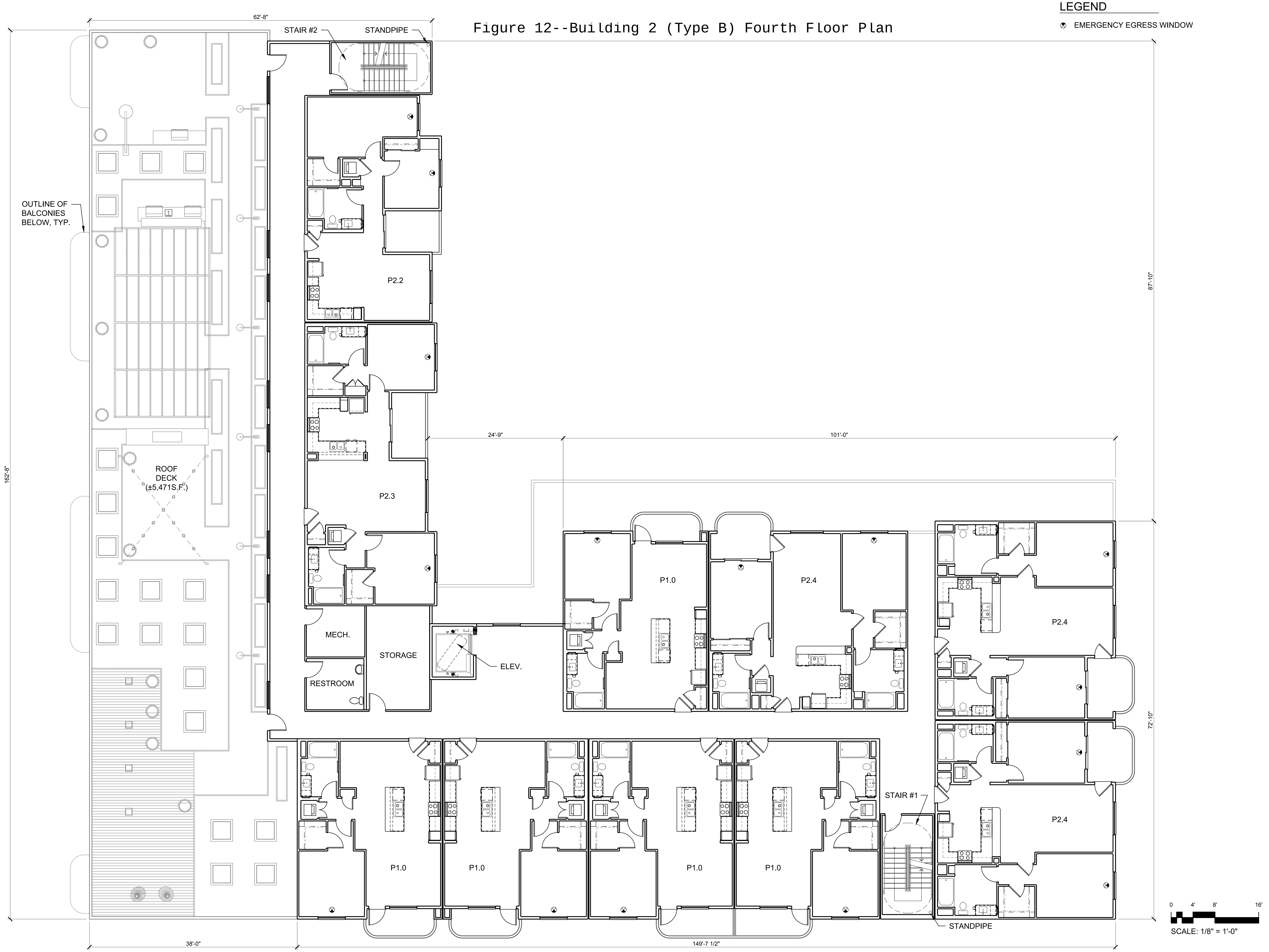
BLDG. B - SECOND AND THIRD FLOOR PLAN

A3.2

Figure 12--Building 2 (Type B) Fourth Floor Plan



BLDG. B - FOURTH FLOOR PLAN 1

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2ND SUBMITTAL	08/15/2018

BLDG. B - FOURTH FLOOR PLAN

A3.3

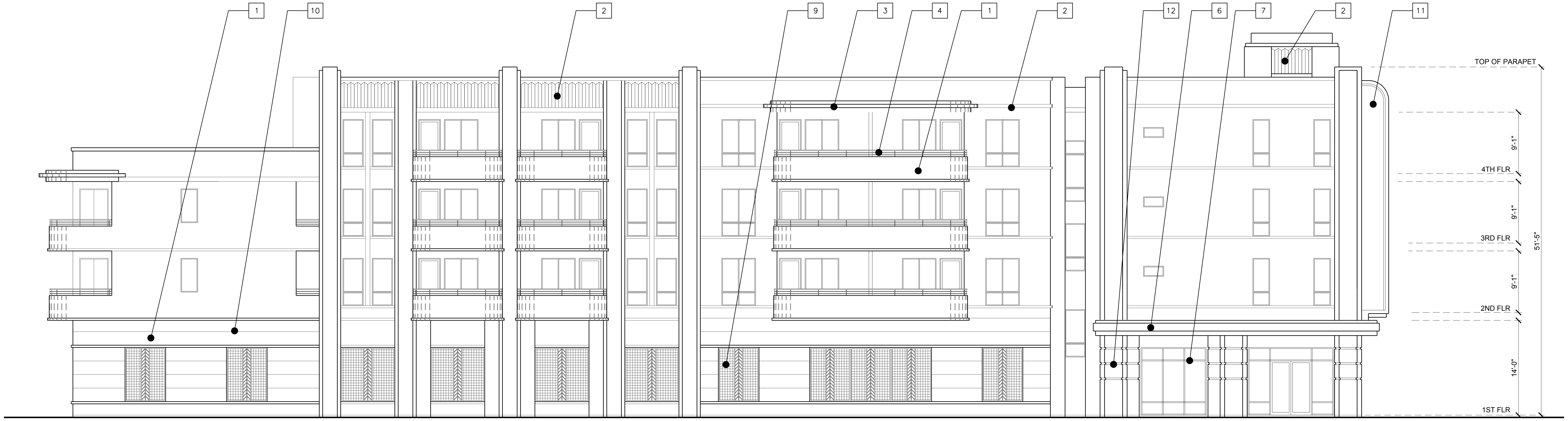
Figure 13--Building 2 (Type B) Exterior Elevations

MATERIAL LEGEND

1	EXTERIOR PLASTER
2	FOAM TRIM
3	METAL CLAD TRIM
4	METAL GUARDRAIL
5	EXTERIOR ACCENT TILE
6	METAL CLAD AWNING
7	STOREFRONT WINDOW SYSTEM
8	PAINTED METAL GUARDRAIL AND GATE
9	PAINTED METAL SCREEN
10	PLASTER SCREEDS
11	METAL CLAD SIGNAGE BLADE
12	3" PLASTER CHANNEL REVEAL

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. B - RIGHT ELEVATION 2



0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. B - FRONT ELEVATION 1

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SAN LORENZO, CA

Issue Date	
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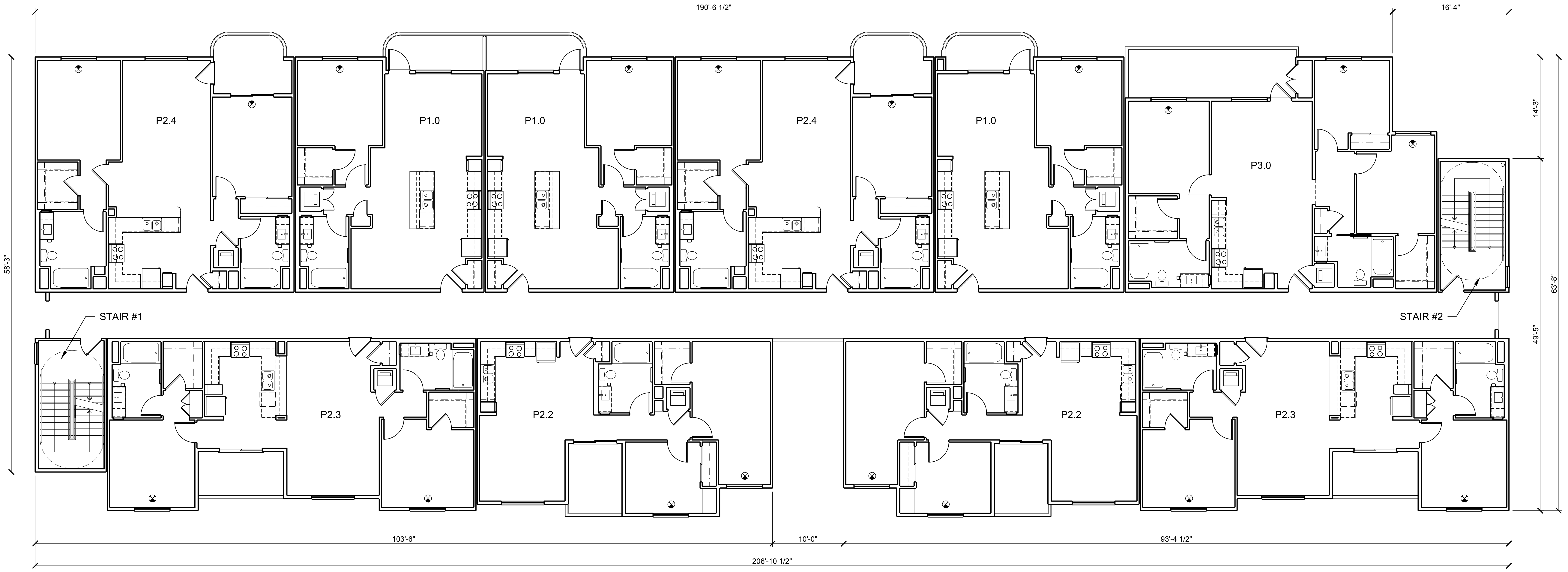
BLDG. B -
EXTERIOR
ELEVATIONS

A3.5

Figure 14--Building 3 & 4 (Type C) First through Third Floor Plans

LEGEND

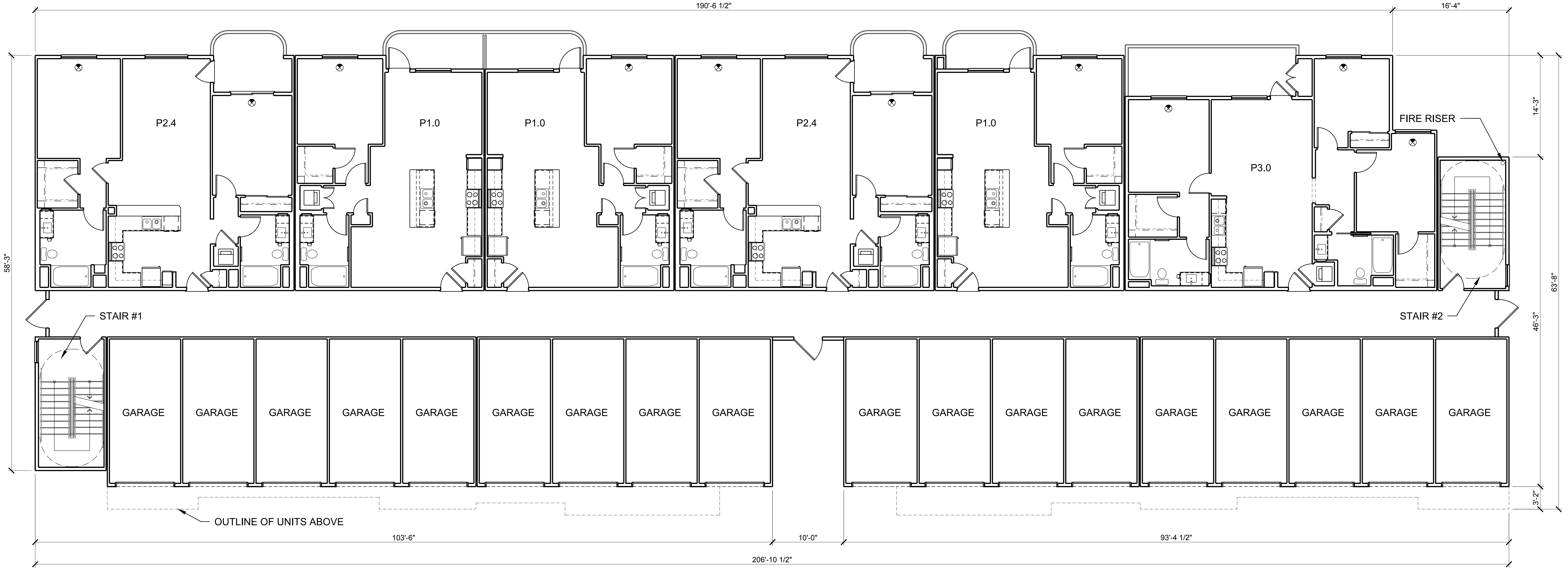
⊗ EMERGENCY EGRESS WINDOW



0 4' 8' 16'

SCALE: 1/8" = 1'-0"

BLDG. C - SECOND - THIRD FLOOR PLAN 2



0 4' 8' 16'

SCALE: 1/8" = 1'-0"

BLDG. C - FIRST FLOOR PLAN 1

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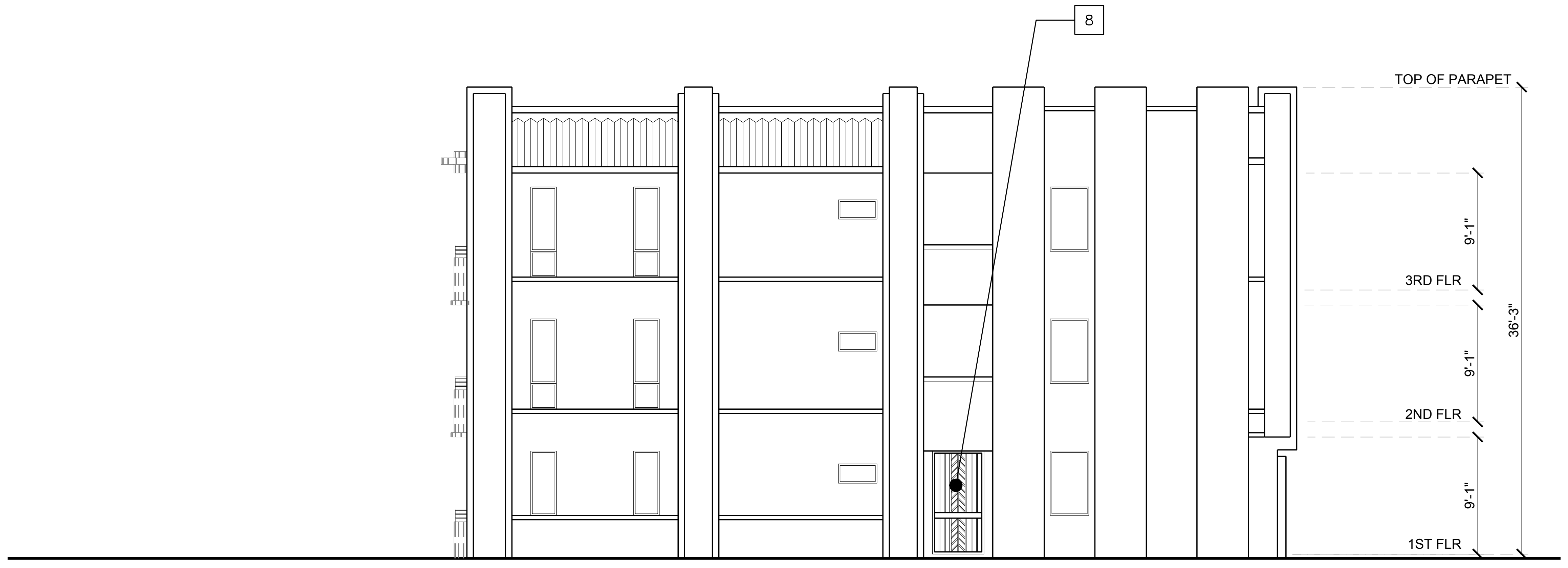
BLDG. C - FIRST -
THIRD FLOOR
PLANS

A4.1

Figure 15--Building 3 & 4 (Type C) Exterior Elevations

MATERIAL LEGEND

1	EXTERIOR PLASTER
2	FOAM TRIM
3	METAL CLAD TRIM
4	METAL GUARDRAIL
5	EXTERIOR ACCENT TILE
6	METAL CLAD AWNING
7	STOREFRONT WINDOW SYSTEM
8	PAINTED METAL GUARDRAIL AND GATE
9	PAINTED METAL SCREEN
10	PLASTER SCREEDS
11	METAL CLAD SIGNAGE BLADE
12	3" PLASTER CHANNEL REVEAL



0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. C - RIGHT ELEVATION 2

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

BLDG. C - FRONT ELEVATION 1

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VILLAGE GREEN
SAN LORENZO, CA

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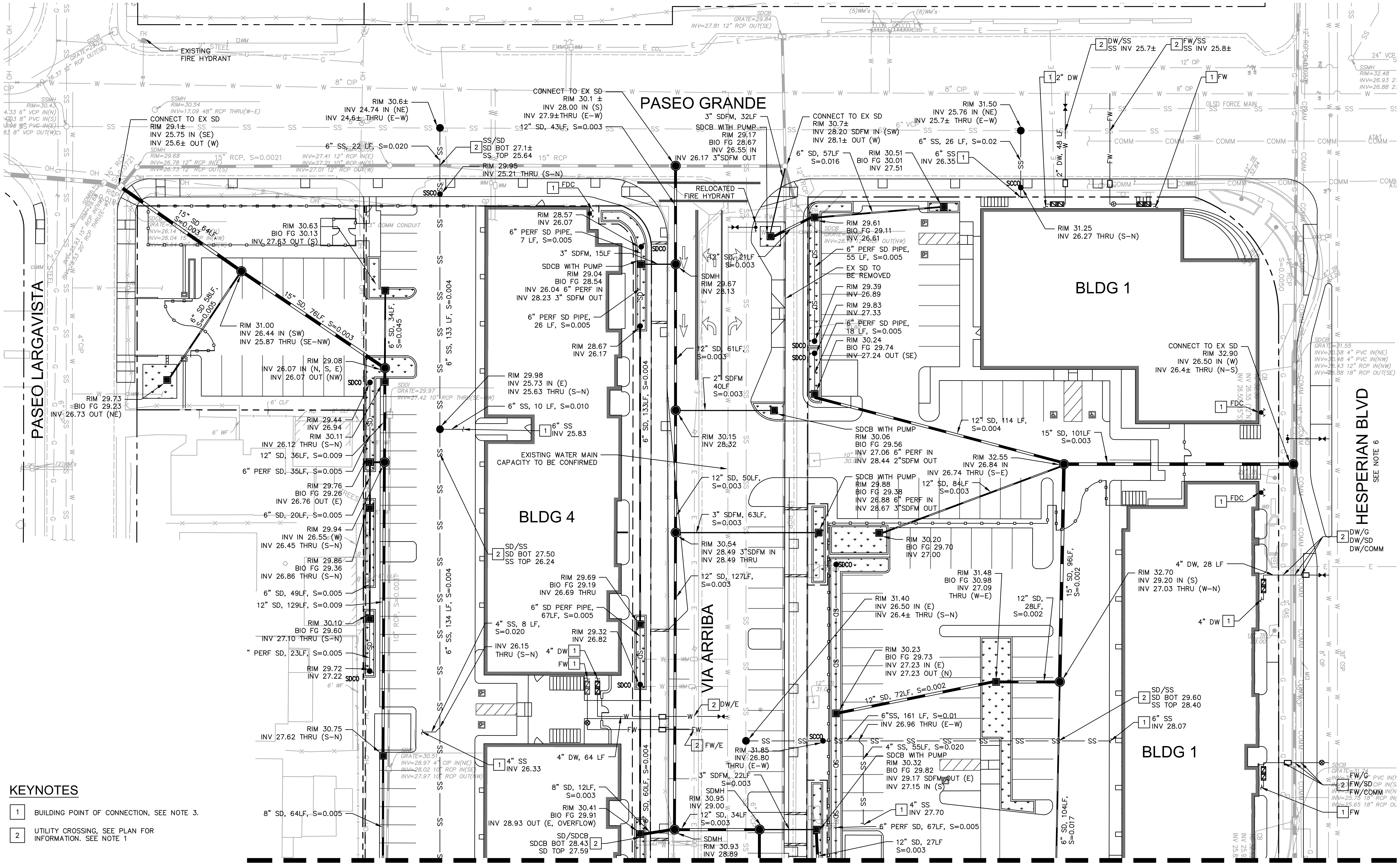
2ND SUBMITTAL	08/15/2018

BLDG. C -
EXTERIOR
ELEVATIONS

A4.3

Figure 16a--Utility Plan Part 1



MATCH LINE SEE SHEET C4.1

KEYNOTES

1. BUILDING POINT OF CONNECTION, SEE NOTE 3.
2. UTILITY CROSSING, SEE PLAN FOR INFORMATION. SEE NOTE 1

NOTES

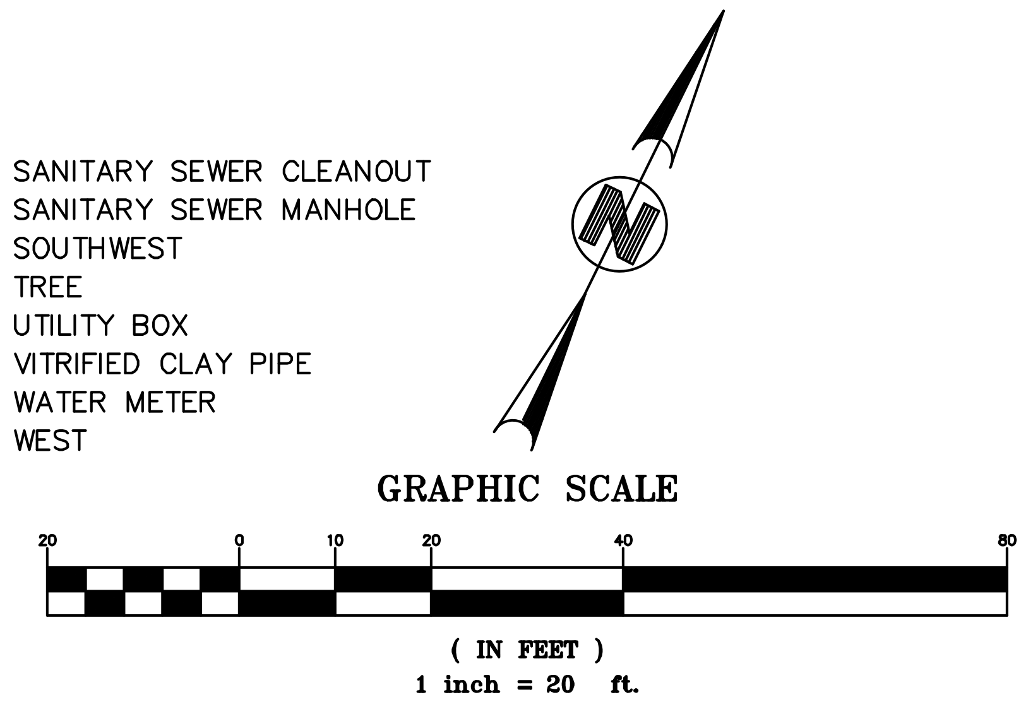
1. THE LOCATIONS, MATERIALS, TYPES, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN WERE OBTAINED FROM MULTIPLE SOURCES AND WILL NEED TO BE FIELD VERIFIED.
2. ALL WORK DONE WITHIN THE PUBLIC RIGHT OF WAY SHALL BE PER SEPARATE PERMIT.
3. SEE MEP PLANS FOR CONTINUATION AT POINT OF CONNECTION
4. NEW DOMESTIC WATER SERVICE AND METER FOR REFERENCE ONLY. FINAL DESIGN BY EBMUD. SEE NOTES 2 AND 3.
5. NEW FIRE WATER SERVICE FOR REFERENCE ONLY. FINAL DESIGN BY FIRE PROTECTION ENGINEER AND EBMUD. SEE NOTES 2 AND 3.
6. HESPERIAN BLVD FUTURE IMPROVEMENTS TO BE COORDINATED WITH VILLAGE GREEN PROJECT.

LEGEND

— — — —	PROPOSED RIGHT OF WAY
—— —— ——	EASEMENT LINE
—— SS ——	SANITARY SEWER LINE
●	SANITARY SEWER MANHOLE PER ORO LOMA STANDARD DRAWING SD–01
SSCO●	SANITARY SEWER CLEANOUT PER ORO LOMA STANDARD DRAWING SD–11
▨	BIORETENTION AREA
━━	STORM DRAIN LINE
—— SD ——	6" PERFORATED STORM DRAIN LINE
■	STORM DRAIN CATCH BASIN
⬤	STORM DRAIN MANHOLE PER ALAMEDA COUNTY STANDARD DRAWING SD–405
SDCO●	STORM DRAIN CLEANOUT
—— W ——	WATER LINE, SEE NOTE 4
—— FW ——	FIRE WATER, SEE NOTE 5
⋈	WATER VALVE
●	FIRE DEPARTMENT CONNECTION
+●+	FIRE HYDRANT
▨	BACKFLOW PREVENTER
⊗	POST INDICATOR VALVE

ABBREVIATIONS

BIO	BIORETENTION AREA	LF	LINEAR FEET	SSCO	SANITARY SEWER CLEANOUT
BLDG	BUILDING	N	NORTH	SSMH	SANITARY SEWER MANHOLE
BOT	BOTTOM	NE	NORTHEAST	SW	SOUTHWEST
CIP	CAST IRON PIPE	NW	NORTHWEST	TR	TREE
COMM	COMMUNICATION	PVC	POLYVINYL CHLORIDE	UB	UTILITY BOX
DW	DOMESTIC WATER	RCP	REINFORCED CONCRETE PIPE	VCP	VITRIFIED CLAY PIPE
E	ELECTRIC OR EAST	S	SLOPE OR SOUTH	WM	WATER METER
EX	EXISTING	SD	STORM DRAIN		WEST
FDC	FIRE DEPARTMENT CONNECTION	SDCB	STORM DRAIN CATCH BASIN		
FH	FIRE HYDRANT	SDCI	STORM DRAIN CURB INLET		
FW	FIRE WATER	SDFM	STORM DRAIN FORCE MAIN		
G	GAS	SDMH	STORM DRAIN MANHOLE		
GM	GAS METER	SE	SOUTHEAST		
INV	INVERT	SS	SANITARY SEWER		



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BKF Project No: 20171017

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VILLAGE GREEN

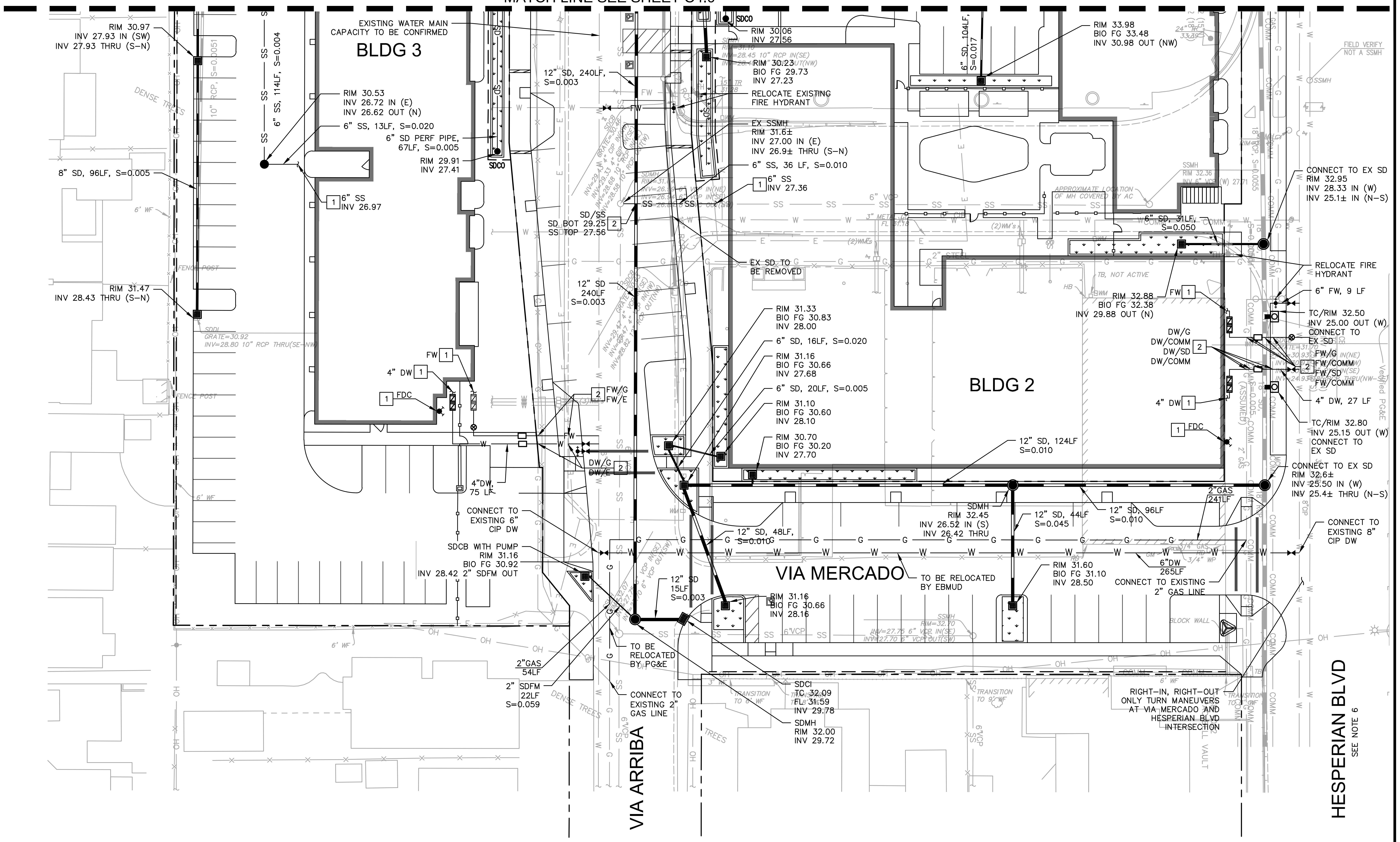
SAN LORENZO, CA

Issue Date
PRELIM-SUBMITTAL 11/30/2017
1ST SUBMITTAL 04/09/2018
2ND SUBMITTAL 08/15/2018
3RD SUBMITTAL 11/12/2018
4TH SUBMITTAL 01/21/2019

C4.0
UTILITY PLAN

Figure 16b--Utility Plan Part 2

MATCH LINE SEE SHEET C4.0



KEYNOTES

1	BUILDING POINT OF CONNECTION, SEE NOTE
2	UTILITY CROSSING, SEE PLAN FOR INFORMATION. SEE NOTE 1

NOTES

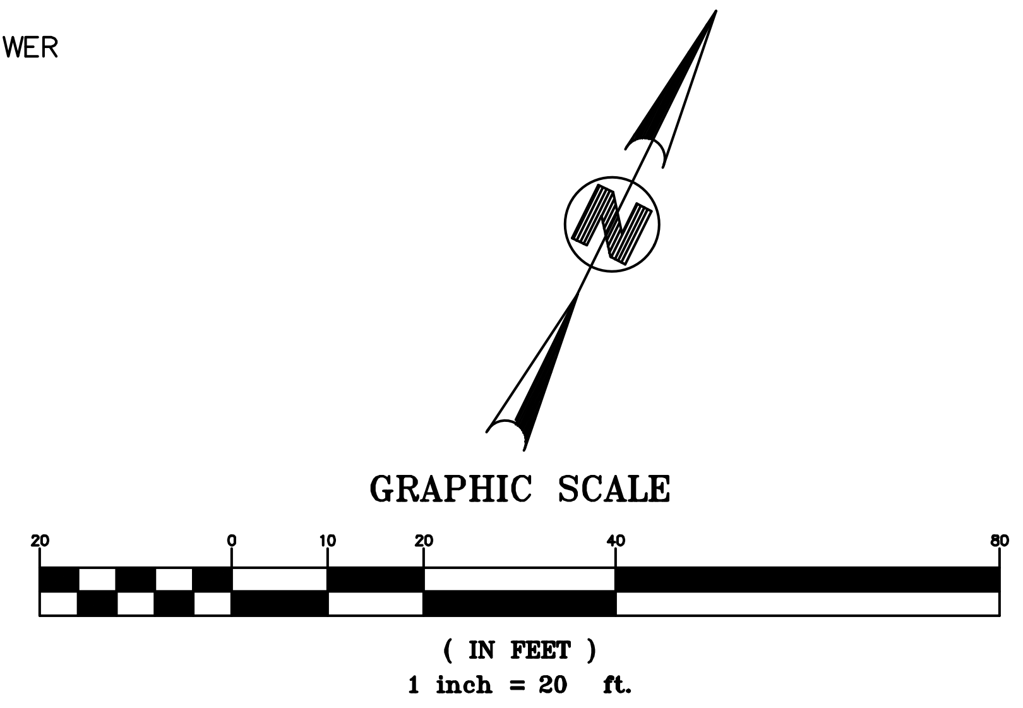
1. THE LOCATIONS, MATERIALS, TYPES, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN WERE OBTAINED FROM MULTIPLE SOURCES AND WILL NEED TO BE FIELD VERIFIED.
2. ALL WORK DONE WITHIN THE PUBLIC RIGHT OF WAY SHALL BE PER SEPARATE PERMIT.
3. SEE MEP PLANS FOR CONTINUATION AT POINT OF CONNECTION
4. NEW DOMESTIC WATER SERVICE AND METER FOR REFERENCE ONLY. FINAL DESIGN BY EBMUD. SEE NOTES 2 AND 3.
5. NEW FIRE WATER SERVICE FOR REFERENCE ONLY. FINAL DESIGN BY FIRE PROTECTION ENGINEER AND EBMUD. SEE NOTES 2 AND 3.
6. HESPERIAN BLVD FUTURE IMPROVEMENTS TO BE COORDINATED WITH VILLAGE GREEN PROJECT.

LEGEND

— – – —	PROPOSED RIGHT OF WAY	●	STORM DRAIN MANHOLE PER ALAMEDA COUNTY STANDARD DRAWING SD–405
— — —	EASEMENT LINE	SDCO●	STORM DRAIN CLEANOUT
—SS—	SANITARY SEWER LINE	—W—	WATER LINE, SEE NOTE 4
●	SANITARY SEWER MANHOLE PER ORO LOMA STANDARD DRAWING SD–01	—FW—	FIRE WATER, SEE NOTE 5
SSCO●	SANITARY SEWER CLEANOUT PER ORO LOMA STANDARD DRAWING SD–11	⋈	WATER VALVE
▭	BIORETENTION AREA		FIRE DEPARTMENT CONNECTION
━	STORM DRAIN LINE	+●+	FIRE HYDRANT
—SD—	6" PERFORATED STORM DRAIN LINE	▨	BACKFLOW PREVENTER
▣	STORM DRAIN CATCH BASIN	⊗	POST INDICATOR VALVE

ABBREVIATIONS

BIO	BIORETENTION AREA	LF	LINEAR FEET	SSCO	SANITARY SEWER CLEANOUT
BLDG	BUILDING	N	NORTH	SSMH	SANITARY SEWER MANHOLE
BOT	BOTTOM	NE	NORTHEAST	SW	SOUTHWEST
CIP	CAST IRON PIPE	NW	NORTHWEST	TR	TREE
COMM	COMMUNICATION	PVC	POLYVINYL CHLORIDE	UB	UTILITY BOX
DW	DOMESTIC WATER	RCP	REINFORCED CONCRETE PIPE	VCP	VITRIFIED CLAY PIPE
E	ELECTRIC OR EAST	S	SLOPE OR SOUTH	WM	WATER METER
EX	EXISTING	SD	STORM DRAIN		WEST
FDC	FIRE DEPARTMENT CONNECTION	SDCB	STORM DRAIN CATCH BASIN		
FH	FIRE HYDRANT	SDCI	STORM DRAIN CURB INLET		
FW	FIRE WATER	SDFM	STORM DRAIN FORCE MAIN		
G	GAS	SDMH	STORM DRAIN MANHOLE		
GM	GAS METER	SE	SOUTHEAST		
INV	INVERT	SS	SANITARY SEWER		



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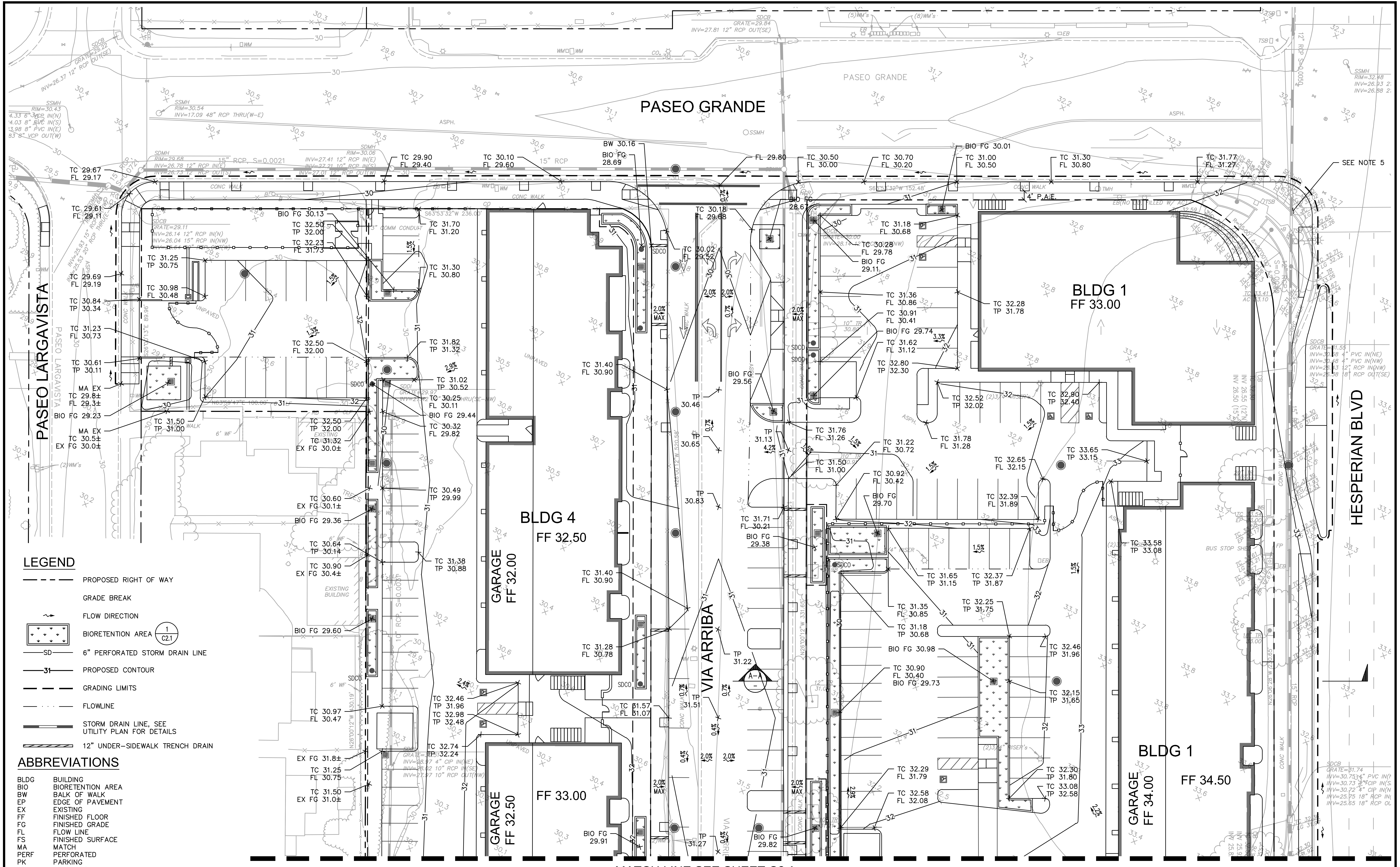
3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

C4.1
UTILITY PLAN

…SHEETS\04-VG-UTIL.dwg 18 Jan 2019 3:20:37pm phia

Figure 17a--Grading and Drainage Plan--Part 1



LEGEND

— — —	PROPOSED RIGHT OF WAY
~	GRADE BREAK
→	FLOW DIRECTION
▨	BIORETENTION AREA (1 / C2.1)
—SD—	6" PERFORATED STORM DRAIN LINE
—31—	PROPOSED CONTOUR
— — —	GRADING LIMITS
— · · —	FLOWLINE
▬	STORM DRAIN LINE, SEE UTILITY PLAN FOR DETAILS
▨	12" UNDER-SIDEWALK TRENCH DRAIN

ABBREVIATIONS

BLDG	BUILDING
BIO	BIORETENTION AREA
BW	BALK OF WALK
EP	EDGE OF PAVEMENT
EX	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISHED SURFACE
MA	MATCH
PERF	PERFORATED
PK	PARKING
SD	STORM DRAIN
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TW	TOP OF WALL

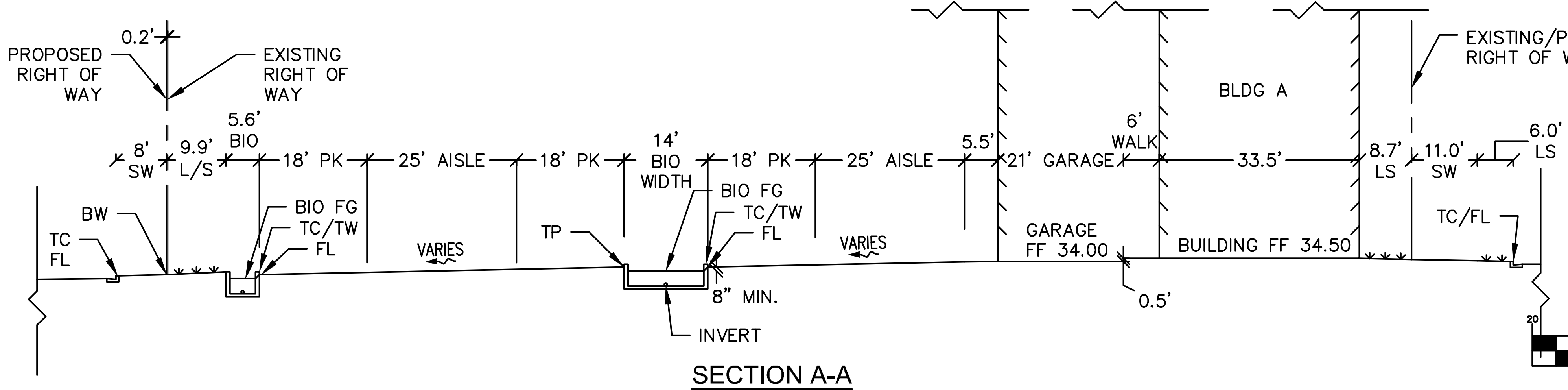
NOTES

1. EXISTING CONDITIONS OBTAINED FROM TOPOGRAPHIC SURVEYS PERFORMED BY BKF ENGINEERS, DATED 9/28/2017 AND 9/29/2017. ADDITIONAL EXISTING CONDITIONS INFORMATION OBTAINED FROM AERIAL SURVEY PERFORMED BY RICHARD J. LUNG AND ASSOCIATES, DATED 10/05/16.
2. CONTRACTOR SHALL VERIFY AND MATCH EXISTING GRADES ADJACENT TO LIMIT OF WORK.
3. ALL SIDEWALK/WALKWAY CROSS SLOPE AND LONGITUDINAL SLOPE NOT TO EXCEED 2% AND 4.99% RESPECTIVELY, UNLESS OTHERWISE NOTED.
4. DUE TO VARIABLES SUCH AS AMOUNT OF STRIPPING, SHRINKAGE, COMPACTION AND METHODS OF OPERATION, THE VOLUME OF DIRT WILL IN ALL LIKELIHOOD DEVIATE TO SOME EXTENT FROM THE CALCULATED VOLUMES.
5. HESPERIAN BLVD FUTURE IMPROVEMENTS TO BE COORDINATED WITH VILLAGE GREEN PROJECT.

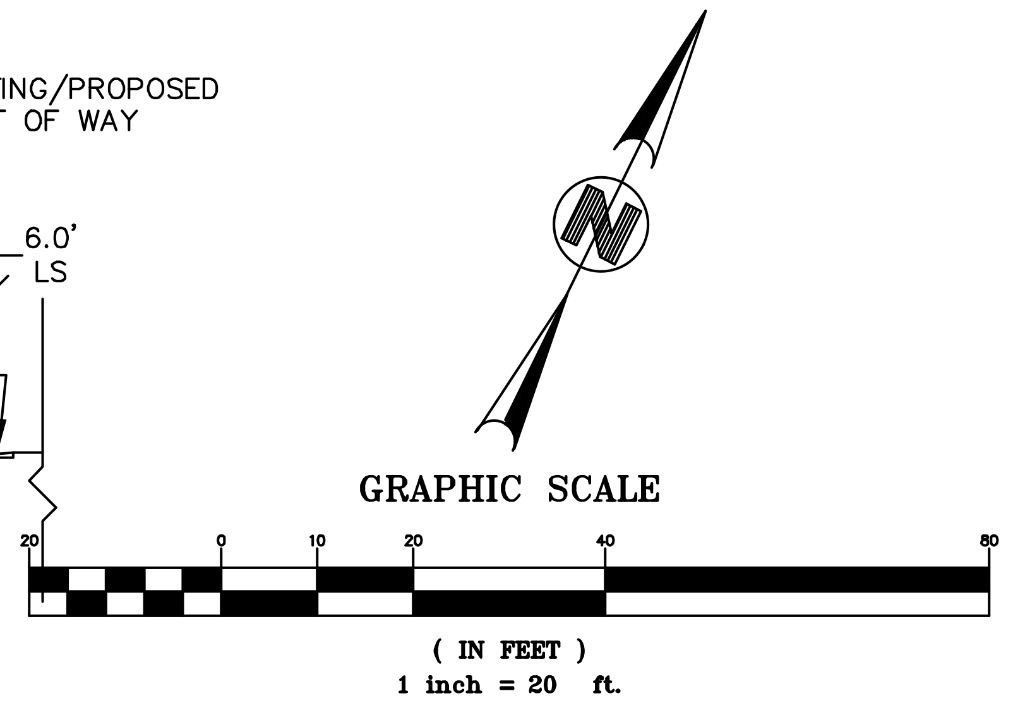
EARTHWORK SUMMARY

CUT:	1,600 CY
FILL:	2,900 CY
NET:	1,300 CY (IMPORT)

SEE NOTE 4



SECTION A-A
1"=20'



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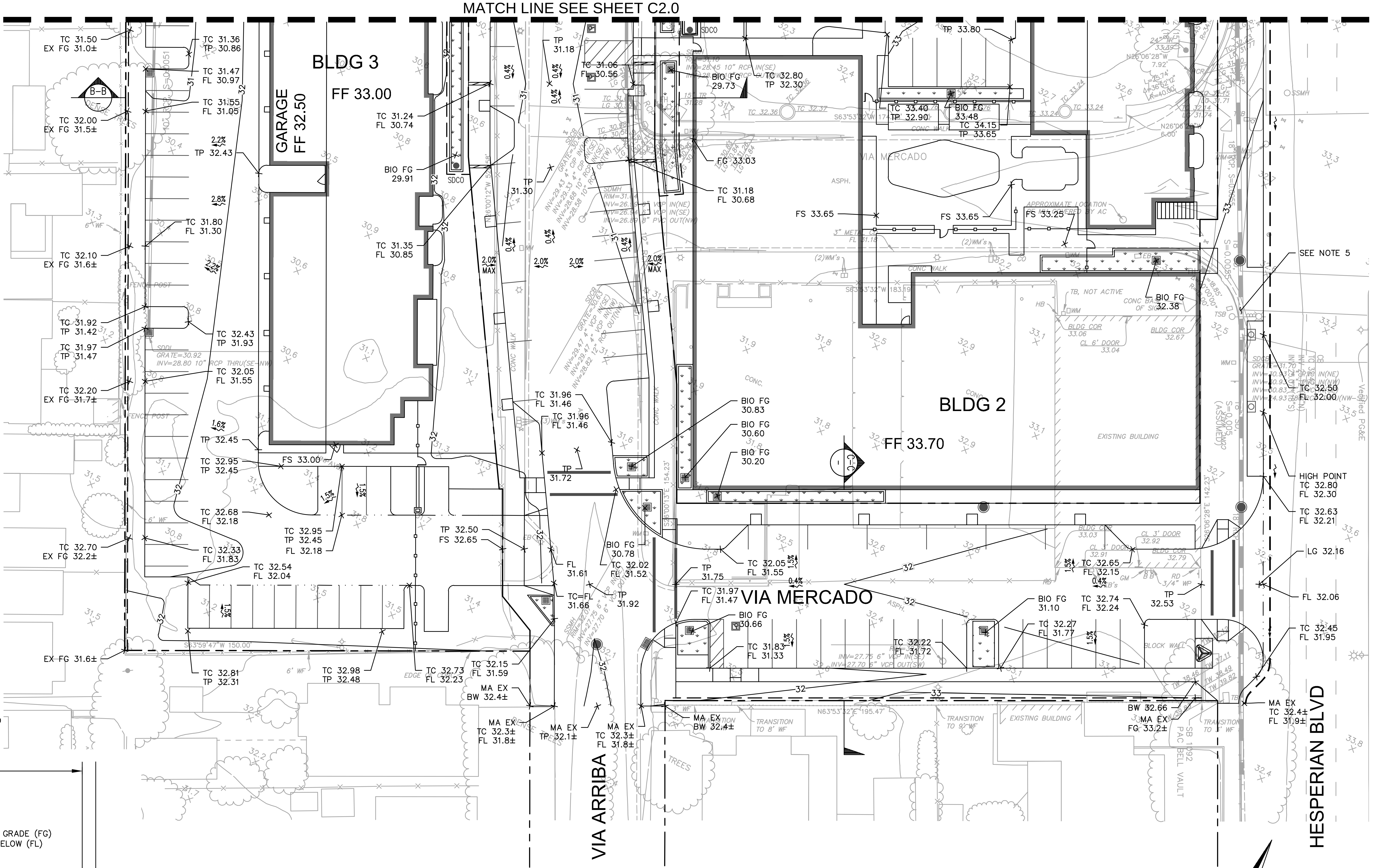
3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

C2.0
GRADING AND
DRAINAGE PLAN

Figure 17b--Grading and Drainage Plan--Part 2



LEGEND

— — — —	PROPOSED RIGHT OF WAY
	GRADE BREAK
⤳	FLOW DIRECTION
▨ (1 / C2.1)	BIORETENTION AREA
——SD——	6" PERFORATED STORM DRAIN LINE
——31——	PROPOSED CONTOUR
— — —	GRADING LIMITS
— · · · —	FLOWLINE
━━━━	STORM DRAIN LINE, SEE UTILITY PLAN FOR DETAILS
▨▨▨	12" UNDER-SIDEWALK TRENCH DRAIN

ABBREVIATIONS

BLDG	BUILDING
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EP	EDGE OF PAVEMENT
EX	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISHED SURFACE
MA	MATCH
PERF	PERFORATED
PK	PARKING
SD	STORM DRAIN
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TW	TOP OF WALL

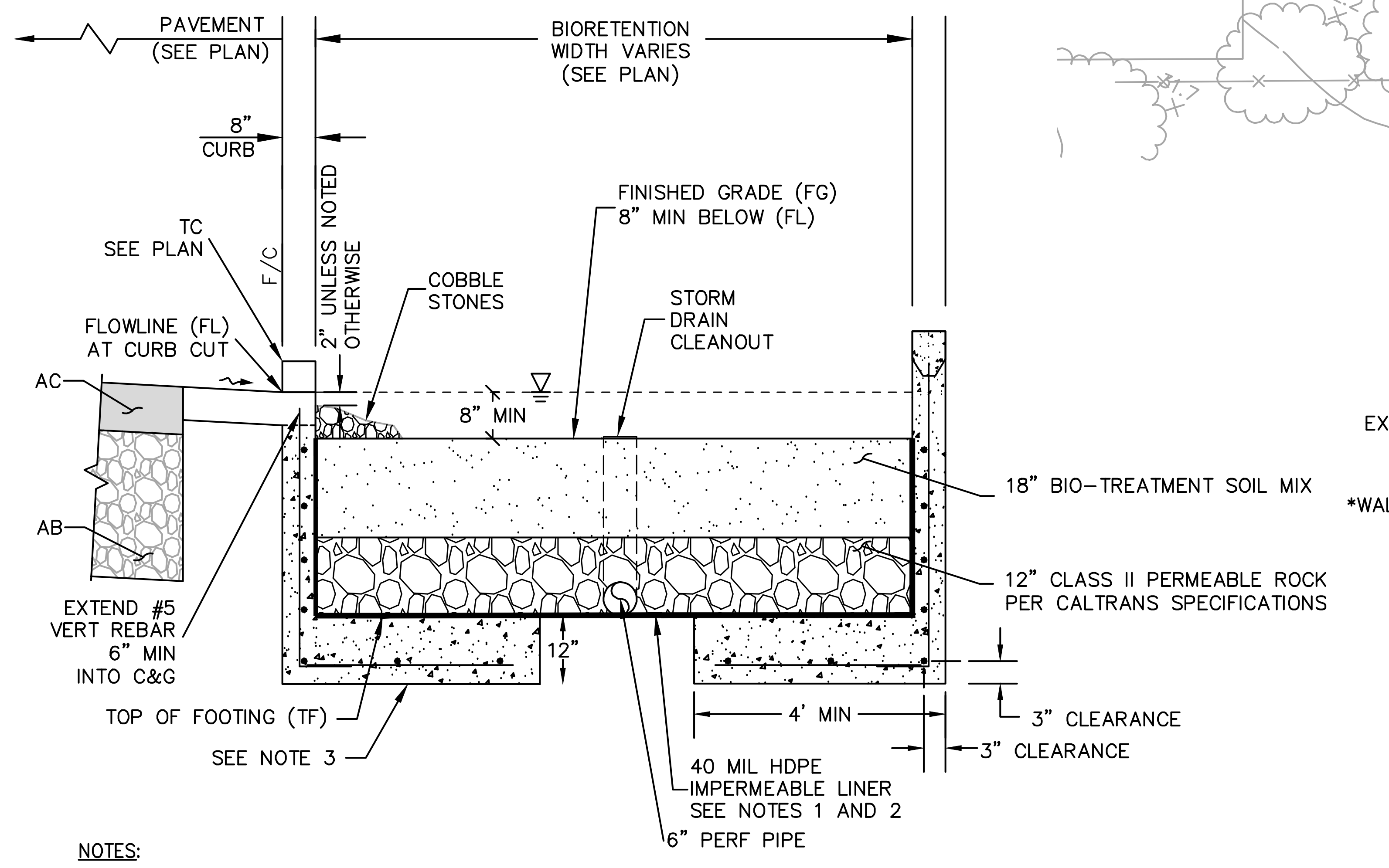
EARTHWORK SUMMARY

CUT:	1,600 CY
FILL:	2,900 CY
NET:	1,300 CY (IMPORT)

SEE NOTE 4

NOTES

1. EXISTING CONDITIONS OBTAINED FROM TOPOGRAPHIC SURVEYS PERFORMED BY BKF ENGINEERS, DATED 9/28/2017 AND 9/29/2017. ADDITIONAL EXISTING CONDITIONS INFORMATION OBTAINED FROM AERIAL SURVEY PERFORMED BY RICHARD J. LUNG AND ASSOCIATES, DATED 10/05/16.
2. CONTRACTOR SHALL VERIFY AND MATCH EXISTING GRADES ADJACENT TO LIMIT OF WORK.
3. ALL SIDEWALK/WALKWAY CROSS SLOPE AND LONGITUDINAL SLOPE NOT TO EXCEED 2% AND 4.99% RESPECTIVELY, UNLESS OTHERWISE NOTED.
4. DUE TO VARIABLES SUCH AS AMOUNT OF STRIPPING, SHRINKAGE, COMPACTION AND METHODS OF OPERATION, THE VOLUME OF DIRT WILL IN ALL LIKELIHOOD DEVIATE TO SOME EXTENT FROM THE CALCULATED VOLUMES.
5. HESPERIAN BLVD FUTURE IMPROVEMENTS TO BE COORDINATED WITH VILLAGE GREEN PROJECT.



NOTES:

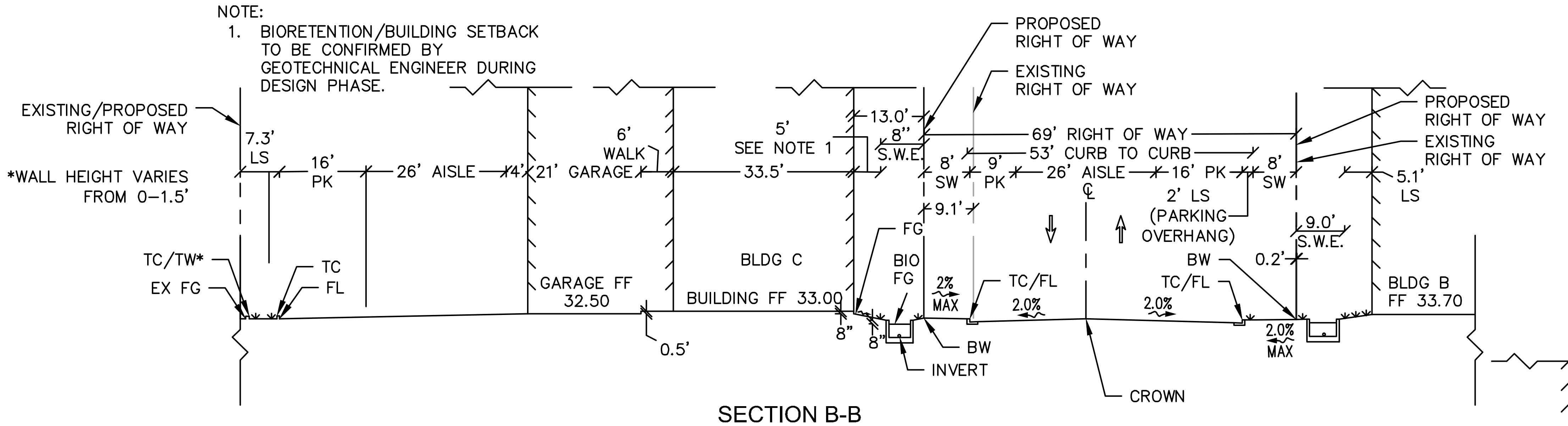
1. IF BIORETENTION AREA EXCEEDS 7 FT IN WIDTH, IMPERMEABLE LINER SHALL BE INSTALLED AT BOTTOM AND EXTEND TO THE FINISHED GRADE OF THE BIO-TREATMENT SOIL MIX.
2. IMPERMEABLE LINER TO BE USED WHEN BIORETENTION AREA IS NOT STRUCTURALLY CONTAINED BY WALL FOOTING. PRIOR TO PLACEMENT OF CLASS II AB, PLACE A LAYER OF GEOTEXTILE FABRIC (MIRAFI 500X OR EQUIVALENT) AT THE BASE OF THE EXCAVATION.
3. BIORETENTION WALL SHALL BE DESIGNED BY THE STRUCTURAL ENGINEER.

① TYPICAL STRUCTURAL BIORETENTION AREA CROSS SECTION

NTS

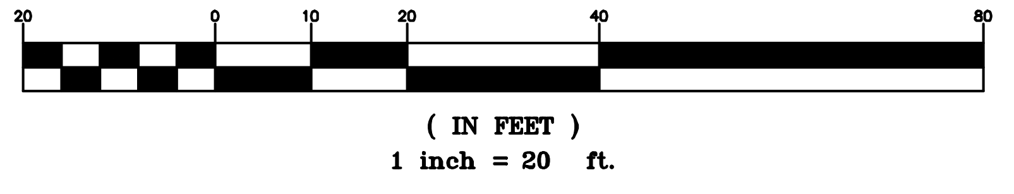
NOTE:

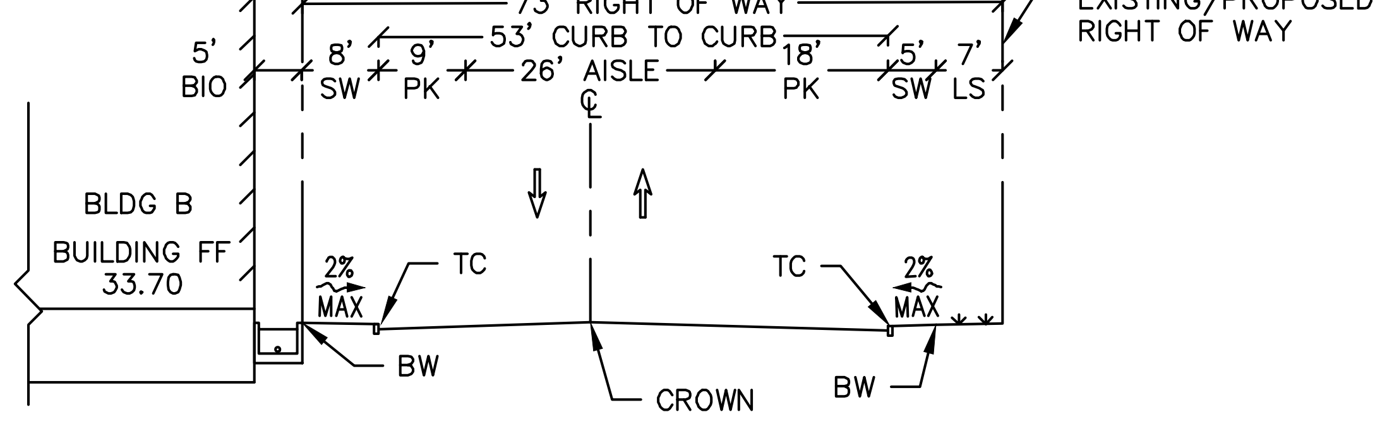
1. BIORETENTION/BUILDING SETBACK TO BE CONFIRMED BY GEOTECHNICAL ENGINEER DURING DESIGN PHASE.



SECTION B-B

1"=20'





SECTION C-C

1"=20'

BKF
100+ YEARS
ENGINEERS
SURVEYORS
PLANNERS

BKF Engineers
300 Frank Ogawa Plaza, Suite 380
Oakland, CA 94612
510-899-7300

BKF Project No: 20171017

DEMMON PARTNERS

Company: DEMMON PARTNERS
Address: 1451 River Park Dr. Suite 121
Sacramento, CA 95815
Phone No. 916-514-0426

VILLAGE GREEN
SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL	11/30/2017
1ST SUBMITTAL	04/09/2018
2ND SUBMITTAL	08/15/2018
3RD SUBMITTAL	11/12/2018
4TH SUBMITTAL	01/21/2019

C2.1
GRADING AND
DRAINAGE PLAN

Figure 18--Conceptual Landscape Plan

MJS
LANDSCAPE
ARCHITECTURE

Project Contact: Paul Maksy
Email: paul@mjs-la.com
Principal: Mark Schattinger
Project Manager: Paul Maksy

Client

DEMMON PARTNERS

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Sacramento, CA 95815
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VILLAGE GREEN

SAN LORENZO, CA

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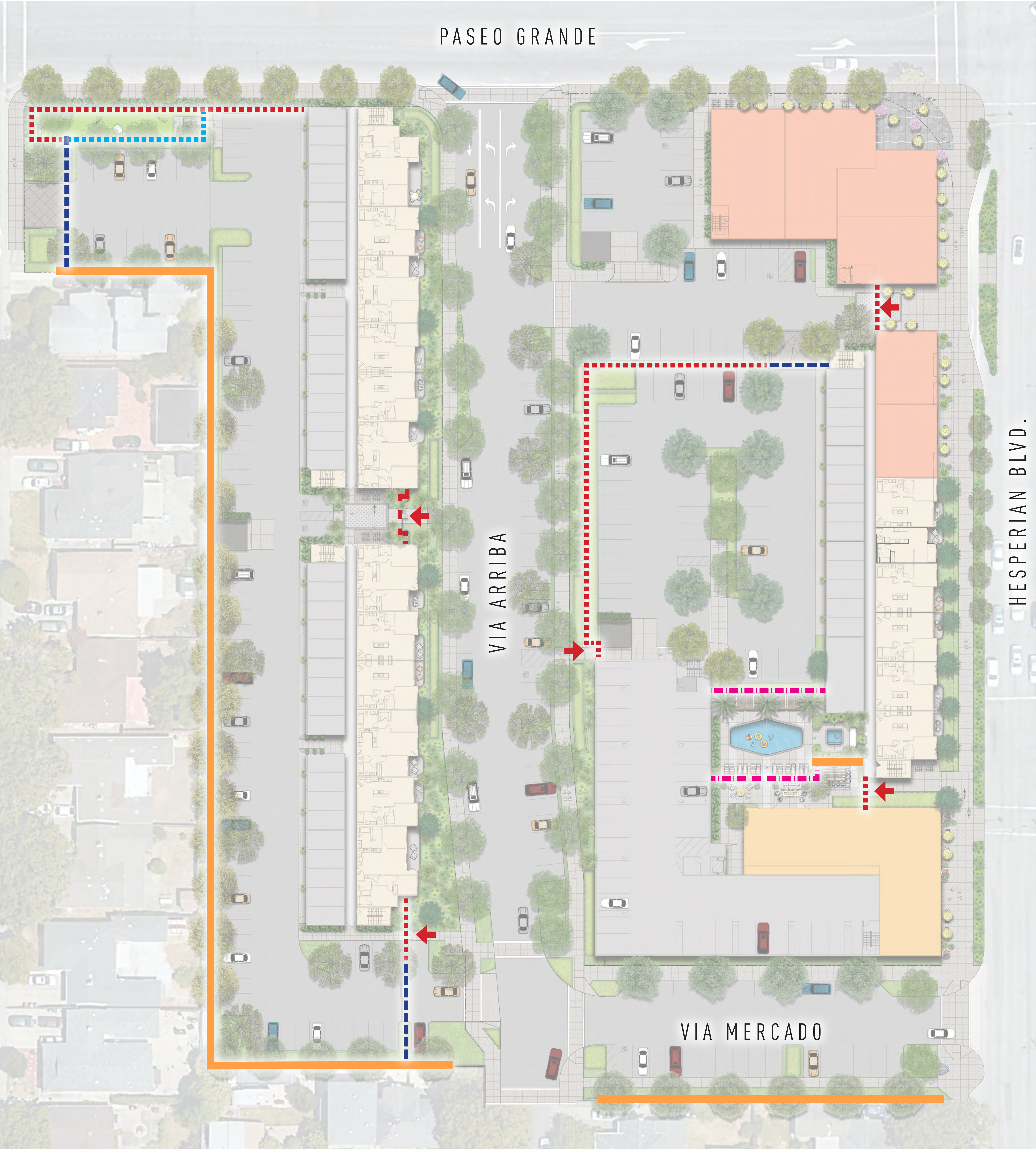
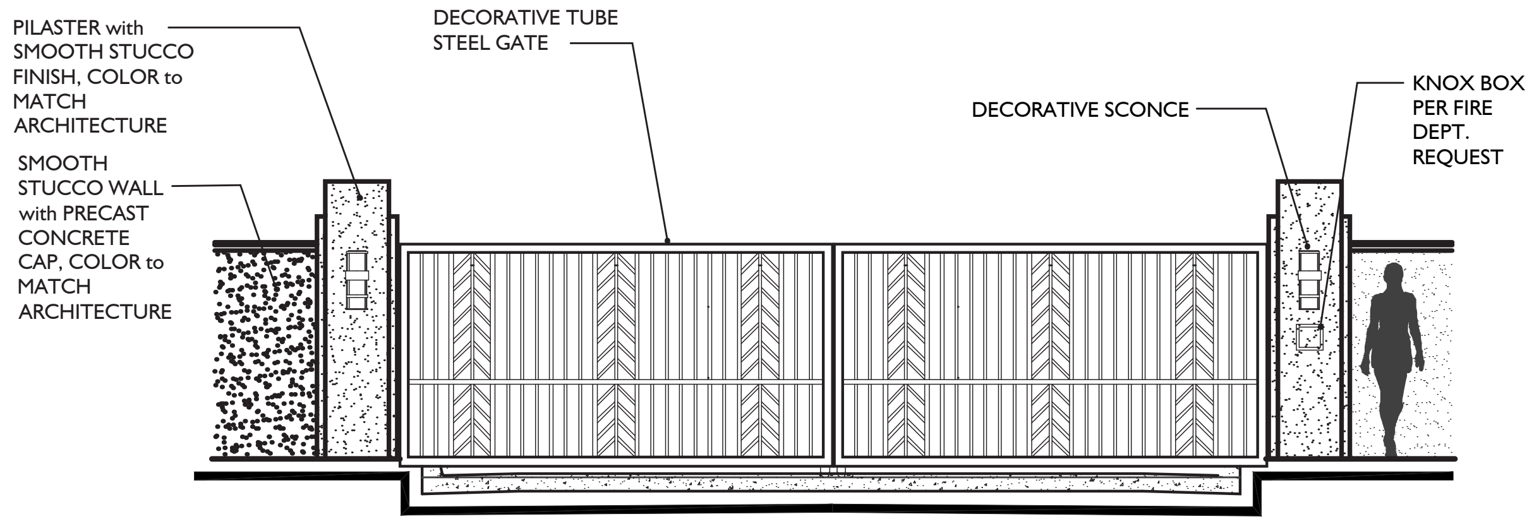
4TH SUBMITTAL	01/21/2019

CONCEPTUAL
LANDSCAPE PLAN

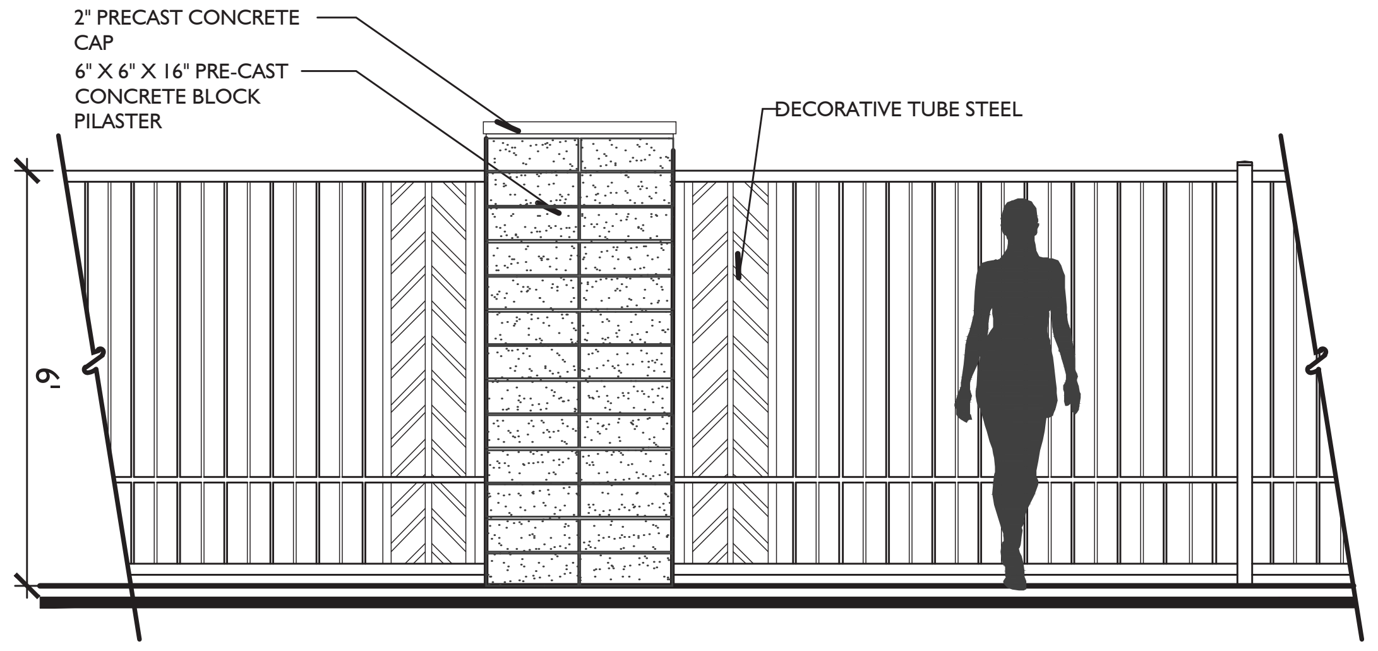
L.1

Figure 19--Wall and Fence Plan

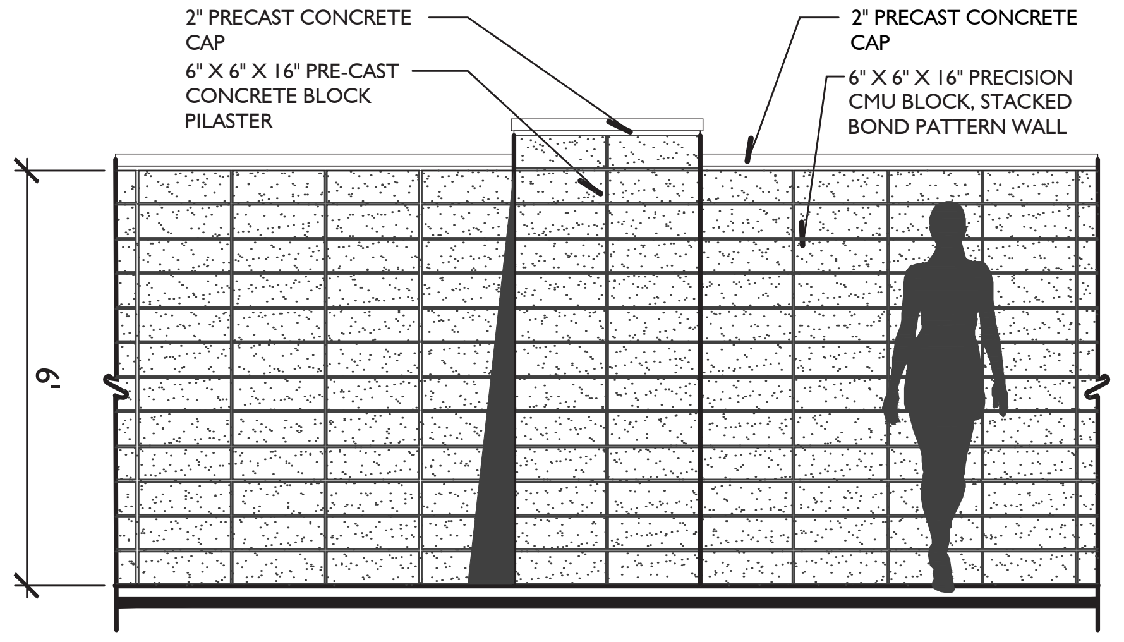




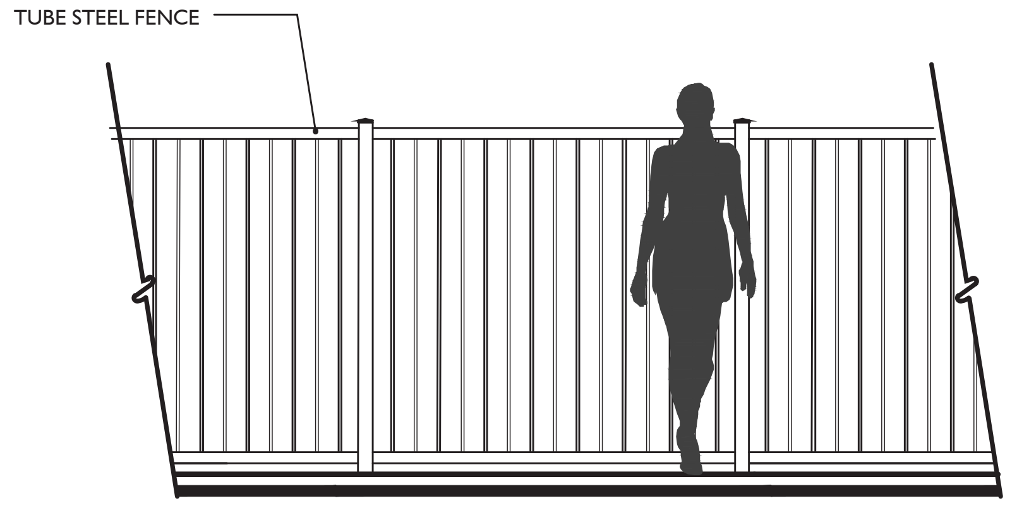
Ⓐ VEHICULAR ENTRY GATE
6' HIGH ▬ ▬ ▬ ▬ ▬ ▬



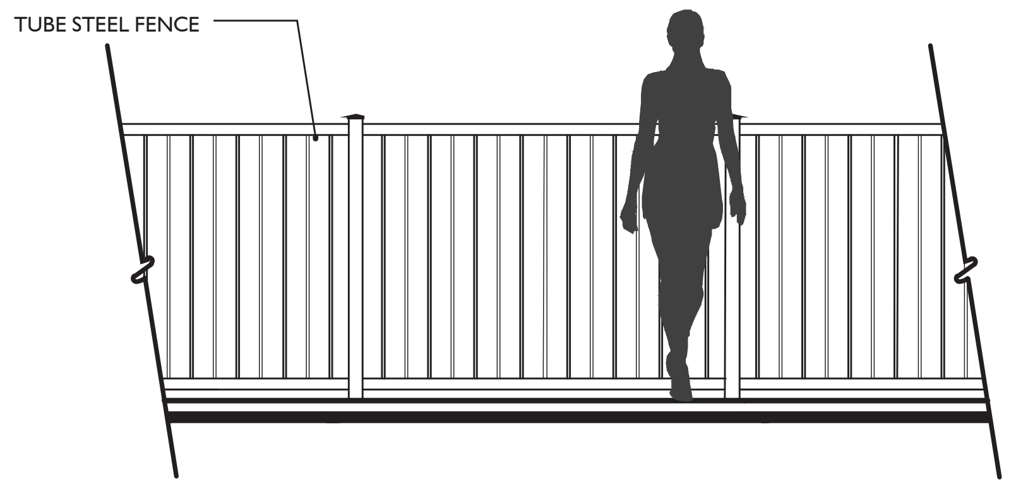
Ⓑ DECORATIVE TUBULAR STEEL FENCE
6' HIGH ■ ■ ■ ■ ■ ■ ■ ■



Ⓒ MASONRY WALL AND PILASTER
6' HIGH ▬

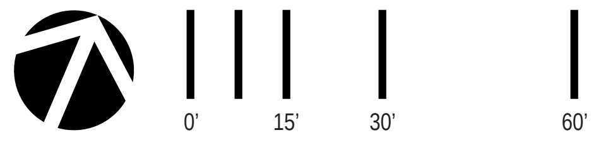


Ⓓ TUBULAR STEEL POOL ENCLOSURE FENCING
5' HIGH ▬ ▬ ▬ ▬



Ⓔ TUBULAR STEEL DOG PARK ENCLOSURE
4' HIGH ■ ■ ■ ■ ■ ■ ■ ■

Ⓕ GATED PEDESTRIAN ENTRY WITH KNOX BOX PER FIRE DEPT. REQUEST
➡



MJS
LANDSCAPE ARCHITECTURE

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Principal: Mark Schattinger
Project Manager: Paul Maksy

Client

DEMMON PARTNERS

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VILLAGE GREEN
SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL	11/30/2017
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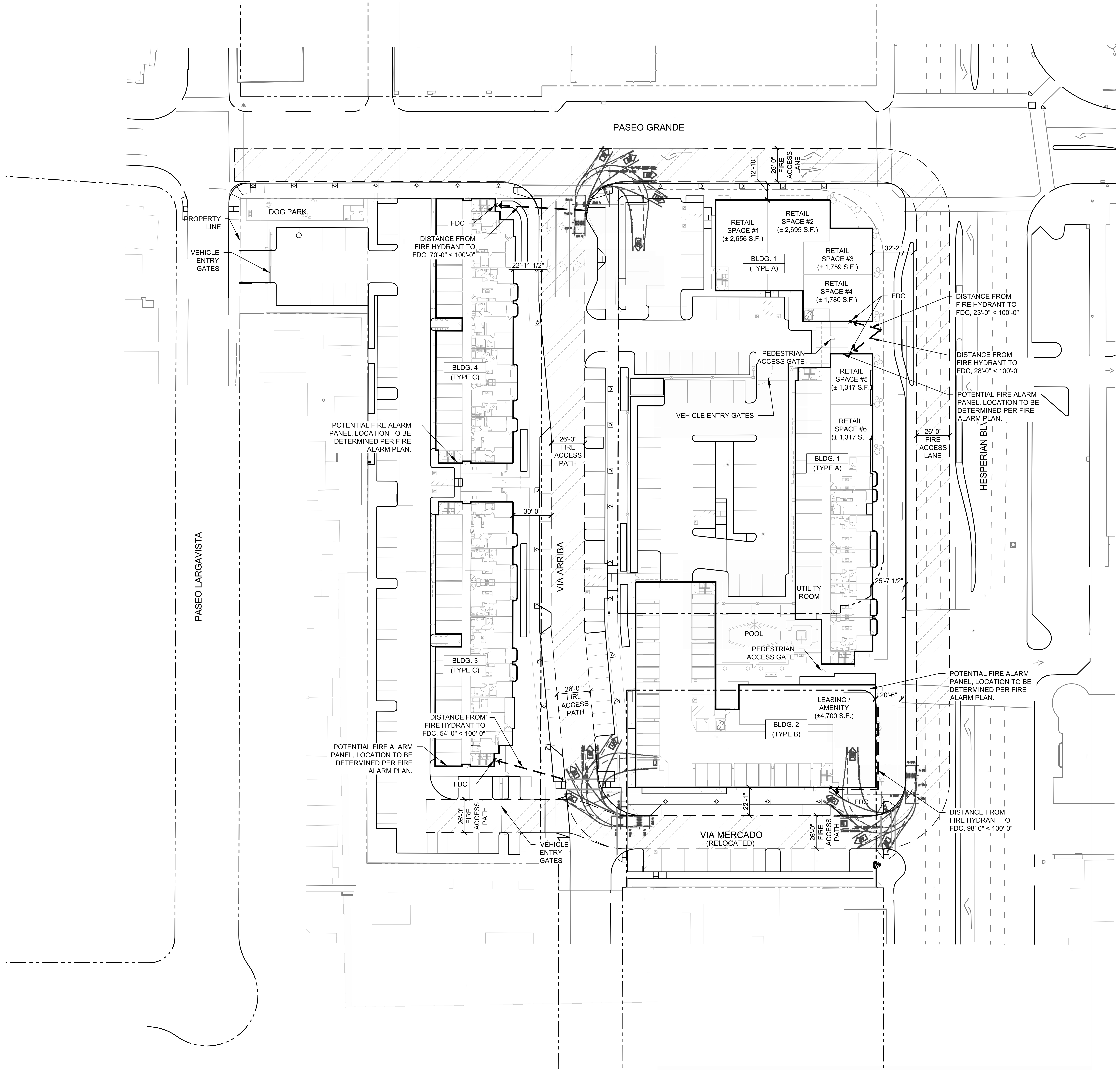
3RD SUBMITTAL	11/12/2018
4TH SUBMITTAL	01/21/2019

WALL & FENCE PLAN

L.3

Figure 20--Fire Access Plan

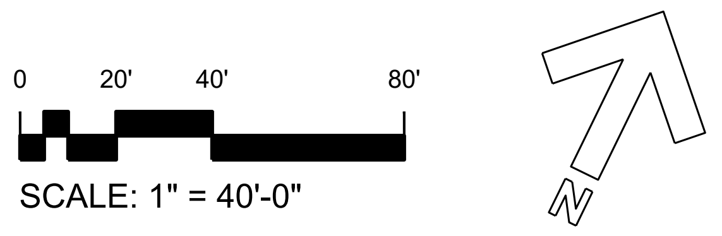


GENERAL NOTES:

1. FIRE ALARM SYSTEM IS REQUIRED AND WILL BE INSTALLED THROUGHOUT AS REQUIRED BY CODE. THE FIRE ALARM PANEL LOCATION AND NUMBER OF PANELS WILL BE DETERMINED BY A LOW VOLTAGE DESIGNER. DESIGN WILL BE A DEFERRED SUBMITTAL AND NOT A PART OF THIS SUBMITTAL.

SYMBOL LEGEND:

⊕	FIRE HYDRANT
●	FDC
▨	26'-0" FIRE ACCESS LANE
←	DISTANCE FROM FDC LOCATION TO NEAREST FIRE HYDRANT, MAXIMUM 100'-0"



SCALE: 1" = 40'-0"

adc
architecture design collaborative
23231 South Pointe Dr.
Laguna Hills, CA 92618
www.adcollaborative.com
949.267.1660

ADC Project No:	160025
Project Contact:	Chris Weimholt
Email:	cweimholt@adcollaborative.com
Principal:	Chris Weimholt
Project Manager:	Chris Weimholt

Client

DEMMON PARTNERS

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VILLAGE GREEN

SAN LORENZO, CA

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4TH SUBMITTAL	01/21/2019

FIRE ACCESS PLAN

A1.1

Addendum to the San Lorenzo Village Specific Plan EIR

Relationship to 2004 San Lorenzo Village Center Specific Plan

The Project is within the area covered by the San Lorenzo Village Center Specific Plan, which was adopted by the Alameda County Board of Supervisors in October 2004. The Specific Plan is the tool used for implementing the General Plan, and incorporates development standards within the designated part of the unincorporated County. The Specific Plan provides a long-term vision for San Lorenzo Village on Hesperian Boulevard from the Interstate 880 overcrossing on the north to around Via Mercado on the south. The Specific Plan covers approximately 30 acres and envisions the area as an active center with stores, public facilities, cultural uses, outdoor spaces, and streetscapes with new multi-family, mixed-use development.

The Project site is within subareas 5B, 5C, and 5D of the Specific Plan area (Figure 3), which together include approximately 5.12 acres along Hesperian Blvd west from Paseo Grande to the parcel south of Via Mercado, as well as the parcel adjacent west of Via Arriba.

The proposed Project is in conformance with the Land Use Standards detailed in subsection "d" of the Plan (p. 30), which state that the Residential Mixed Use Standard for Number of Units is 450 for Subareas 2, 4 and 5A through 5D, 130 for Subarea 6, total not to exceed 5810 for entire Plan Area".[5]

With the addition of the 163 dwelling units proposed for Village Green, cumulative development in subareas 2, 4, 5A-5D would total 241 dwelling units and 12,184 sf of retail. These numbers are well within the maximum development potential identified in the Specific Plan.

Section 10 of this CEQA document details the ways in which the Project is consistent with the Design Guidelines and Land Use Controls in the Specific Plan (Table 9). To remain within the purview of an EIR Addendum, the proposed Project must not involve "substantial changes…which will require major revisions to the previous EIR…due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects." (CEQA Guidelines Section 15162(a)(1). Based on the Project's close conformity with the development potential identified for subareas 2, 4, 5A-5D in the Specific Plan and the Project's overall consistency with the Design Guidelines and Land Use Controls therein, the Project does not meet the conditions described in Section 15162 calling for preparation of a subsequent EIR.

Relationship to 2004 San Lorenzo Village Center Specific Plan EIR

The Final EIR for the Specific Plan was certified in June 2004 with adoption of the Specific Plan. The EIR was prepared to serve as a Program EIR with respect to analysis of projects developed pursuant to the Specific Plan, in accordance with Section 15168(a) of the CEQA Guidelines. CEQA specifically provides certain exemptions and/or review processes for future projects that fall within the scope of a Program EIR. Section 15183 of the CEQA Guidelines states:

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[5] San Lorenzo Village Center Specific Plan—p. 30. July 2004.

> CEQA mandates that projects which are consistent with the development density established by existing zoning, community plan, or general plan policies for which an EIR was certified shall not require additional environmental review, except as might be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site. This streamlines the review of such projects and reduces the need to prepare repetitive environmental studies.

Section 15183 of the CEQA Guidelines also requires that applicable, feasible mitigation measures adopted pursuant to the Program EIR must be incorporated into the future project. A project would not be exempt from further review if there is anything peculiar to the project or the parcel; if significant project, offsite, or cumulative effects were not previously analyzed; or if substantial new information has surfaced since approval of the previous EIR.

Similarly, Section 15182(a) of the CEQA Guidelines states, “Where a public agency has prepared an EIR on a specific plan after January 1, 1980, no EIR or negative declaration need be prepared for a residential project undertaken pursuant to and in conformity to that specific plan.” Section 15182 (b) limits this exemption to Projects to which the conditions described in Section 15162 do not apply.

Table 2 (next page) summarizes how the development parameters of the Village Green Project compare to the maximum development potential detailed in the Revised Specific Plan. In the Specific Plan, the maximum number of dwelling units proposed for subareas 5A, 5B, 5C, and 5D (comprising the Village Center subarea) totaled 150, while the Village Green Project proposes to provide 163 units in subareas 5B, 5C, and 5D only (excluding subarea 5A, north of Paseo Grande). However, this does not render the residential density of the proposed Project inconsistent with the Specific Plan, because the Specific Plan states that “The number of units shown (150) is intended to indicate that this area is anticipated to receive a portion of the maximum of 450 units allowed within subareas 2, 4 and 5. **Densities may be shifted or reallocated among these subareas** provided that the maximum number of units within these subareas does not exceed 450” [emphasis added].[6]

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[6] San Lorenzo Village Center Specific Plan—Final EIR. P. III-2. June 2004.

Table 2. Maximum Expected Development Potential (2004 Specific Plan) Compared to Village Green Project

Subarea	2004 Existing Retail, Office and Civic Space (sf)	2004 SP Maximum Expected Retail (sf)	2004 SP Total New Space (Retail/ Ofc/Civic)	2004 SP Existing Space to Remain in Use	2004 SP Total Space at Buildout	2004 Potential New Residential Dwelling Units	2018 Cumulative Proposed (including Village Green Project)	
1: Tool Rental	13,500		0	13,500	13,500	0		
2: San Lorenzo Plaza	143,000	80,000	100,000	0	100,000	150 *	78 du (Mercy Housing)	
3: Homes Assoc.	23,000		35,000	11,000	46,000	0		
4: Theater Area	28,500	18,500	18,500	11,000	29,500	150 *		
5: Village Square	**55,000**	**69,500**	**89,500**	**12,000**	**101,500**	**150 ***	**163 du**	**12,184 sf**
6: Self Storage	15,000[7]			15,000	15,000	130		
Total	278,000	168,000	243,000	62,000	305,000	580	**241**	

Notes:

*: From the Specific Plan, p. III-2: "The number of units shown (150) is intended to indicate that this area is anticipated to receive a portion of the maximum of 450 units allowed within subareas 2, 4 and 5A-5D. Densities may be shifted or reallocated among these subareas provided that the maximum number of units within these subareas does not exceed 450."

While the Project is consistent with the overall development evaluated in the Specific Plan EIR, the specific parameters of land use for the proposed Project differ from those detailed in the Specific Plan for the subareas proposed for development, as detailed in the previous section. In addition, since the Specific Plan EIR was certified in 2004, certain circumstances upon which the analysis in the Specific Plan EIR was conducted may have changed and should therefore be revisited.

Therefore, pursuant to the criteria detailed below in CEQA Guidelines Sections 15162, 15163, and 15164, the County has decided to prepare an Addendum to the Specific Plan EIR for the proposed Project. This Addendum provides an analysis based on information specific to the proposed Project and the current circumstances. The updated analysis of the Project is included in Chapter 3, Environmental Checklist, of this document.

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[7] Existing retail strip building facing Hesperian Boulevard; does not include space in existing storage lockers.

CEQA Determination

CEQA Guidelines Section 15164(e) states that, "A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR....The explanation must be supported by substantial evidence." The following discussion provides the explanation, supported by the substantial evidence provided in the Environmental Checklist that follows.

CEQA Guidelines Section 15164(a) further states, "The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR have occurred."

<u>Some Changes or Additions are Necessary to the Prior EIR</u>

The following considerations lead to the conclusion, based on substantial evidence provided in the Checklist analysis, that "some changes or additions" are necessary to the prior EIR:

1. As detailed above, the specific development parameters for the proposed Project are different from the Village Center project analyzed in the Specific Plan EIR.
    a. As the Checklist analysis demonstrates, the Project parameters are not sufficiently different as to result in new or more severely adverse significant impacts compared to the analysis in the prior EIR.
2. Since the Specific Plan EIR was certified in 2004, changes may have occurred to environmental resources, including regional population and housing demand; traffic conditions; air quality; climate change; proximity to hazardous materials; and/or adequacy of available utility services such as potable water, wastewater treatment, and stormwater retention.
    a. As detailed in the Checklist analysis below, none of these changes have been found to require major revisions to the prior EIR.

<u>None of the Conditions in Section 15162 Have Occurred</u>

Section 15162 of the Guidelines describes the conditions under which preparation an Addendum is <u>not</u> appropriate, and a subsequent or supplemental EIR must be prepared:

a. When an EIR has been certified or a Negative Declaration adopted, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:
    1. Substantial changes are proposed in the project which will require major revisions of the EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in severity of previously identified significant effects;
    2. Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions of the EIR or Negative Declaration due to involvement of new significant environmental effects or a substantial increase in severity of previously identified significant effects; or
    3. New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified or

the Negative Declaration was adopted, shows the following:

A. The project will have one or more significant effects not discussed in the previous EIR or Negative Declaration.

B. Significant effects previously examined will be substantially more severe than previously shown in the previous EIR.

C. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

D. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponent decline to adopt the mitigation measure or alternative.

Changes to the Project defined in the Specific Plan

- With the addition of the 163 dwelling units proposed for Village Green, cumulative development in subareas 2, 4, 5A-5D would total 241 dwelling units and 12,184 sf of retail. These numbers are within the maximum development potential provided in the final Specific Plan of 450 dwelling units for subareas 2,4,and 5A-5D (units identified within these subareas were specifically given flexibility to be shifted across the individual subareas).
- The 12,184 sf of proposed retail space is the only retail development built or proposed in these subareas since the Specific Plan was adopted in 2004. The proposed square footage is within the 69,500 sf of retail space identified for subareas 5A-5D in the Specific Plan.
- The Project is consistent with the Design Guidelines and Land Use Controls identified in the Specific Plan (see Section 10: Land Use).

Therefore the Project does not represent significant changes from the development analyzed in the Specific Plan EIR.

Changes to Circumstances

Changes to circumstances in the Specific Plan area and surrounding areas include:

- Population: According to the Association of Bay Area Governments (ABAG), the 2010 Census projected that the population of San Lorenzo would grow from approximately 27,265 in 2010 to 28,100 in 2020, a total increase of approximately 3.1 percent; this is a higher growth rate than the 0.8% population growth that was predicted for the same period in the Specific Plan EIR. However, this growth rate still represents a substantially smaller same-period growth rate than the 9.5% growth projected for Alameda County overall. The proposed Project is still within the maximum capacity analyzed in the prior EIR and, because it brings the total developed units in the Specific Plan area to 241 out of a maximum of 450, it would have minimal effect on population growth as compared to the analysis in the prior EIR. Therefore substantial changes to the EIR would not be required as a result of the minor changes in projected areawide population growth.

- Climate Change: The trends driving global climate change have intensified in the period since the Specific Plan was adopted. However, the County adopted the Alameda County (Unincorporated Areas) Community Climate Action Plan (CCAP) in 2014. The CCAP includes actions to accomplish a target reduction in GHG emissions of 15% below the 2005 baseline levels by 2020 through a series of 37 local programs and policy measures related to transportation, land use, building energy, water, waste, and green infrastructure. The Project is required to comply with California Title 24 standards for energy efficiency, as well as the County's Green Building Ordinance. With required compliance, the Project would be consistent with programs and policy measures identified in the Alameda County CCAP, and the impacts of the Project would be less than significant. Therefore, no major changes to the EIR are required.
- Utility Services: As described in the Checklist and based on confirmation from local service providers, the Project is still within the development parameters that would enable existing utilities to provide adequate service to the Project. Therefore substantial changes to the EIR would not be required as a result of minor changes in utility plans and capacities since 2004.
- Transportation: Of the six intersections whose operations were analyzed in both the 2004 EIR and this EIR Addendum, three are currently experiencing degraded LOS performance in the AM peak hour compared to 2004, and one is experiencing degraded LOS performance in the PM peak hour (one is experiencing improved LOS performance in the PM peak hour). None of the affected intersections have been degraded to an unacceptable LOS (E or F). While the unsignalized Via Arriba/Paseo Grande intersection is expected to degrade from LOS C to LOS E during the AM peak hour under Cumulative with Project Conditions, the identical impact was predicted in the Specific Plan EIR. Traffic conditions in the relevant area have degraded somewhat, but not to a significant extent.[8]
- Noise: Because of the increases in traffic on I-880 and development along Hesperian Boulevard, the overall ambient noise level in the Project area has likely increased since 2004, although directly comparable noise measurements do not exist to document the specific increase in overall noise levels.[9] Existing ambient noise levels in the Project area now generally exceed the non-commercial noise ordinance limits specified in the Alameda County Noise Ordinance and the exterior noise levels in the Alameda County General Plan Noise Element.

The Specific Plan EIR analyzed the Final Specific Plan, which included 580 residential dwelling units, and concluded that the only significant unavoidable impacts would result from construction noise. Additional noise reduction measures are recommended for implementation in this document; however,

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[8] Annual Average Daily Traffic (AADT) increased an average of 1.4% per year (approximately 3000 cars per year) at Interstate 880 at the Junction with Interstate 238 from 2011-2016, for a total growth of 7.1% (15,000 cars per year). California Department of Transportation. AADT data available at http://www.dot.ca.gov/trafficops/census/volumes2011/Route505-980.html. Accessed May 22, 2018.

[9] By the properties of noise propagation, this small and gradual increase in freeway noise is likely imperceptible to the human ear. Federal Highway Administration. Available at https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm.

given the proximity of adjacent residences, the impacts could still be significant. For other resource impacts, by logical extension, residential development that stayed within or below the maximum development analyzed would not result in new or more severely adverse impacts, and would therefore not require significant changes to the EIR.

New Information

There is no new information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIRs were certified, and that that now meets the criteria of CEQA Guidelines Section 15162 (a)(3). Analysis of soil, groundwater, and soil vapor samples has recently been conducted at the Project site, but the specific results do not constitute substantially important new information, given that the 2004 Specific Plan EIR discussed potentially contaminated historic dry cleaning sites within the Specific Plan Area that would be subject to federal, state and county remediation requirements.

New Significant Effects

Based on the conclusions from the Initial Study/Checklist that follows (which were drawn from substantial evidence presented in, or incorporated by reference from, the prior EIR, as well as new technical studies and analysis of the Village Green Project), the County finds that no new or substantially greater significant environmental effects will result from implementation of the Project, beyond those effects previously identified in the 2004 Specific Plan EIR. The proposed Project would generate approximately 134 new vehicle trips during the AM peak hour and 129 new vehicle trips during the PM peak hour. This compares to 690 vehicle trips in the AM peak hour and 1,214 in the PM peak hour analyzed in the Final Specific Plan (the only trips added from Specific Plan development since 2004 have been the 15 AM peak hour and 18 PM peak hour trips generated by the San Lorenzo Senior Housing Project). The intersection at the unsignalized Via Arriba/Paseo Grande intersection is expected to degrade intersection performance from LOS C to LOS E during the AM peak under Cumulative with Project Conditions. However, this is the same impact that was concluded in the Specific Plan EIR. Beyond that, the impact is less than significant because, with the proposed traffic improvements described above (page 5), the intersection would not meet the County's significance threshold regarding applicable signal warrant criteria found in the Manual on Uniform Traffic Control Devices (MUTCD).

The following CEQA Checklist also incorporates by reference other relevant information contained in the 2004 Specific Plan EIR. All development projects pursuant to the Specific Plan are subject to the mitigation measures identified in the Specific Plan EIR, or their equivalent. All applicable policies, regulations, and mitigation measures identified in the prior EIR will also be applied to the Project or otherwise be made conditions of approval of the Project.

Conclusion

The County finds that the Village Green Project would not require substantial changes to the San Lorenzo Village Center Specific Plan EIR, and that the Village Green Project is fully consistent with the Specific Plan as analyzed in the Specific Plan EIR.

No substantial changes have occurred with respect to the circumstances under which the prior EIR were certified, and there is no significant new relevant information which was not known and could not have been known at the time that the prior EIR was certified as complete. The Project would not have any new significant effects not discussed in the previous EIR, and would not result in any significant effects that would be substantially more severe than previously shown in the previous EIR. Therefore, the County believes this Addendum is fully consistent with the requirements of Guidelines Sections 15162, 15163, and 15164.

CEQA Checklist

Overview

This CEQA Checklist provides a summary of the potential for new or more severe environmental impacts that may result from implementation of the Project as compared to impacts identified in the certified 2004 San Lorenzo Village Center Specific Plan EIR. This Checklist provides updated information on environmental conditions, as appropriate.

This CEQA Checklist hereby incorporates by reference the analysis of all potential environmental impact topics included in the prior EIR and the Initial Study that directly preceded it.[10] The significance criteria from the prior EIR have been consolidated, adjusted, and/or abbreviated in certain portions of this CEQA Checklist for administrative purposes; a complete list of the significance criteria can be found in the 2004 Specific Plan EIR, including its Initial Study Checklist.

This CEQA Checklist provides a determination of whether the proposed Project would result in:

- Equal or Less Severity of impact as previously identified in the 2004 Specific Plan EIR; or
- Substantial Increase in the severity of previously identified significant impacts as disclosed in the 2004 Specific Plan EIR; or
- New significant impacts.

As demonstrated in the following CEQA Checklist, there are no impacts that constitute a substantial increase in the severity of previously identified significant impact, and no new significant impacts that would result from the Project, as compared to the 2004 Specific Plan EIR. Pursuant to CEQA Guidelines Section 15162, this assessment considered the potential for such new or more severe environmental impacts, based on the potential for:

- Substantial changes to the San Lorenzo Village Center Specific Plan as previously analyzed;
- Substantial changes in circumstances under which the Project, as part of the San Lorenzo Village Center Specific Plan, will be undertaken; or
- Substantial new information not known at the time the 2004 Specific Plan EIR was certified.

The proposed Project is required to comply with applicable mitigation measures identified in the 2004 Specific Plan EIR and with applicable conditions of approval identified by County of Alameda. The Project sponsor (Demmon Partners) has agreed to incorporate and/or implement the required applicable mitigation measures as part of the proposed Project. These measures will be included in the Mitigation Monitoring and Reporting Program (MMRP) for the Project. If the CEQA Checklist inaccurately identifies or fails to list an applicable mitigation measure or condition of approval, the applicability of that mitigation measure or condition of approval to the proposed Project is not affected.

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[10] All references to the Specific Plan EIR include the Initial Study that directly preceded it.

1. Aesthetics

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Have a substantial adverse effect on a public scenic vista;	☑	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, located within a state or locally designated scenic highway;	☑	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings;	☑	☐	☐
d): Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area;	☑	☐	☐

a, b) Substantial Adverse Effect on Scenic Vistas, Scenic Resources

<u>2004 Specific Plan EIR</u>

For the purposes of this analysis, a scenic vista is defined as a vantage point with a broad and expansive view of a significant landscape feature (e.g., a mountain range, lake, or coastline) or of a significant historic or architectural feature (e.g., views of a historic tower). A scenic vista is a location that offers a high quality, harmonious, and visually interesting view.

The prior EIR concluded that there are no scenic vistas that would be affected by adoption or implementation of the Draft Specific Plan.[11] Because the site has been in active commercial use for over

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[11] The Draft Specific Plan was revised subsequent to the publication of the Draft Specific Plan EIR in 2003. As adopted by the County in 2004, the Final Specific Plan reduced the residential development intensity analyzed in the Draft EIR, from a maximum of 850 dwelling units to a maximum of 580. Because the development intensity of the Final Specific Plan is reduced from the Draft Plan, none of the potentially significant impacts that were mitigated to a level below significance in the Draft EIR would be significant and unavoidable as a result of implementing the reduced development level in the Final Specific Plan; and no impacts determined to be less than significant in the Draft EIR were found to be significant or potentially significant in the Final EIR. In other words, the environmental impacts of implementing the Final Specific Plan were found to be less than those of the Draft Specific Plan, with the exception of Parking, where the Final Specific Plan raised the residential parking requirement from 1.5 spaces per dwelling unit to 2. With respect to parking, mitigation

50 years, it does not provide any formally identified scenic vistas or scenic resources. The prior EIR concluded there are no scenic resources such as trees or rock outcroppings that would be affected by the implementation of the Specific Plan. Implementation of the Specific Plan was found to have no impact on scenic resources.

Project Analysis

The Project is proposed on an area that now consists of surface parking and a vacant commercial building. There are no scenic resources that would be affected by development of the Project, and there are no nearby scenic resources or vistas that would be blocked by the Project. While the hills of Anthony Chabot Regional Park (northwest of the Project site) can be glimpsed from various vantage points in the overall area, the existing residences south and west of the Project do not have such views, either because their homes are surrounded by high fences and/or because the view of the hills is obstructed by existing development north of Paseo Grande.

The closest designated state Scenic Highway is SR 238/I-580, which is approximately 0.6 mile to the north of the Project site. No views of the Project site can be seen from any portion of SR 238/I-580. Therefore, the Project would result in **no impact** to scenic resources along a scenic highway. The Project would not cause significant impacts to scenic resources.

c) Visual Character

2004 Specific Plan EIR

The Specific Plan EIR noted the presence in the area of older structures dating from the 1930s and 1940s, including most notably the Lorenzo Theater, which has been listed on the California Register of Historical Resources. It noted that the design guidelines of the Specific Plan reflect desirable elements that enhance and improve the character of the area, but that the Specific Plan does not include any process to ensure that these design guidelines are implemented in a consistent and desirable manner, thus resulting in a potentially significant impact to visual character of the Specific Plan area.

To mitigate this potential impact, the Specific Plan EIR included **Mitigation Measure IV.1.3 Design Review,** which recommended that the Specific Plan be amended to incorporate a design review process through a method such as the County's Site Development Review or Planned Development process, intended to ensure that the design guidelines of the Specific Plan are applied against proposed developments. The final Specific Plan as adopted in 2004 includes the requirement that Site Development Review by Planning Commission must be completed for all new construction or additions exceeding 1,000 square feet.

The EIR found that the Specific Plan's height limit of 50' for buildings adjacent to existing residential areas would significantly change the visual appearance of the area compared with its predominant single-story character and could result in a potentially significant impact on the light, air, views, privacy and livability of adjacent residential areas. As such, the Specific Plan EIR identified two mitigation

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measures recommended in the Draft EIR were found to reduce the impact below the level of significance in the Final EIR.

measures, which were both subsequently adapted and included as Design Guidelines in the final Revised Specific Plan (the language of the Design Guidelines as adopted in the Specific Plan is used here):

- **Mitigation Measure IV.1-4A: Height Setbacks**: height profile of new buildings shall be contained within a 45 degree angle, (or 1:1 ratio of setback to height) starting at grade from the common property line with parcels having single-family houses.
- **Mitigation Measure IV**.**1.4B**: **Landscape Buffer:** Install trees within 10 feet of boundary adjacent to properties with existing single-family houses where new development exceeds 15 feet in height. Tree planting shall be designed to effectively screen new development from existing residences. Tree species and landscape plan shall be considered through the SDR process for new projects.

The prior EIR noted that the Design Guidelines of the Specific Plan (detailed in the Section Land Use & Urban Design) would provide a substantial basis for evaluating the design and aesthetic qualities of proposed development. These guidelines would both encourage improvement in the visual quality of the planning area and screen out designs that would adversely impact the existing character of the area. With implementation of these Mitigation Measures and design guidelines, the prior EIR concluded that impacts on visual character would be **less than significant**.

Project Analysis

The Project is proposed on an area that now consists of surface parking and a vacant commercial building. The proposed site cannot be said to have a definable visual character. In fact, the Specific Plan was developed to provide a defined visual character for the site area, based on a series of Design and Land Use Guidelines. As demonstrated in detail in Table 9 in Section 10 Land Use, the Project conforms to the Specific Plan Design Guidelines, which include the mitigation measures identified in the Specific Plan EIR. In addition, the Specific Plan requires all new development to undergo design review to ensure that the design guidelines of the Specific Plan are implemented in a consistent and desirable manner. The Project’s Site Development Review by the County’s Planning Commission would help ensure that the Project would result in a **less than significant impact** to visual character of the Specific Plan Area.

d) Create new source of light or glare

The SLVCSCP EIR found that the amount of light and glare generated within the Specific Plan area could create new sources of substantial light or glare. This could be a potentially significant impact on day or nighttime views in the area if not designed properly.

Project Analysis

The Project site currently includes limited lighting because the existing commercial building at the southeastern corner of the site is vacant. The Project would increase lighting in the area by creating a new light source. Security lighting would be provided throughout the site, particularly in the common areas and parking lots. Onsite lighting would include pole lights, building-mounted lights with motion sensors, and soffit lights switched from the interior of the buildings. Light impacts could also occur as a result of vehicle headlights from the proposed parking areas on the Project site. Light spillage on adjacent properties could occur, but the Project could install light controlling devices, such as light guards and automatic shut-off. In addition, landscaping and fencing is proposed along the western and southern perimeters of the Project site to help reduce the amount of light spilling onto adjacent properties.

Glare is caused by light reflections from pavement, vehicles, and building materials, such as reflective glass and polished surfaces. During daylight hours, the amount of glare depends on the intensity and direction of sunlight. Glare can create hazards to motorists and nuisances to bicyclists, pedestrians, and other sensitive viewers. Implementation of the Project would include reflective surfaces such as windows and other potential building finishes. It is expected that the upper levels of the proposed building could be visible from I-880 near Hesperian Boulevard. Therefore, glare from the building could be created along these major road corridors. Tinted and low-emissivity glass would allow the building to absorb some of the light, which would result in less light reflection off of the building.

The Project would be required to adhere to the Design Guidelines in the Specific Plan as they relate to light and glare. Therefore, light impacts would be reduced to less than significant through the design review process.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of significant aesthetic impacts identified in the prior EIR. It would not result in new significant impacts related to aesthetics that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on scenic vistas, visual character, or light and glare within the site and surrounding areas. With the implementation of the mitigation measures in the prior EIR and the required Site Development Review by the County, the impacts would be **less than significant**.

2. Agriculture

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
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?	☑	☐	☐
Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☑	☐	☐
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))?	☑	☐	☐
Result in the loss of forest land or conversion of forest land to non-forest use? or	☑	☐	☐
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?	☑	☐	☐

all): Conversion or loss of farmland, forest

The 2004 Specific Plan EIR found that no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) has been identified within the Specific Plan area, which has been previously developed in commercial urban land uses. There would be no conversion of agricultural land to non-agricultural land, so the Specific Plan EIR found **no impact.**

There are no lands zoned for agricultural uses or Williamson Act contracts in the Project vicinity. The Project involves the construction of affordable senior housing on land within an already-developed area with commercial uses. The construction of the Project would not result in the conversion of farmland to a nonagricultural use. The Project would not conflict with any agricultural zoning use or a Williamson Act contract. The prior EIR concluded that **no impact** would occur as a result of the proposed Project.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of significant agricultural impacts identified in the prior EIR. It would not result in new significant impacts related to agriculture that were not identified in the 2012 SMEIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on agriculture within the site and surrounding areas. There would be no impacts to agricultural resources.

3. Air Quality

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☑	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☑	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, including releasing emissions that exceed quantitative threshold for ozone precursors?	☑	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations, including, but not limited to, substantial levels of toxic air contaminants?	☑	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☑	☐	☐

a): Conflict with applicable Clean Air Plan

2004 Specific Plan EIR

The prior EIR concluded that the Specific Plan would be inconsistent with the 1997 Bay Area Clean Air Plan (CAP) in regard to projections of population and vehicle miles traveled. It also concluded that the Specific Plan would be consistent with CAP recommendations regarding implementation of Transportation Systems Management (TSM) strategies. These TSM strategies assist in mitigation of potential air quality impacts and inconsistencies with the CAP. TSM strategies that are included within the Specific Plan include the following:

- As a mixed-use, higher density project located within an existing urban setting, the Specific Plan would provide for convenient access between residential and commercial areas, potentially creating opportunities for reducing what would otherwise be longer trips to locations outside of the planning area for commercial services.
- The development of a mixed-use project in an already developed urbanized area is an example

of "infill development." In-fill projects are strongly advocated as "smart growth" alternatives to urban sprawl, such as development at the eastern edge of the Bay Area on sites far removed from existing infrastructure and efficient mass transit service.

- The provisions and policies of the Specific Plan would provide for the implementation of other transportation control measures, particularly those related to encouraging the use of bicycles and pedestrian travel, and the provision of bus shelters to facilitate transit use.
- Given that the planning area has already been designated as a Redevelopment Project Area, the Alameda County Redevelopment Agency may be able to fund, install, construct or acquire land for transportation improvements required to meet an adopted congestion management deficiency plan, transportation improvement plan or air quality management plan.

Implementation of these strategies as contained in the Specific Plan would have beneficial and mitigating effects on air quality impacts and other inconsistencies with the CAP, reducing this impact to a level of **less than significant**.

Project Analysis

The most recent clean air plan produced by BAAQMD is the Bay Area 2017 Clean Air Plan.[12] The Final (Revised) Specific Plan EIR analyzed 450 units in the combined Specific Plan subareas of 2, 4, and 5A-5D, with the flexibility to shift units between subareas as long as the total of 450 was not exceeded. There has only been one project built or entitled since the Specific Plan was approved: a 77-unit housing project (in subarea 2). Therefore, the Village Green Project would not exceed the growth assumptions evaluated in the Specific Plan EIR for consistency with the Clean Air Plan.

Since the Project is consistent with and part of the Specific Plan and plans to implement the TSM strategies and construction mitigation measures, it too would not conflict with the Clean Air Plan. As a result, the Project would not conflict with or obstruct implementation of the Plan, and this impact would be **less-than-significant.**

b ,c): Violate air quality standard or contribute substantially to air quality violation; Result in cumulatively considerable net increase of criteria pollutants

Construction

2004 Specific Plan EIR

The prior EIR found that demolition of existing buildings, site clearing, grading, excavation and other earth-moving activities would comprise the major sources of construction dust and diesel equipment emissions during implementation of development pursuant to the Specific Plan. Construction-related traffic and the general disturbance of soil and the movement or application of construction materials could also generate a significant amount of dust and particulate matter. During construction activities fugitive dust would be emitted by equipment and vehicles, as a result of wind passing over exposed earth surfaces, and as a result of particulate matter being emitted from diesel powered equipment. The

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[12] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

effects of construction activities within the planning area would include the settling of dust on horizontal surfaces in the vicinity of the construction sites, and locally elevated levels of PM_{10} downwind of construction activity that could be inhaled by sensitive receptors. This is considered a **potentially significant impact**. Mitigation measures, if available, should be incorporated so that construction activity emissions would not impede attainment or maintenance of ozone or carbon monoxide (CO) standards in the air basin.

- **Mitigation Measure IV.4.2A: Implementation of Site-Specific Dust Abatement Programs.** Each development project or development phase pursuant to implementation of the Specific Plan shall be required to demonstrate compliance with all applicable County regulations and operating procedures prior to issuance of building or grading permits, including standard dust control measures. The effective implementation of dust abatement programs, incorporating all of the following dust control measures, would reduce the temporary air quality impact associated with construction dust.
    - All active construction areas shall be watered using equipment and staff that are provided by the project applicant or prime contractor, as needed, to avoid visible dust plumes. Appropriate non-toxic dust palliative or suppressant, added to water before application, may be used.
    - All trucks hauling soil, sand and other loose materials shall be covered or shall maintain at least two feet of freeboard.
    - All unpaved access roads, parking areas and construction staging areas shall be either paved, watered as necessary to avoid visible dust plumes, or subject to the application of (non-toxic) soil stabilizers.
    - All paved access roads, parking areas and staging areas at the construction site shall be swept daily with water sweepers.
    - If visible soil material is carried onto adjacent public streets, these streets shall be swept daily with water sweepers.
    - All stockpiles of debris, soil, sand or other materials that can be blown by the wind shall either be covered or watered as necessary to avoid visible dust plumes.
    - An off-pavement speed limit of 15 miles per hour for all construction vehicles shall be incorporated into the construction contract and enforced by the prime contractor.
    - All inactive portions of the project site (those areas which have been previously graded, but inactive for a period of ten days or more) shall be watered with an appropriate dust suppressant, covered or seeded.
    - All earth-moving or other dust-producing activities shall be suspended when the above dust control measures prove ineffective in avoiding visible dust plumes during periods of high winds. The wind speed at which this suspension of activity will be required may vary, depending on the moisture conditions at the project site, but suspension of such activities shall be required in any case when the wind speed exceeds 25 miles per hour.
- **Mitigation Measure IV.4.2B: Implementation of Site-Specific Diesel Reduction Programs.** Each

development project or development phase within the planning area shall be required to demonstrate compliance with all applicable County regulations and operating procedures prior to issuance of building or grading permits, including standard diesel reduction efforts.

- Diesel powered equipment shall be maintained in good working condition, with manufacturer-recommended mufflers, filters, and other equipment.
- Diesel powered equipment shall not be left inactive and idling for more than ten minutes, and shall comply with applicable BAAQMD rules.
- Use alternative fueled construction equipment.
- Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use.

The prior EIR concluded that, with implementation of the above construction controls, air pollutant emissions for construction activities would be considered less than significant. In dust control efforts, watering alone is estimated to reduce dust emissions by approximately 50 percent. The combined effect of the above measures, including the use of a dust suppressant, would have a control efficiency of 70 to 80 percent, which would be expected to reduce site-specific construction-related impact to a level of **less than significant**.

The prior EIR further concluded that, with implementation of the above dust control and diesel reduction measures, air pollutant emissions for these construction activities would also be considered **less than significant**.

Project Analysis

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 California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as Attachment A.

In December 1999, the BAAQMD adopted its CEQA Guidelines – “Assessing the Air Quality Impacts of Projects and Plans”, as a guidance document to provide lead government agencies, consultants and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The 1999 BAAQMD CEQA Guidelines was an advisory document, and local jurisdictions were not required to utilize the methodology outlined therein.

The BAAQMD most recently updated its CEQA Air Quality Guidelines in May 2017. These guidelines continue to provide direction on recommended analysis methodologies, but no longer recommend quantitative significance thresholds. The Air District recommends that lead agencies develop their own thresholds of significance. Alameda County references the BAAQMD CEQA Thresholds Options and

Justification Report (2009), which provides substantial evidence for reliance on the thresholds published in 2011. As such, the air quality thresholds used in this Addendum to the Specific Plan EIR are based upon the substantial evidence provided in the BAAQMD CEQA Thresholds Options and Justification Report as accounted for in the BAAQMD's 2011 Guidelines. These thresholds are detailed in Table 3.

Table 3. Air Quality Significance Thresholds

Criteria Air Pollutant	**Construction Thresholds**	**Operational Thresholds**	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
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	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	

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.

Source: Illingworth & Rodkin, 2018.

The construction schedule assumed that the Project would be built out over a period of approximately 15 months, beginning in January 2019. Based on the CalEEMod default assumptions, there were an estimated 320 construction workdays. Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 4 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 Y, predicted construction period emissions would not exceed the County's adopted significance thresholds. The impact to air quality would be **less than significant**.

Table 4. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	1.6 tons	3.6 tons	0.2 tons	0.2 tons
Average daily emissions (pounds)[1]	10.3 lbs./day	22.3 lbs./day	1.2 lbs./day	1.1 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 320 workdays.				

Source: Illingworth & Rodkin, 2018.

Operation

2004 Specific Plan EIR

The prior EIR conducted air quality emissions modeling using the URBEMIS 7-G model, and found that estimated daily regional emissions resulting from buildout of the Specific Plan (which incorporates or includes numerous mitigating land use, design and transit infrastructure strategies) would generate an increase of less than 80 pounds per day for all criteria emissions. It concluded that the regional emissions associated with implementation of the Specific Plan would therefore be **less than significant** and therefore not cumulatively considerable.

Modeling results presented in the prior EIR also showed that State and federal one-hour ambient standards for CO would not be violated at the planning area intersection most affected by traffic attributed to the Plan (Hesperian Blvd/Paseo Grande). Therefore, this is a **less than significant** impact.

Project Analysis

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. Operational assumptions used in the emissions modeling are detailed in Attachment A.

As shown in Table 5, operational emissions would not exceed the County's adopted significance thresholds. This would be considered a **less-than-significant impact**.

Table 5. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2021 Project Operational Emissions (tons/year)	1.5 tons	3.7 tons	1.0 tons	0.3 tons
2021 Existing Use Emissions (tons/year)	0.1 tons	0.3 tons	0.1 tons	<0.1 tons
Net Annual Emissions (tons/year)	1.4 tons	3.4 tons	0.9 tons	<0.3 tons
BAAQMD Thresholds (tons /year)	10 tons	10 tons	15 tons	10 tons
Exceed Threshold?	**No**	**No**	**No**	**No**
Net Annual Emissions (lbs/day)	7.7 lbs.	18.6 lbs.	4.9 lbs.	<1.6 lbs.

BAAQMD Thresholds (pounds/day)	54 lbs.	54 lbs.	82 lbs.	54 lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**
Notes: [1] Assumes 365-day operation.				

Source: Illingworth & Rodkin, 2018.

Because the Project would have emissions less than the BAAQMD thresholds, it would not contribute substantially to existing or projected violations of those standards.

d): Expose Sensitive Receptors to Substantial Pollutant Concentrations

2004 Specific Plan EIR

The prior EIR concluded that there were no known sources of toxic air contaminants that would adversely affect development within the Specific Plan area. Although the planning area is in close proximity to I-880, a heavily traveled roadway, there are no established standards that preclude development of residential uses near a highway. This would be considered a **less-than-significant** impact.

Project Analysis

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 residents that are sensitive receptors. In addition, temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. Community risk impacts are addressed by increased predicting lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The methodology for computing community risks impacts is contained in Attachment A.

Construction Risk to Nearby Receptors

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 Project construction activities was conducted to evaluate potential health effects to sensitive receptors at these nearby residences from construction emissions of DPM and $PM_{2.5}$.[13] The closest sensitive receptors to the Project site would be residences directly west of the site along Paseo Largavista and residences directly south of the site along Hesperian Boulevard and Via Arriba. 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 estimated.

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[13] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

The maximum increased lifetime cancer risk, annual $PM_{2.5}$ concentrations, and non-cancer hazard index for residents near the Project site from construction activities were computed using modeled DPM and $PM_{2.5}$ concentrations and the health risk calculation methods and exposure parameters described in Attachment A. The cancer risk calculations are based on applying the BAAQMD-recommended age sensitivity factors to the TAC concentrations. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. BAAQMD-recommended exposure parameters were used for the cancer risk calculations. Results of this assessment are shown in Table 6. Attachment A includes detailed modeling information.

The contribution of cumulative sources within 1,000 feet of the Project site was assessed in the same manner as they were for the proposed Project site and added to the calculation of potential risk. Since community risk levels for cancer risk and $PM_{2.5}$ concentration from unmitigated construction activities are greater than the single source significance thresholds, the impact would be considered **potentially significant**, as shown in Table 6.

Table 6. Impacts from Combined Sources at Construction Maximally Exposed Individual

Source		**Maximum Cancer Risk (per million)**	**$PM_{2.5}$ concentration (µg/m3)**	**Hazard Index**
Unmitigated Project Construction		**47.3 (infant)**	0.49	0.05
Mitigated Construction		6.6 (infant)	0.15	<0.01
Hesperian Boulevard mobile source		2.7	0.21	<0.01
Plant G8416 (gas station) emissions		0.8	0.00	<0.01
Combined Sources	Unmitigated Construction	50.8	0.7	<0.07
	Mitigated Construction	10.1	0.36	<0.03
BAAQMD Threshold – Single Source		*10.0*	*0.3*	*1.0*
Exceed Single Source Threshold? (mitigated)		***No***	***No***	***No***
BAAQMD Threshold – Combined Sources		*100*	*0.8*	*10.0*
Exceed Combined Source Threshold? (mitigated)		***No***	***No***	***No***

Mitigation Measure

In addition to the mitigation measures identified in the Specific Plan EIR and detailed above, the following additional measure would help ensure that health risk from construction emissions of TACs is reduced to a less-than-significant level:

- **Mitigation Measure AQ-1***:* Selection of equipment during construction to minimize emissions. Such equipment selection would include the following.

  The Project shall develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average 79 percent reduction in particulate matter exhaust emissions or more. One feasible plan to achieve this reduction would include the following:

  - All diesel-powered off-road equipment larger than 25 horsepower and operating on the site for more than two days shall meet, at a minimum, U.S. EPA particulate matter emissions standards for Tier 2 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[14] would meet this requirement. Other measures may be the use of added exhaust devices, alternatively-fueled equipment (i.e., non-diesel), 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.

Resulting Level of Significance

Implementation of Mitigation Measures IV.4.2A and IV.4.2B would be expected to reduce fugitive dust emissions by over 50 percent. Implementation of Mitigation Measure AQ-1 would further reduce on-site diesel exhaust emissions by at least 85 percent and fugitive $PM_{2.5}$ by at least 45 percent. This would reduce the maximum cancer risk to 6.6 in one million and the maximum $PM_{2.5}$ concentration 0.15 $\mu g/m^3$, which are both less than their respective BAAQMD significance thresholds. After implementation of these mitigation measures, the Project would have a **less-than-significant** impact with respect to community risk caused by construction activities.

Cumulative Construction Impact on Maximally Exposed Individual (MEI)

The cumulative impacts of TAC emissions from construction of the Project, Hesperian Boulevard, and stationary sources on the construction MEI are also included in Table 5. The screening levels reported for cumulative sources were computed in the same manner described above for project residential occupants. As shown in Table 5, the sum of impacts from combined sources at the construction MEI would be **less-than-significant**.

Operational Risk Impacts

Operation of the Project is not expected to cause localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. No stationary sources of TACs, such as generators, are proposed as part of the Project. The Project would introduce new sensitive receptors to the area in the form of future residences.

A review of the area indicates that Hesperian Boulevard and one stationary source permitted by BAAQMD are within 1,000 feet of the site and could adversely affect new residents. Since initial screening computations showed that cancer risk to Project residents from Hesperian Boulevard would exceed significance thresholds, refined modeling was conducted. Refined modeling of local roadways produces more accurate results, because Project-specific information is used in the modeling. This includes roadway orientation with respect to receptors (i.e., where dwelling units would be located with respect to traffic), emission estimates (i.e., based on traffic speeds and traffic mix), and meteorological conditions near the Project. As part of the refined modeling, permitted stationary sources of TACs were identified using BAAQMD's Stationary Source Risk & Hazard Analysis Tool.

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[14] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Hesperian Boulevard TAC Impacts

The maximum increased lifetime cancer risk and annual $PM_{2.5}$ concentrations for new residents at the Project site are included in Table 7 and were computed using modeled TAC and $PM_{2.5}$ concentrations and the BAAQMD recommended methods and exposure parameters described in Attachment A. The maximum cancer risks, $PM_{2.5}$ concentration, and non-cancer health impacts (hazard index) are each below their respective BAAQMD significance thresholds. The location of the maximally exposed resident (MEI), where the maximum TAC and $PM_{2.5}$ risk would occur, is shown in Figure 21.

Stationary Sources

BAAQMD's Stationary Source Screening Analysis Tool was used to identify stationary sources and their screening risk levels at the sources. The lone stationary source within a 1,000-ft radius of the Project site is a gas station. Based on a 750-foot distance from source to receptor, the estimated adjusted cancer risk to new residents from this stationary source would be 1.3 per million. The adjusted chronic or acute HI for the stationary source would be below 0.01. There are no $PM_{2.5}$ emissions from this source. Both the single- source and combined risk thresholds are not exceeded; therefore, the impacts from operational Project emissions would be considered **less than significant**.

The combined (cumulative) risk to Project residents at the Project site from mobile and stationary sources is shown in Table 7.

Table 7. Community Risk Impact to New Project Residents

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Chronic Hazard Index
Hesperian Boulevard Maximum Impact (1st floor)	2.7	0.21	<0.01
Gas station	1.3	0.00	<0.01
Cumulative Total	*4.0*	*0.21*	*<0.02*
BAAQMD Single-Source Threshold	*>10.0*	*>0.3*	*>1.0*
Significant?	*No*	*No*	*No*
BAAQMD Cumulative Source Threshold	*>100*	*>0.8*	*>10.0*
Significant?	*No*	*No*	*No*

e): Odors

2004 Specific Plan EIR

The prior EIR concluded that there were no uses permitted under the Specific Plan that would be expected to generate odors different from what already existed within the Specific Plan area. Odors associated with existing retail, restaurant and civic uses that previously occupied space within the San Lorenzo Village Center commercial area would likely remain about the same or be reduced, as existing buildings are replaced with newer structures that are made to conform to current building codes. The addition of new residential units would be constructed in accordance with the Specific Plan and the Alameda County Zoning Ordinance and building code standards. Any impact of odors on sensitive receptors would be considered **less than significant**.

Figure 21. Project Site, Roadway Links, and Project Residential Receptor Locations

Figure 22. Project Site and TAC Sources

Figure 23. Project Construction Site, Modeled Receptors and Location of Maximum Impact from Project

Project Analysis

The Project would not be a new source of significant levels of construction-period or operational odors. Typical sources of objectionable odors include chemical plants, sewage treatment plants, large composting facilities, rendering plants and other large industrial facilities that emit odorous compounds. As a residential development, the Project would not be a source of significant objectionable odors. During construction, diesel-powered vehicles and equipment would create odors that some may find objectionable. However, these odors would be temporary and not likely to be noticeable beyond the Project site's boundaries. The potential for objectionable odor impacts would be less than significant.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of significant air quality impacts identified in the prior EIR. It would not result in new significant impacts related to air quality that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on air quality. With the implementation of the mitigation measures in the prior EIR and the additional measure identified in this document, the impacts would be **less than significant**.

4. Biological Resources

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;	☑	☐	☐
b): Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;	☑	☐	☐
c): Have a substantial adverse effect on federally protected wetlands (as defined by section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;	☑	☐	☐
d): Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites;	☑	☐	☐
e): Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or	☑	☐	☐
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?	☑	☐	☐

a): Special Status Species and Habitat

2004 Specific Plan EIR

The Specific Plan EIR found that the Specific Plan area has supported urban development for more than 50 years, and does not currently provide habitat for 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 & Game or U.S. Fish & Wildlife Service. It concluded that implementation of the Specific Plan would result in no impact to special status species or their habitat.

Project Analysis

Searches of the California Department of Fish and Wildlife's (CDFW's) Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife Service's (USFWS's) Listed Species List, and the California Native Plant Society's (CNPS) online inventory were conducted for the Initial Study of the nearby San Lorenzo Senior Housing Project at 15888 Hesperian Boulevard on March 17, 2014.[15] The Senior Housing project is located within 1000 ft. of the proposed Project. Occurrences were analyzed within a 2-mile radius to help determine the potential for each species to occur within the Project site. As shown in Figure 24, none of the 35 fish and wildlife species and 18 plant species that were identified in the search has the potential to occur within the Project site. The Project site does not contain suitable habitat for any special-status species since it is highly developed with urban infill. The Project site does not contain active or proposed critical or sensitive habitat.[16]

The Project site contains 12 trees, including several trees that are suitable for nesting migratory birds, including American robins (*Turdus migratorius*). This species has the potential to be affected through habitat modification caused by the removal of the tree or demolition of the buildings. With the implementation of standard **Mitigation Measure BIO-1**, below, the potential impact on candidate, sensitive, and/or special status species and/or protected species is **less than significant**.

- **Mitigation Measure BIO-1: Protect Nesting Birds**. The Project Applicant shall abide by all provisions of Sections 3503 and 3503.5 of the California Fish and Game Code and Migratory Bird Treaty Act of 1918 (MBTA). During construction of the Project, the removal of the tree and demolition of the existing buildings shall occur between September 1 and January 31. Tree removal and building demolition should be avoided from February 1 to August 31, which is the typical migratory bird nesting period (nesting period) in this part of California. If no vegetation removal or building demolition is proposed during the nesting period, then no surveys are required.

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[15] San Lorenzo Senior Housing Project, Initial Study/Mitigated Negative Declaration, April 2014. Available at https://www.acgov.org/cda/planning/landuseprojects/documents/San%20Lorenzo%20Senior%20Housing%20ISMND.pdf. Accessed March 27, 2018.

[16] USFWS critical habitat mapper. Available at http://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77. Accessed March 27, 2018.

Figure 24--Special Status Species

Path: K:\Projects_3\County_of_Alameda\00071_14_MercyHousing\mapdoc\Bio\Fig_IV_1_CNDDB_Project Area_20140318.mxd; User: 29391; Date: 3/18/2014

Source: Imagery, ESRI 2013; Occurrences, CNDDB March 2014.

Figure IV-1
Special Status CNDDB Species

If it is not feasible to avoid tree removal and/or building demolition during the nesting period, a qualified wildlife biologist shall conduct a survey for nesting birds. Surveys shall be conducted no earlier than three days prior to the commencement of removal of the tree or demolition of buildings. Following the survey, the wildlife biologist shall provide a report to the County and Project Sponsor detailing the findings. If nesting birds that are covered by the MBTA and/or Sections 3503 and 3503.5 of the California Fish and Game Code are discovered in the tree or on the building that will be demolished, tree removal and/or building demolition will be delayed until the nest(s) is no longer active; either the nest fails or the nest is successful and the young fledge and are no longer dependent on the nest for survival. The latter will be determined by a qualified biologist. If a nest is found in the tree, but not on the building, building demolition can still occur, and vice versa.

b and c): Riparian Habitat and Sensitive Natural Communities, Wetlands

2004 Specific Plan EIR

The prior EIR found that, although San Lorenzo Creek passes along the northern boundary of the Specific Plan area, it does not represent a riparian habitat or natural community due to previous channel modifications designed to prevent localized flooding. There are no federally protected wetlands located in the Specific Plan area. There would be no impacts to riparian habitat or wetland resulting from development pursuant to the Specific Plan.

Project Analysis

The U.S. Fish and Wildlife Service's National Wetlands Inventory shows that there are no riparian habitats or federally protected wetlands mapped within ½ mile of the Project site, with the exception of San Lorenzo Creek, which the prior EIR noted has been channelized to the extent that it is no longer considered to provide the functions of riparian habitat.[17] Therefore, construction and operation of the proposed Project would result in **no impacts** to riparian or federally protected wetland habitats.

d) Interfere substantially with movement of migratory wildlife or impede use of nursery sites

2004 Specific Plan EIR

The prior EIR found that the Specific Plan area does not provide a migratory wildlife corridor or a wildlife nursery, and development anticipated under the Specific Plan would not interfere with the movement of wildlife. There would be no impact on the use of migratory corridors or nursery sites.

Project Analysis

As an existing surface parking lot between two multistory buildings, the site has negligible value as a corridor for movement of species. If vegetation removal were to occur during the February 1 through August 31 bird nesting period, it could result in potential violation of Fish and Game Code (Sections 3503, 3513, or 3800) if it results in destruction of bird nests. The Project sponsor would comply with

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[17] USFWS National Wetlands Inventory Mapper. Available at https://www.fws.gov/wetlands/data/mapper.html. Accessed March 27, 2018.

Mitigation Measure BIO-1 pertaining to nesting habitat as a condition of approval. Implementation of Mitigation Measure BIO-1 would ensure that impacts to migratory wildlife are **less than significant**.

e) Conflict with local policies or ordinances protecting biological resources, such as tree preservation

2004 Specific Plan EIR

The prior EIR noted that the Specific Plan area was not at the time subject to tree preservation ordinances or policies. Removal of existing landscape vegetation would be permitted under the Specific Plan as well as replacement of such landscaping with new trees and other materials.[18]

Project Analysis

There are 12 existing street trees on the Project site. All are proposed for removal. Three of the trees are within the County's public Right-of-Way at the corner of Paseo Grande and Hesperian Blvd. Pursuant to Section 12.11 of the Alameda County Municipal Code, removal of these three trees within the County's public right-of-way will require an encroachment permit authorized by the Director of the Alameda County Public Works Agency or his or her designee.

The Project's landscape plan calls for street trees along the entire Project length of Hesperian Blvd (ten Armstrong maple, 24"box) and Paseo Grande (sixteen Crape myrtle, 24" box). In addition, Via Arriba and Via Mercado will be lined with 24" box trees on both sides (see Figure 18, Landscape Plan). Trees will also be planted along the drive aisles and the Project perimeter, on the rooftop terrace (trees in pots), around the pool courtyard and entry courts, and on the common landscape areas. There would also be a landscaped strip consisting of shrubs, approximately 14' wide, running along the eastern edge of Buildings 3 & 4. The 4th floor rooftop terrace above Building 2 will included approximately 19 trees and a row of hedges in pots.

The Project will comply with the requirements of the Tree Ordinance for securing encroachment permits to remove trees within the County right-of-way. This compliance will ensure that the Project does not conflict with local ordinances protecting biological resources.

f): Conflict with provisions of an adopted Habitat Conservation Plans or Local Conservation Plans

2004 Specific Plan EIR

The prior EIR found that no Habitat Conservation Plans or Local Conservation Plans are currently applicable within the Specific Plan Area. Implementation of the Specific Plan would cause no conflicts with such plans.

Project Analysis

There is no adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan that is applicable to the Project site. The Project would result in **no impact** to such a plan.

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[18] Alameda County Code Chapter 12.11, Tree Ordinance No; 0-2004-23 was added to the County Code in 2004.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of impacts related to biological resources as identified in the prior EIR, nor would it result in new significant impacts to biological resources that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on biological resources within the site and surrounding areas. Impacts to biological resources would be less than significant.

5. Cultural and Historic Resources

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines section 15064.5;	☑	☐	☐
b): Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5;	☑	☐	☐
c): Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;	☑	☐	☐
d): Disturb any human remains, including those interred outside of formal cemeteries	☑	☐	☐
e) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either: 1) a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, that is listed or eligible for listing on the California Register of Historical Resources, or on a local register of historical resources as defined in Public Resources Code section 5020.1(k), or 2) a resource determined by a lead agency, in its discretion and supported by substantial evidence, to be significant according to the historical register criteria in Public Resources Code section 5024.1 (c), and considering the significance of the resource to a California Native American tribe.	☑	☐	☐

a): Historic Resources

2004 Specific Plan EIR

An information inquiry was made for the prior EIR to the Northwest Information Center (NWIC) at Sonoma State University, part of the California Historic Resources Information System ("CHRIS"). The review noted one recorded Native American and one historic cultural resource site listed within the Specific Plan Area.

The prior EIR discussed the potential impacts from implementation if the Specific Plan on the Lorenzo Theater, which is listed on the California Register of Historical Resources, based on a finding by the California State Historical Resources Commission that the theater was a significant representation of Art Deco commercial architecture in Alameda County. It identified the County's use of its regulatory powers to preserve this historic resource and to protect it from adverse impacts from inappropriate Theater in the future, they will not occur as a result of the proposed [Specific] Plan."[19] It concluded, therefore, that the Specific Plan would not have an impact on the Lorenzo Theater as an historic resource.

Project Analysis

The Project site is located within the potentially National Register of Historic Places (NRHP)-eligible San Lorenzo Village Historic District (District), as described in a report prepared as part of the 238/580 Freeway Widening Project in 2000.[20] David Bohannon developed the first stage of the San Lorenzo Village from 1944 to 1958 with "approximately 3,000 houses, as well as schools, churches, and commercial and civic buildings."[21] Bohannon also developed many of the retail shopping centers at San Lorenzo Village during the same time and following, including the San Lorenzo Plaza Shopping Center, the Theater Block, and the San Lorenzo Village Square. These original shopping centers are still owned and managed by the Bohannon Development Company, with the exception of the San Lorenzo Theater.

The only existing building on the Project site is an abandoned retail building at 500 Mercado, which is proposed for demolition as part of the Project. This building is believed to be built around 1946 and first used as a restaurant until 1965, when it became Kavanaugh Liquors, its most recent use. While the building is within the District, the Primary Record prepared by the State Department of Parks and Recreation to document the District's significance does not include 500 Mercado as a contributor.[22]

In 2014, a new records search (File No. 13-275) was conducted at the NWIC, Sonoma State University, Rohnert Park. The search covered a radius of 0.5-miles of the Senior Housing Project at 15888 Hesperian Blvd. The CHRIS records search identified 18 resources within 0.5-mile of the Project site. Of these 18 resources, one is a prehistoric archaeological site, P-01-000238/CA-ALA 502, known as the "Hesperian Site" (see subsection below). Sixteen (16) resources identified within the 0.5-mile radius of the Senior Housing Project (which included the proposed Project) are components of the Historic District.

Because two NWIC records searches have been conducted that include the Project site, no additional NWIC records search was conducted for the proposed Project. Based on a review of those prior records

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[19] San Lorenzo Village Center Specific Plan/Town Center Project Draft EIR, p. IV-47.

[20] Hope, Andrew. 2000. P-01-010742, San Lorenzo Village Historic District. Prepared as part of the Historic Architecture Survey Report for the Widening of I-238 between I-580 and I-880, in Hayward and San Lorenzo, Alameda County. Prepared by Caltrans District 4. July. Oakland, California.

[21] Hope, Andrew. 2005. Evaluating the Significance of San Lorenzo Village, A Mid-20th Century Suburban Community, CRM Journal Summer 2005, p. 50-61.

[22] Primary Record #P-01-010742, San Lorenzo Village Historic District, State of California Resources Agency, included in Technical Appendix C for Senior Housing IS/MND. April 2014.

searches, the Project site contains no historic buildings or resources. The Project would not require demolition of a structure or structures which are potentially eligible for listing on the NRHP or California Register of Historical Resources (CRHR). There would be no impact to historic resources.

b): Archaeological Resources

2004 Specific Plan EIR

The NWIC records search conducted for the prior EIR revealed a single Native American archaeological site within the Specific Plan area. CA-ALA-502, known as the "Hesperian Site", is characterized by a prehistoric midden with shell fragments, fire-cracked rock, and an isolated burial. The NWIC report concluded there was a high potential for additional Native American sites in the Specific Plan area. The prior EIR concluded that "it [is] important to gain a better and more detailed understanding of the location and extent of CA-ALA-02." Towards that end, it identified *Mitigation Measure IV.6-2*, requiring further archival and field study by a qualified archaeologist. Implementation of this Mitigation Measure was found to reduce any potential impacts to archaeological or paleontological resources to **less than significant**.

Project Analysis

The Hesperian Site containing the prehistoric midden is located between Hesperian Blvd. and Paseo Largavista, north of Paseo Grande, under the existing Public Storage site, less than 400' directly north of the proposed Project. As noted in the prior EIR, it is also possible that additional archaeological and/or Native American resources could be discovered within the planning area." The 2014 San Lorenzo Senior Housing Project IS/MND updated Mitigation Measure IV.6.2 from the prior EIR as follows:

- **Mitigation Measure CUL-1: Perform Construction Monitoring, Evaluate Uncovered Archaeological Features, and Mitigate Potential Disturbance for Identified Significant Resources at the Project Site.** Prior to demolition, excavation, grading, or other construction-related activities on the Project site, the applicant shall hire a qualified professional archaeologist (i.e., one who meets the Secretary of the Interior's professional qualifications for archaeology or one under the supervision of such a professional) to monitor, to the extent determined necessary by the archaeologist, Project-related earth-disturbing activities (e.g. grading, excavation, trenching). In the event that any prehistoric or historic-period subsurface archaeological features or deposits, including locally darkened soil (midden), that could conceal cultural deposits, animal bone, obsidian, and/or mortar are discovered during demolition/ construction-related earth-moving activities, all ground-disturbing activity within 100 feet of the discovery shall be halted immediately, and the appropriate County agencies shall be notified within 24 hours. County staff shall consult with the Project archeologist to assess the significance of the find. Impacts on any significant resources shall be mitigated to a less-than-significant level through data recovery or other methods determined adequate by the County and that are consistent with the Secretary of the Interior's Standards for Archaeological Documentation. If Native American archaeological, ethnographic, or spiritual resources are discovered, all identification and treatment of the resources shall be conducted by a qualified archaeologist and Native American representatives who are approved by the local Native American community as scholars of the cultural traditions. In the event that no such Native American is available, persons who represent tribal governments and/or organizations in the locale in which resources could be affected shall be consulted. When historic archaeological sites or historic architectural features are involved, all identification and treatment is to be carried out by historical archaeologists or architectural historians who meet the Secretary of the Interior's professional qualifications for archaeology and/or architectural history.)

The Project would comply with the above Mitigation Measure, which would ensure this impact is **less than significant**.

c) Paleontological Resources

2004 Specific Plan EIR

The prior EIR analyzed impacts to archeological and paleontological resources together, and recommended **Mitigation Measure IV.6.2,** which it concluded would reduce such impacts to less than significant levels.

Paleontological resources may be present in fossil-bearing soils and rock formations below the ground surface. Ground-disturbing activities in these fossil-bearing soils and rock formations have the potential to damage or destroy paleontological resources. Therefore, any construction-related and earth-disturbing activities associated with implementing the Project could damage or destroy fossils in these rock units. Damage or destruction to these resources would result in a potentially significant impact, but would be reduced to less than significant with mitigation.

Project Analysis

There is no additional information to suggest an increased likelihood of encountering paleontological resources on the Project site. However, to strengthen the protections against harm to paleontological resources in the Specific Plan area, the County adopted an additional Mitigation Measure identified for the 2014 San Lorenzo Senior Housing Initial Study.

- **Mitigation Measure CUL-3: Conduct Protocol and Procedures for Encountering Paleontological Resources.** Prior to the start of any subsurface excavations that would extend beyond previously disturbed soils, all construction forepersons and field supervisors shall receive training by a qualified professional paleontologist, as defined by the Society of Vertebrate Paleontology (SVP), who is experienced in teaching non-specialists, to ensure they can recognize fossil materials and will follow proper notification procedures in the event any are uncovered during construction. Procedures to be conveyed to workers include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who will evaluate its significance. If a fossil is determined to be significant and avoidance is not feasible, the paleontologist will develop and implement an excavation and salvage plan in accordance with SVP standards. Construction work in these areas shall be halted or diverted to allow recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall then be deposited in a scientific institution with paleontological collections. A final Paleontological Mitigation Plan Report shall be prepared that outlines the results of the mitigation program. The County shall be responsible for ensuring that monitor's recommendations regarding treatment and reporting are implemented.

Implementation of MM CUL-3 would ensure that impacts to paleontological resources are less than significant.

d) Human Remains

2004 Specific Plan EIR

The prior EIR concluded that implementation of the Specific Plan would not result in the disturbance of any known human remains. However, it noted that during construction-related excavation activity associated with the Specific Plan human remains could be uncovered, disturbed and/or damaged. It found this to be a potentially significant impact, and identified **Mitigation Measure IV.6.3** to reduce this impact to less than significant.

- **Mitigation Measure CUL-2: Halt Construction/Evaluate Remains.** In the event that any human remains are uncovered within the planning area during construction activity associated with implementation of the Project, there should be no further excavation or disturbance of the site until the Alameda County Coroner has been informed. The Coroner shall then make a determination as to whether an investigation of the cause of death is required, whether such investigation has occurred, and whether appropriate actions have been taken. If any remains are determined to be of Native American origin, the descendants from the deceased Native American(s) shall be notified. The descendants shall have the opportunity to make a recommendation to the landowner or the person responsible for the excavation work as to means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.8.

Project Analysis

There is no new information indicating a greater likelihood of the presence of human remains beyond that identified in the Specific Plan EIR, and no substantial changes in the circumstances under which the 2004 Specific Plan will be implemented with respect to the presence of human remains have occurred. Compliance with Mitigation Measure CUL-2 would ensure this impact is **less than significant**.

e) Adverse effect on Significance of Tribal Resources

2004 Specific Plan EIR

The prior EIR, having been prepared before the CEQA Guidelines were revised to incorporate a specific threshold for Tribal Resources,[23] discussed Native American tribal resources in the context of archaeological resources. It discussed the single Native American resource found in the records search conducted by NWIC. The prior EIR concluded that, with implementation of Mitigation Measure CUL-1, impacts on this resource, and others that might be discovered during construction and excavation activities implementing the Specific Plan, would be **less than significant**.

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[23] In September 2016, the California Office of Administrative Law approved changes to Appendix G adding consideration of tribal cultural resources.

Project Analysis

The California Native American Heritage Commission (NAHC) was contacted on March 28, 2018 to identify any areas within the Project area that may be listed in the NAHC's Sacred Lands File. The NAHC responded on April 24, 2018, stating that a search of their files failed to indicate the presence of Native American cultural resources in the immediate Project area. The NAHC letter is included in this document as Attachment B.

Given this finding and the incorporation of Mitigation Measures CUL-1, CUL-2, and CUL-3, the impacts to tribal resources from construction and operation of the Project would be **less than significant**.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any impacts related to archeological, historic, or tribal resources or human remains as identified in the prior EIR, nor would it result in any new significant impact related to such resources that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on cultural resources within the site and surrounding areas. With implementation of required mitigation measures, impacts to cultural resources would be less than significant.

6. Geology and Soils

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Expose people or structures to substantial risk of loss, injury, or death involving:	☑	☐	☐
• rupture of a known earthquake fault;	☑	☐	☐
• strong seismic ground shaking;	☑	☐	☐
• seismic-related ground failure including liquefaction; or	☑	☐	☐
• landslides?	☑	☐	☐
b): Result in substantial soil erosion or loss of topsoil?	☑	☐	☐
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??	☑	☐	☐
d): Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☑	☐	☐
e): Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☑	☐	☐

A site-specific Geotechnical Exploration Report was prepared for the Project by KC Engineering Company in September 2016 (Attachment C). The report collected and analyzed data from site reconnaissance and six exploratory test borings on the proposed site.

According to the Geological Map of Alameda County cited in the Geotechnical Report, the geologic deposits underlying the site are mapped as Holocene-aged alluvial fan and fluvial deposits composed of gravels, sands, silts, and clays. Field exploration and laboratory testing confirmed that the surface and subsurface soil conditions consist of assorted layers of alluvial deposits of variable thickness and depths across the site, as described in greater detail below. Groundwater was encountered in the borings at depths ranging from 6 to 18 below ground surface (bgs).

a): Exposure to Fault rupture, Groundshaking, Liquefaction, Landslides

2004 Specific Plan EIR

The prior EIR noted that, at its closest point, the Specific Plan area is approximately one mile west of the earthquake fault zone associated with the Hayward Fault. This is outside the 600-ft Earthquake Zone established by the Alquist-Priolo Earthquake Fault Zoning Act to identify sites at risk from rupture of active faults. Further, the entire Specific Plan area is designated as Category VIII—"Very Strong" on the Earthquake Hazard Map for Hayward/Union City/San Lorenzo produced by the Association of Bay Area Governments (ABAG). The prior EIR concluded that, in the event of a major earthquake on the regional fault system, including the Hayward Fault, the Specific Plan area would be subject to strong seismic ground shaking and seismic-related ground failure, including a moderate likelihood for ground failure due to liquefaction. This was found to represent a potentially significant impact associated with implementation of the Specific Plan.

A Liquefaction Hazards Map that included the Specific Plan area reflected the Specific Plan area as being in a "Moderate" category for liquefaction hazards. The very northernmost portion of the Specific Plan area was shown as being "Moderately Low" relative to liquefaction hazards.

The prior EIR identified two mitigation measures that would reduce seismic-related impacts from strong seismic shaking or potential for ground failure to less than significant.

- **Mitigation Measure VI-a. Building Code Compliance**—The effects of ground shaking on structures and other improvements which may be built as a result of, and in accordance with, the Draft Specific Plan, should be reduced by earthquake-resistant design in accordance with the latest editions of the Uniform Building code for regular commercial and residential buildings.
- **Mitigation Measure VI-b. Site Specific Geotechnical Investigations**—Geotechnical evaluations should be required for developments proposed in the Specific Plan area due to its association with high potential for seismically induced ground failure. Common measures for mitigating these hazards include over-excavation and re-compaction of foundation soils, densification of site soils, or providing a mat or other type of reinforced foundation.

The prior EIR concluded that compliance with Mitigation Measures VI-a and VI-b would reduce potential impacts to a level of **less than significant**.

The prior EIR concluded that, given the essentially flat topography of the Specific Plan area, the likelihood of landslide damage is minimal.

Project Analysis

Fault Rupture

Based on the California Geological Society (CGS) Map for the San Leandro Quadrangle[24], the Project site is not located within an Alquist-Priolo Earthquake Fault Zone. There are no known active or inactive

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[24] California Geological Survey, Earthquake Zones of Required Investigation for San Leandro Quadrangle. Available at http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/SAN_LEANDRO_EZRIM.pdf. Accessed March 30, 2018.

faults crossing the site as mapped and/or recognized by the State of California. The Geotechnical Report concluded there is no potential for fault-related surface rupture at the Project site.

Strong Seismic Ground Shaking

The Project site is located in a seismically active region and earthquake-related ground shaking should be expected during the design life of structures constructed on the site. The Project must be constructed to meeting seismic load standards in the 2013 California Building Code Earthquake Loads per Section 1613. Application of these standards is considered to reduce risk from earthquake-related ground shaking to less than significant level.

Liquefaction

The CGS map demonstrates that the site is located in an area designated by CGS as a Liquefaction Zone, "where historical occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required." The Geotechnical Report found that the predominantly stiff subsurface silts and clays would indicate a Seismic Design Category of Site Class D.

Soils most susceptible to liquefaction are saturated and loose, fine to medium-grained sand having a uniform particle range. Based on the site exploration by KC Engineering, the soil material encountered beneath the site was found to be predominately cohesive and exceeding other technical thresholds of susceptibility to liquefaction. [25] However, a potential liquefiable layer was identified in Boring 1 (of 6) between 22 and 27 feet, and its potential for liquefaction was evaluated. KC Engineering conducted a liquefaction analysis and concluded from further data that this layer was susceptible. The potential liquefaction induced total settlement was calculated, and the results indicated a total settlement of 1.0 inches with up to 0.5 inches of differential settlement across the structures' footprints. The potential for surface manifestation (i.e., sand boils, ground fissures, etc.) is very low due to the thickness of the non-liquefiable clay soils overlying the potentially liquefiable soils. The report preparers assess that, because the site is relatively flat and there are no open face slopes adjacent to the site which bisects the sand, the potential for lateral spreading at the site, the potential for lateral spreading at the site is considered unlikely.

The site is not located within an earthquake-induced landslide hazard area. Therefore, this would be a **less-than-significant** impact. No mitigation would be required.

b): Soil Erosion

2004 Specific Plan EIR

The prior EIR found that, given the flat topography of the Specific Plan area, implementation of the Specific Plan would not cause substantial soil erosion or loss of topsoil. However, to the extent there is excavation of sites in preparation for new construction, there would be some potential for minor soil erosion, particularly during rainy months of the year. Standard construction period practices would be

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[25] Ibid. p. 11 of 61.

required for all building permits issued within the Specific Plan area. In this way, impacts related to soil erosion would be less than significant.

Project Analysis

Earth-disturbing activities associated with construction of the Project could result in erosion if proper sedimentation and erosion control methods are not in place during construction. Because the Project site exceeds one acre in size, in accordance with NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ), the Project would develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which would reduce the potential for soil erosion impacts during construction of the Project. Further, the Project would be subject to the San Francisco Regional Water Quality Control Board's Regional Stormwater NPDES Permit (MRP) Provision C.3 requirements for post-construction stormwater controls on new development. Compliance with the Construction General Permit and Provision C.3 requirements would ensure that the Project would result in a less-than-significant impact related to soil erosion and loss of topsoil.

c): Unstable Soils

2004 Specific Plan EIR

The prior EIR analyzed the potential for unstable soils in its analysis of the risk of seismic hazards in (a), found above.

Project Analysis

KC Engineering's investigation of the site also included an evaluation of consolidation settlement of the subsurface firm-to-stiff, silty clay layer in Boring 5 (along Hesperian Blvd ~150' south of Paseo Grande, see Attachment C), encountered from 10 to 22 feet below the surface. The analysis revealed a total settlement of less than 0.125 inches, assuming a 4-story structure with wall loads of 3,500 plf and column loads of 40 kips. The Report concluded that this amount of settlement would not cause a significant amount of damage. The impact from unstable soils would be **less than significant**.

d): Expansive Soil

2004 Specific Plan EIR

The prior EIR concluded that the history of the continuing stream of site improvements within the Specific Plan area, spanning 50 years without evidence of substantial structural difficulties, indicates that proper application of structural design methods would adequately address specific soil characteristics or limitations of any particular site. Individual projects implemented pursuant to the Specific Plan would be required to conform to all applicable Uniform Building Code standards for structural design.

Project Analysis

The site-specific Geotechnical Exploration Report states,

> "The primary geotechnical considerations for the project are the presence of highly expansive near-surface clay material and the potential for total and different settlements due to seismically-induced liquefaction. The near-surface soils are prone to excessive heave and shrink movements with changes in moisture content and, consequently, must be carefully considered in the design of grading, foundations, drainage, and landscaping….Total settlements are expected

> [to be] 1.0 inch, with differential settlements across structure [sic] footprint of 0.5 inches. Additionally, the upper 1.5 feet of materials on the pad area west of Via Arriba was found to be relatively soft, likely due to previous structure demolition operations. These materials will need to be over-excavated down to the native soils…."
>
> Due to the potential for seismically induced liquefaction settlement to occur and the presence of near surface highly expansive soils, we recommend that the building pads and adjacent concrete flatwork areas be lime-treated to reduce the shrink/swell potential and to aid in dampening the effects of differential settlement.[26]

The Project will be required to implement the recommendations contained in pages 13-25 of the Geotechnical Exploration as feasible, regarding:

- Demolition
- Grading
- Surface and subsurface drainage
- Foundation design
- Slab-on-grade construction
- Pavement areas
- Retaining walls,
- Swimming Pool
- General Construction Requirements

Implementation of recommendations in the Report, and adherence to California Building Code requirements would ensure the maximum practicable stability of the Project site and would reduce the potential for expansive soils to a **less-than-significant** level.

e): Support of alternative wastewater disposal systems

2004 Specific Plan EIR

The prior EIR noted that projects implemented pursuant to the Specific Plan would rely on the existing wastewater collection and treatment system provided by the Oro Loma Sanitary District. No use of septic tanks or alternative wastewater disposal systems would be used in the Specific Plan area.

Project Analysis

The Project would not produce wastewater that requires support of septic tanks or alternative wastewater disposal systems, and would result in no impact related to this threshold.

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[26] Ibid., p. 13 of 61.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any impacts related to geology or geologic hazards as identified in the prior EIR, nor would it result in any new significant impact related to geology or geologic hazards that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on geology and soils within the site and surrounding areas. With implementation of recommendations in the site-specific Geotechnical Exploration Report and adherence to CBC requirements, impacts to geological resources would be less than significant.

7. Greenhouse Gas Emissions and Climate Change

Would the Project:	**Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR**	**Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR**	**New Significant Impact**
a): Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☑	☐	☐
b): Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☑	☐	☐

At the time the 2004 Specific Plan EIR was certified, a quantitative evaluation of greenhouse gas (GHG) impacts was not required under CEQA. In 2010, the CEQA Guidelines were amended, in compliance with Public Resources Code Section 21083.05, to address the analysis and mitigation of the effects of greenhouse gas (GHG) emissions.

a): GHG Emissions

BAAQMD's CEQA Air Quality Guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. If a Project exceeds both these values, its greenhouse gas impacts would be considered significant. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the Project would occur beyond 2020, so a threshold that addresses a future target is appropriate. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population. This is calculated for 2030 based on the GHG reduction goals of Executive Order B-30-15, taking into account the 1990 inventory and the projected 2030 statewide population and employment levels.[27]

GHG emissions associated with development of the proposed Project would occur over the short-term from construction activities and long-term from Project operations. Construction GHG emissions would consist primarily of emissions from equipment exhaust and worker and vendor trips. Long-term operational GHG emissions would result from vehicular traffic within the Project vicinity, energy and water usage, and solid waste disposal.

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[27] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the Project. Project land use types, size, and other Project-specific information were input to the model. CalEEMod output is included in Attachment A.

Service Population Emissions

The Project service population efficiency rate is based on the number of future residences plus full-time employees. The number of future residences is estimated at 538 based on the latest US Census data of 3.3 average persons per household for the City of San Lorenzo.[28] The number of future full-time employees is estimated at 29 based on an approximate 2.5 employees per 1,000 sf of retail space. The total service population considering future residence and employees was calculated as 567 people.

Construction Emissions

GHG emissions associated with construction were computed to be 584 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the County nor BAAQMD have adopted thresholds 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 Project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site Project. In 2021 as shown in Table 7, annual emissions resulting from operation of the proposed Project in 2021 are predicted to be 1,671 MT of CO_2e. The annual emissions from operation of the existing site in 2021 are computed as 165 MT of CO_2e. Therefore, incremental (net new) emissions resulting from the Project in 2021 would be 1,506 MT of CO_2e. The annual emissions resulting from operation of the proposed Project in 2030 are predicted to be 1,421 MT of CO_2e; thus, the net new emissions resulting from the Project in 2030 would be 1,256 MT of CO_2e. The net emission increase in both 2021 and 2030 would exceed the BAAQMD threshold of 1,100 MT of CO_2e/yr and, therefore, the service population threshold was also computed to determine the significance of this project. As shown in Table 8, service population emissions would be below the BAAQMD threshold for 2020 and the projected future threshold (i.e., for 2030) and, therefore, this would be considered a **less-than-significant** impact.

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[28] The analysis of Section 13: Population and Housing impacts used slightly different assumptions for estimating Project residents and retail employees, but the total number in the potential service population is the same at 567.

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Table 8. Annual Project GHG Emissions (CO_2e) in Metric Tons			
Source Category	**Existing in 2021**	**Proposed Project in 2021**	**Proposed Project in 2030**
Area	<1	8	9
Energy Consumption	11	228	228
Mobile	150	1,366	1,115
Solid Waste Generation	3	54	54
Water	1	15	15
Total Emissions	**165**	**1,671**	**1,421**
Net New Emissions		**1,506**	**1,256**
Emissions Per Service Population		2.95	2.51
Significance Threshold Per Service Population		4.6	2.6

Source: Illingworth & Rodkin, 2018.

b): Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing GHG Emissions

Project Analysis

Alameda County (Unincorporated Areas) Community Climate Action Plan (CCAP)

The Alameda County (Unincorporated Areas) Community Climate Action Plan (CCAP) was approved by the Board of Supervisors on February 4, 2014. The CCAP includes actions to accomplish a target reduction in GHG emissions of 15% below the 2005 baseline levels by 2020 through a series of 37 local programs and policy measures related to transportation, land use, building energy, water, waste, and green infrastructure.[29] The Project is required to comply with California Title 24 standards for energy efficiency, as well as the County's Green Building Ordinance, which stipulates that new residential projects must achieve minimum certification under either LEED (Leadership in Energy and Environmental Design) for Homes, the "Build It Green" point rating system, or another nationally recognized program. With required compliance, the Project would be consistent with programs and policy measures identified in the Alameda County CCAP, and the impacts of the Project would be **less than significant**.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the emissions modeling conducted for the Project, and the requirements for compliance with the County's 2014 Climate Action Plan, implementation of the Project would not substantially increase the severity of any impacts related to GHG emissions, nor would it result in any new significant impact related to GHG emissions that were not

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[29] Alameda County (Unincorporated Areas) Community Climate Action Plan. 2014. Available at http://www.acgov.org/cda/planning/generalplans/documents/110603_Alameda_CCAP_Final.pdf. Accessed April 4, 2018.

identified in the prior EIR. New information, in the form of the CAP itself, provides the basis for the measures required to control greenhouse gas emissions. These measures are intended to reduce GHG emissions below the levels in place in 2005. In other words, compliance with the CAP will ensure a beneficial environmental impact compared to the emissions levels at the time of the prior EIR in 2004.

8. Hazards and Hazardous Materials

Would the Project:	**Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR**	**Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR**	**New Significant Impact**
a): Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☑	☐	☐
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?	☑	☐	☐
c): Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors?	☑	☐	☐
d): Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☑	☐	☐
e): Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	☑	☐	☐
f): Be 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, and would result in a safety hazard for people residing or working in the Project Area; or be located within the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the Project Area?	☑	☐	☐
g): Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☑	☐	☐
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?	☑	☐	☐

a,b,c,d,e): Creation of Hazards through Disposal, Transport, Upset, Storage or Use of Hazardous Materials; Emission/Handling of Hazardous Materials near Schools; Cortese List

2004 Specific Plan EIR

The prior EIR concluded that there was no aspect of the Specific Plan that would pose a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. Further, there would be no foreseeable upset or accident conditions involving the release of hazardous materials into the environment as a result of the adoption or implementation of the Specific Plan.

The prior EIR also noted that the Specific Plan area has supported a variety of commercial uses over its 50+ years of active development and some of these uses have involved, and some may continue to involve, the use of chemicals, hydrocarbons or other materials that are classified as hazardous or potentially hazardous, such as gasoline, mechanical lubricants, chemicals used in dry cleaning plants, and photo processing chemicals. Any such uses that remain in operation would be allowed to continue to operate, subject to applicable environmental laws and regulations, and would not be immediately or directly affected by the adoption of the Specific Plan.

The prior EIR included a review of the various databases that are maintained by various state and federal agencies concerned with the regulation of hazardous materials. This review identified several sites within the Specific Plan area that are known to involve hazardous materials. The following list identifies these sites and summarizes the status (in 2002) of each:

- 575 Paseo Grande--This site (a former gasoline service station) involves a leaking underground storage tank (LUST). The site is currently vacant. A leak from the underground tanks was discovered in 1995. Preliminary site assessment and subsurface soil and groundwater monitoring activities are underway. This site is listed on the Cortese list.
- 16015 Via Arriba--This site has been cleared of structures and contaminated soil involving asbestos-contaminated wastes. Polychlorinated biphenyls (PCBs) have been removed from the site.
- 427 Paseo Grande--This is another site involving a LUST and appears on the “Cortese” list. Site investigations determined there was no contamination present and the case was signed off with no action being taken or deemed necessary.
- 395 Paseo Grande--This site involved the removal to a land fill of 2.1 tons of asbestos containing waste. No further action or clean-up was anticipated.
- 15900 Hesperian Blvd.--This gas station site is also on the Cortese list. A groundwater monitoring study is underway in accordance with regulatory agency protocols to track the potential spread of hydrocarbon contamination from previously leaking underground storage tanks.

The prior EIR found that implementation of redevelopment pursuant to the Specific Plan would involve the demolition of existing commercial buildings and construction of new streets, utility infrastructure and mixed-use buildings. Any demolition, excavation and/or new construction would potentially involve the excavation or transportation of hazardous materials through the area to appropriate disposal sites elsewhere. Any such activities could result in a hazard to the public and the environment.

The prior EIR noted that Village Elementary School and the Lollipop Lane Pre-School are located within the Specific Plan area. Transportation of hazardous or contaminated soil or materials to disposal sites elsewhere could potentially expose students to health hazards associated with the implementation of the Specific Plan. Further, some hazardous substances may be used during construction of new buildings and could expose workers to potential health hazards.

All demolition, excavation, transportation and/or construction work would be required to comply with all applicable Occupational Safety and Health Administration (OSHA) regulations regarding worker safety, consistent with standard County of Alameda practices. If any sites are determined to contain hazardous materials, the developer of such sites would be required to comply with all applicable local, state and federal procedures and requirements regarding the identification and characterization of the contaminants present, the formulation of a work plan detailing the appropriate disposition, transportation and disposal of the materials, and preparation and compliance with site-specific health and safety plans regarding worker safety, all as administered by the Alameda County Division of Health Services.

Compliance with the foregoing standard regulatory measures would reduce any potential impact to a **less than significant** level.

Project Analysis

A Phase I Environmental Site Assessment (ESA) was performed by Terracon (report dated March 5, 2018).[30] San Lorenzo Launderette, formerly located on site APN 412- 42-113, is listed on the EDR Exclusive Historic Dry Cleaner (EDR Hist Cleaner) database. The EDR Hist Cleaner database listing reports that the facility operated as a self-service laundry in the year 1951. Based on a review of the available Sanborn maps, the facility operated as a dry cleaner in the years 1957 through 1963. Additionally, records for the facility were not identified in the Alameda County Department of Environmental Health (ACDEH), Department of Toxic Substances Control Hazardous Waste Tracking System (DTSC HWTS), and Regional Water Quality Control Board (RWQCB). Based on the unknown nature of operations associated with the historical dry-cleaning business, the potential for undocumented spills or releases associated with dry cleaning chemicals represents a recognized environmental condition (REC) to the site. Note that this site was also documented in the EDR Report prepared for the Specific Plan EIR; its environmental status and history do not constitute new information for this Addendum.

Historical information also indicates an off-site dry cleaner on the east adjoining property (northeast of Hesperian Boulevard) in a hydrologically up-gradient position relative to the site. The potential for undocumented spills or releases of dry cleaning chemicals associated with the historical on and off-site dry cleaning operations represents a REC to the site. Additionally, the regulatory databases indicate a LUST incident in 1995 associated with an historical fueling station on the northern adjoining property

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[30] Phase I Environmental Site Assessment, Village Green. Prepared by Terracon Consultants, March 5, 2018.

(575 Paseo Grande, northwest of Paseo Grande). Based on the reported groundwater concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline-range organics (-GRO), benzene, and naphthalene, and absence of groundwater plume delineation between monitoring well MW-2 and the site, there is a potential of groundwater impacts to the site from the former off-site fueling station, which represents a REC.

Based on the findings of the Phase I ESA, Terracon recommended that a subsurface investigation be performed to assess potential impacts from the historical on-site dry cleaning operations, off-site dry cleaning business, and fueling station. This Limited Site Investigation (LSI, included here as Attachment D) was conducted to investigate the presence of indicator contaminants associated with the RECs identified during Terracon's Phase I ESA.[31]

Field activities were performed in three locations associated with the environmental conditions identified in the Phase I ESA. A total of six borings were advanced (see Figure 25). Three soil borings were advanced to a depth of approximately five feet below ground surface (bgs) for the collection of soil and soil gas samples, and three borings were advanced to a depth of approximately 20 feet bgs for the collection of soil and groundwater samples. Six soil samples were collected, and groundwater samples were also collected from three soil borings. Soil vapor sampling was also conducted.

Analysis of extracted soil, groundwater and soil vapor samples showed the following (details are given in Attachment D):

- Total Petroleum Hydrocarbons (TPH) as gasoline range organics (-GRO), diesel-range organics (-DRO), or motor oil-range organics (-MORO) were detected in soil or groundwater samples. The concentrations of TPH-DRO exceeded Tier 1 (residential) Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board in two samples, the higher of which in the northwest corner of the site near the off-site Fueling Station at 575 Paseo Grande. Other constituents were not detected in soil and groundwater at levels exceeding their respective ESLs.

  The concentrations of TPH-GRO, -DRO, and -MORO detected in groundwater are likely associated with the former offsite fueling station. The responsible party has been identified and the site is currently under the oversight of Alameda County Health Care Services Agency.

- VOC concentrations in soil gas did not exceed ESLs. Because groundwater is not going to be used as a drinking water source and is not expected to be encountered during future construction activities, no further action is necessary.
- PCE was detected in the soil gas sample near the historical on-site dry-cleaning business at a concentration five times above the Tier 1 ESL and the ESL for soil gas vapor intrusion Human Health Risk Levels (HHRLs) for residential uses.

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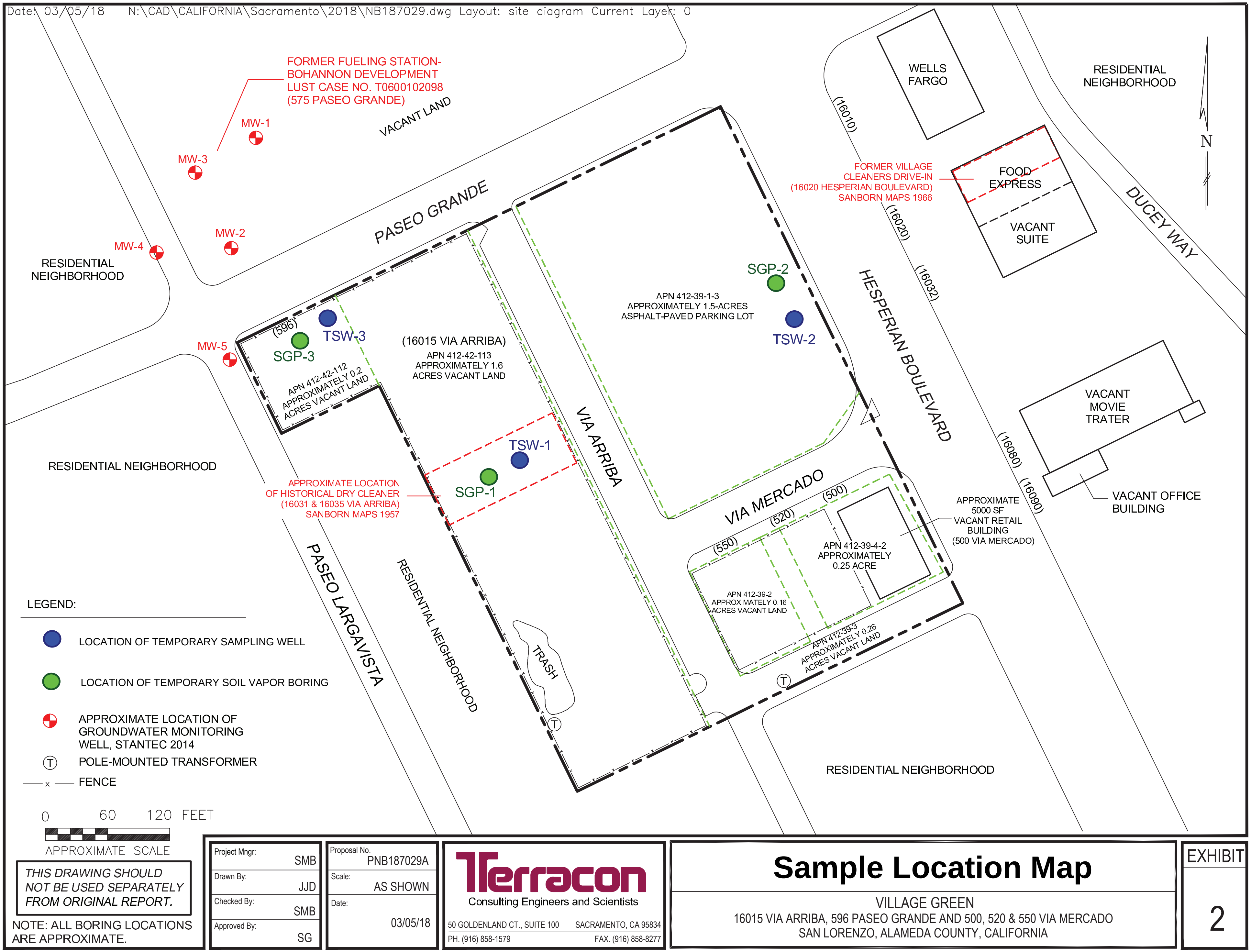
[31] Limited Site Investigation, Village Green. Prepared by Terracon Consultants, May 18, 2018.

Figure 25--Investigative Sampling Locations



As a result of the presence of PCE at levels above Tier 1 ESL on site, Terracon recommends additional investigation to address the unexplained occurrence of PCE in soil gas sample. As of this writing, the Applicant is preparing to conduct the additional investigation.

As noted in the Specific Plan EIR, all demolition, excavation, transportation and/or construction work would be required to comply with all applicable Occupational Safety and Health Administration (OSHA) regulations regarding worker safety, consistent with standard County of Alameda practices. As also noted in the prior EIR, the Applicant will be required to comply with all applicable local, state and federal procedures and requirements regarding the identification, characterization, and remediation of the contaminants present, the formulation of a work plan detailing the appropriate disposition, transportation and disposal of the materials, and preparation and compliance with site-specific health and safety plans regarding worker safety, under the regulatory supervision of the Alameda County Department of Environmental Health's Local Oversight Program. Compliance with these standard regulatory measures would reduce any potential impact to a **less-than-significant** level.

f): Hazards near Airport/Airstrip

2004 Specific Plan EIR

The prior EIR noted that Hayward Executive Airport (formerly known as the Hayward Air Terminal) is located within two miles of the southern portion of the Specific Plan area. The prior EIR discussed the applicability of the Hayward Executive Airport Master Plan (2002), which defines the operational procedures and guidelines for the safe operation of the facility, based on the California Airport Land Use Handbook (Handbook). The Handbook sets forth land use guidelines for such things as residential densities and nonresidential land use intensities that would be applicable to areas within certain zones of proximity to airports. The Handbook's definition of zones of risk has been developed with careful attention to aeronautical engineering standards and risk factors derived from years of study of aircraft failure and disasters. While the Specific Plan area is within two miles of the Hayward Executive Airport, the prior EIR concluded that it is well outside of the area that would be subject to the Handbook's guidelines and therefore adoption and implementation of the Specific Plan would not result in a safety hazard for the residents or employees who would come to the project area as a result of the Specific Plan.

Project Analysis and Conclusion

The Project site is within the Airport Influence Area (AIA) of Hayward Executive Airport, as defined in the Hayward Executive Airport Land Use Compatibility Plan (ALUCP), adopted by the Alameda County Airport Land Use Commission in 2011 (see Figure 26). As the figure demonstrates, it is in Zone 6 of the Safety Compatibility Zones, defined as the Traffic Pattern Zone. According to the ALUCP, this zone contains the aircraft traffic pattern. While a high percentage of accidents occur in this zone, the size of the zone reduces the risk level as compared to the other zones.[32] The compatibility guidelines in the

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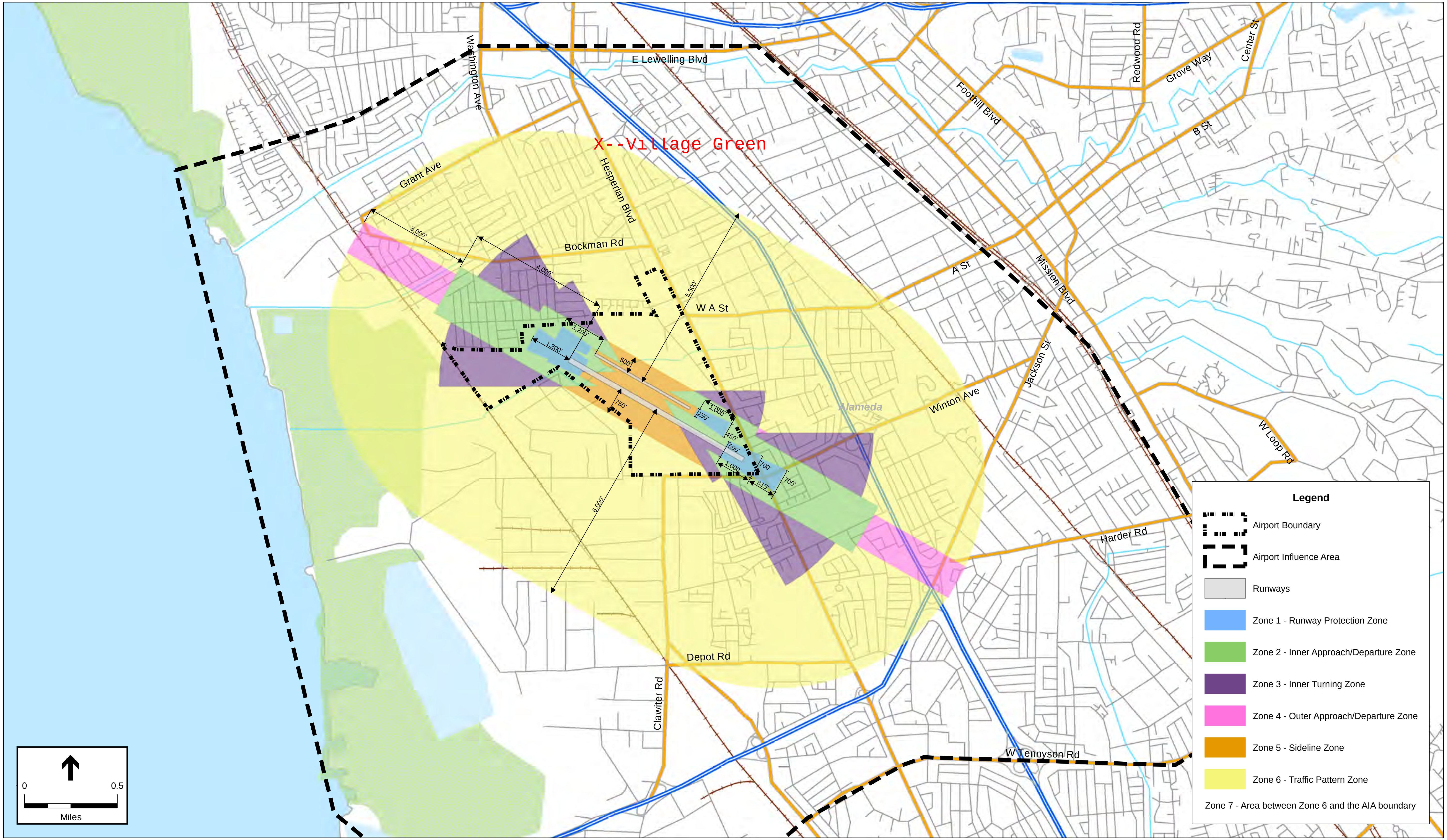
[32] Hayward Executive Airport Land Use Compatibility Plan. P. B-8. Prepared by ESA Airports. Available at http://www.acgov.org/cda/planning/landuseprojects/documents/Draft_HWD_ALUCP_091510.pdf. Accessed April 4, 2018.

Figure 26--Hayward Executive Airport--Safety Compatibility Zones



SOURCE: ESA Airports, ESRI, City of Hayward GIS Department, California Airport Land Use Planning Handbook (Caltrans, 2002)

Hayward Executive Airport Land Use Compatibility Plan . 202229

Figure 3-4

Safety Compatibility Zones

ALUCP for this zone allow for the residential and non-residential uses as proposed for the Project. The zone is characterized by a "Generally low likelihood of accident occurrence at most airports."[33] Therefore, the Project would not result in a safety hazard for people residing or working in the Project area.

Although the ALUC does not have the authority under state law to require that all actions, regulations, and permits be referred for review, the ALUC requests that certain types of actions be referred to the ALUC for determination of consistency with the ALUCP prior to their approval by the local jurisdiction. Included among these types of actions for which ALUC requests consistency review are "proposed residential development within the AIA, including land divisions, consisting of five or more dwelling units or parcels." [34] The review process for individual projects is detailed in the ALUCP Section 2.7.5.

- **Recommendation**. The Project Applicant should submit the Project to the Alameda County Airport Land Use Commission (Commission) for voluntary consistency review under the review guidelines contained in the 2010 Hayward Executive Airport ALUCP.

There is no private airstrip within the vicinity of the Project. Therefore, the Project would not result in a safety hazard associated with a private airstrip for people residing or working in the Project area.

g): Emergency Access Interference with Emergency Response Plan or Emergency Evacuation Plan

2004 Specific Plan EIR

The prior EIR concluded that the adoption and implementation of the Specific Plan would not impair implementation of, or physically interfere with, the County's emergency response or emergency evacuation plan because it would involve the re-use of existing commercial sites for commercial and/or mixed-use purposes. Aside from some potential alteration to the local access streets serving parcels on the east side of Hesperian Boulevard, there would be no change to the circulation system in or around the site and therefore there would be no impact on any such plans of Alameda County.

Project Analysis

There are no emergency response or evacuation plans in effect in the Project area. The site would have two fire access lanes of 26' width each: one would extent from the vehicle entry gate at the south end of Via Arriba through the parking area west of Buildings 3 and 4 to an emergency vehicle-only exit onto Paseo Grande; the second extends from the relocated Via Mercado along Hesperian, and curves west along Paseo Grande to Via Arriba. Other emergency vehicles could access the site through any of the vehicle entrances: at Via Arriba from Paseo Grande, Paseo Largavista from Paseo Grande, or on the relocated Via Mercado from Hesperian; the most convenient access for most purposes would be Via Arriba, which would provide a 22' drive aisle. The Project, including the proposed relocation of Via Mercato, would not impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan **(no impact).**

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[33] Ibid., Table 2-3, p. 2-21

[34] Ibid. p. 2-8.

h): Wildland Fires

2004 Specific Plan EIR

The prior EIR noted that the Specific Plan area is located in a built-out urban area and is not intermixed or located adjacent to wildlands. Any new structures built on sites within the Specific Plan area would be required to comply with all applicable fire code and fire suppression systems, as routinely required by the County. Therefore, implementation of the Specific Plan would not expose people or structures to significant risks associated with wildland fires.

Project Analysis

The San Lorenzo area is considered a "local responsibility area" (LRA) with respect to fire protection, meaning that fire protection services are provided by a local as opposed to a state agency. The Project site is not identified on the State Fire Hazard Severity Zone map as being within a fire hazard severity zone[35] and**,** consequently**,** building code requirements that apply to developments within a fire hazard severity zone would not be required. Potential impacts resulting from exposure of people or structures to the risk of wildland fires is considered less-than-significant.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any impacts related to wildland fires as identified in the prior EIRs, nor would it result in any new significant impact related to wildland fires that were not identified in the prior EIRs.

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[35] Fire Hazard Severity Zone Map. Available at http://www.fire.ca.gov/fire_prevention/fhsz_maps_alameda. Accessed April 4, 2018.

9. Hydrology and Water Quality

Would the Project:	**Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR**	**Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR**	**New Significant Impact**
a): Violate any water quality standards, conflict with water quality objectives, fail to meet waste discharge requirements, significantly degrade any surface water body or groundwater, or adversely affect the beneficial uses of such waters, including public uses and aquatic, wetland and riparian habitat?	☑	☐	☐
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 proposed uses for which permits have been granted)?	☑	☐	☐
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 that would result in substantial erosion or siltation on- or off-site?	☑	☐	☐
d): 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?	☑	☐	☐
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?	☑	☐	☐
f): Otherwise substantially degrade water quality?	☑	☐	☐
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 that would impede or redirect flood flows?	☑	☐	☐
h): Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☑	☐	☐

i): Expose people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☑	☐	☐
j): Expose people or structures to a substantial risk of loss, injury, or death as a result in inundation by seicher, tsunami, or mudflow?	☑	☐	☐

a, f): Violate Water Quality Standards

2004 Specific Plan EIR

The prior EIR found that the land uses proposed under the Specific Plan could contribute various pollutants to stormwater runoff, including fuel leaks, oil and grease, sediments, detergents, cleaning fluids, pesticides, fertilizers, and miscellaneous trash and debris. All future development pursuant to the Specific Plan would be subject to all routine and normal conditions and requirements of Alameda County including measures designed to safeguard water quality standards against discharge of contaminants into the public wastewater or storm drain systems. These requirements include compliance with the Statewide NPDES General Permit for Discharges of Stormwater associated with Construction and the requirements of the Alameda Municipal Storm Sewer System (MS4) permit re-issuance.

In addition, the prior EIR (Final) included the following mitigation measures/conditions of approval pertaining to storm water runoff quality that would apply to the Specific Plan:

- **Condition of Approval IV.7.10: NPDES and MS4 Permits.** Any development under the Specific Plan will be subject to all NPDES permit requirements for stormwater management and discharges under the County's reissued MS4 permit. This reissued permit incorporates updated state and federal requirements related to the quantity and quality of stormwater discharges from new development and redevelopment projects. In accordance with this requirement, new development or redevelopment within the Planning Area will be required to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges, and to manage runoff flows. Projects that involve the creation or replacement of one or more acre of impervious surfaces are required to comply with these requirements by April 15, 2004. Projects that involve the creation or replacement of 5,000 square feet or more of impervious surfaces are required to comply with these requirements by April 15, 2005.
- **Condition of Approval IV.7.11: Storm Water Pollution Prevention Plan.** Any construction projects of greater than 5 acres pursuant to the Plan will be required to comply with the NPDES General Permit for Stormwater Discharges, which requires preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would specify measures to be used to prevent runoff from entering the storm drain system. Construction projects affecting greater than one acre will also be required to prepare a SWPPP in accordance with NPDES regulations under anticipated future NPDES requirements.

All development projects implemented pursuant to the Specific Plan must comply with requirements of all applicable federal, state, and county programs and regulations. For this reason, and because the Specific Plan area already consists of largely impervious surface from implementation of similar land uses to those proposed in the Specific Plan, the prior EIR concluded that the impacts to water quality standards would be **less than significant**.

Project Analysis

Construction-Stage Water Quality Impacts

The proposed Project has the potential to impact water quality during construction because of the potential for erosion of soils from the Project site and the potential discharge of construction materials and wastes to the stormwater collection system. The delivery, handling, and storage of construction materials and wastes, as well as use of construction equipment, could also introduce the risk of stormwater contamination. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and the potential contamination of drinking supplies. Pesticide use (including herbicides and fungicides) associated with site preparation work (as opposed to pesticide use for landscaping) is another potential source of stormwater contamination during construction. Pesticide impacts on water quality include toxicity to aquatic species and bioaccumulation in larger species. Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses, and vectors and physical changes to the aquatic ecosystem.

Because the Project would disturb one acre or more of land during construction, the Applicant must file for coverage under and comply with the Statewide NPDED General Permit for Discharges of Stormwater associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). Compliance with Construction General Permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer (QSD). The SWPPP would list best management practices (BMPs) that would be implemented to protect stormwater runoff, and monitoring of BMP effectiveness. BMPs for the Project will be drawn from the Alameda Countywide Water Pollution Prevention Program's (ACWPPP) construction BMP plan sheet and will include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with stormwater. The SWPPP would specify properly-designed centralized storage areas that keep these materials out of the rain. If grading must be conducted during the rainy season, the primary BMPs selected would focus on erosion control (i.e., keeping sediment on the site).

Post-Construction Water Quality Impacts

The proposed Project will create or replace 185,624 sf of impervious surface, equivalent to 83% of the total area of the site. It has the potential to impact water quality once it is constructed, through the leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. As such, it is a regulated project under Provision C.3 and will be required to comply with the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049, NPDES Permit No. CAS612008, August 19, 2015). Compliance requires, at a minimum treatment controls, such as bioretention facilities, vegetated swales or other appropriate controls to treat runoff from any surface parking and parking exposed to rainfall, roof runoff from the proposed buildings, and runoff from any other related impervious surfaces, including roads and sidewalks.

The Project's preliminary Stormwater Control Plan (see Figures 27a & 27b) creates 23 Drainage Management Areas (DMAs)/Integrated Management Practice Areas (IMPs) across the site; sixteen (16) of these will include some pervious areas, for a total of 31,093 sf of pervious area. The site will include fifteen (15) bioretention areas, ranging in size from 125 sf to 640 sf[36]. The typical bioretention area consists of approximately 18 inches of biotreatment soil mix underlain by approximately 12" of permeable rock over an impermeable liner, draining to a 6" perforated pipe connected to the storm sewer network.[37] Eight of the DMAs include roof areas, which drain to a stormwater media filter.

The Applicant's proposed site design measures include the following:

- Direct roof runoff onto vegetated areas
- Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas
- Direct runoff from driveways and/or uncovered parking lots onto vegetated areas

In addition, source control measures include:

- Mark on-site storm drain inlets with "No Dumping! Flows to Bay" or equivalent
- Plumb interior floor drains to sanitary sewer (subject to sanitary district approval)
- Plumb interior parking garage floor drains to sanitary sewer (subject to district approval)
- Retain existing vegetation as practicable
- Select diverse species of plants, including pest- and disease-resistant, drought-tolerant
- Minimize use of pesticides and quick-release fertilizers
- Use efficient irrigation system, design to minimize runoff
- Provide connection for pool to sanitary sewer (subject to district approval)
- Provide roofed and enclosed area for dumpsters, recycling containers
- Connect any drains in or beneath dumpsters and areas serving food service facilities to the sanitary sewer (subject to district approval)
- Design for discharge of fire sprinkler test water to landscape or sanitary sewer

The Project qualifies as a Special Project Category C under Provision C.3. Based on its density and proximity to transit, it qualifies to treat up to 60% of its stormwater runoff using non-Low Impact Development (LID) treatment measures. Because the total amount of replaced impervious surface is

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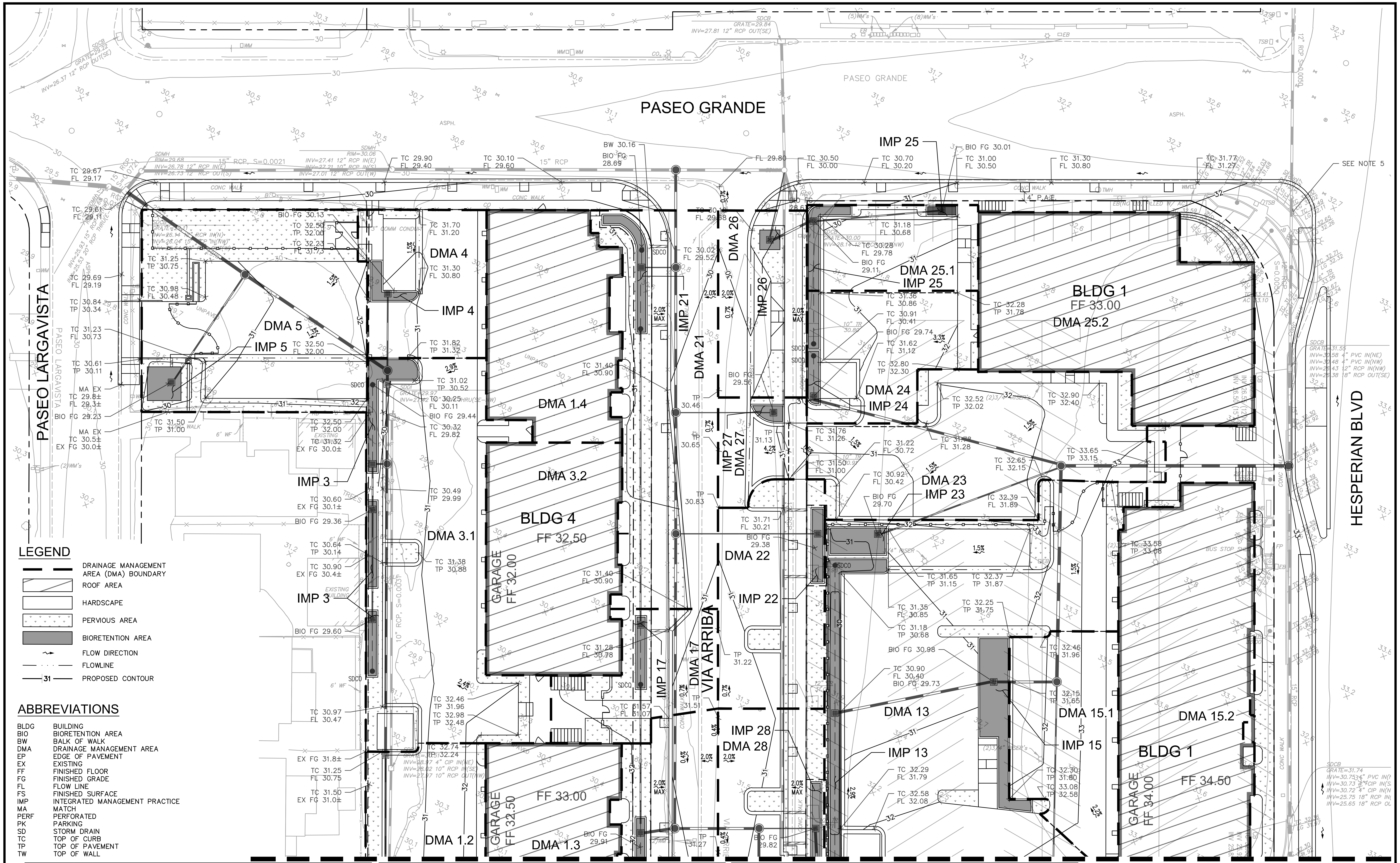
[36] Bioretention areas were sized using the "4 percent method" flow-based sizing criteria in the 2013 Alameda County C.3 Technical Guidance Handbook.

[37] Impermeable liner will be used where the bioretention area is not structurally contained by wall footing.

greater than 50 percent of the pre-project impervious surface, stormwater treatment requirements apply to the whole site, with the exception of the Via Arriba area, which is a public street within the Project area and therefore subject to the stormwater control jurisdiction of the County Public Works Agency.

Figure 27a--Preliminary Stormwater Control Plan Part 1



LEGEND

▬ ▬	DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
▨	ROOF AREA
☐	HARDSCAPE
⁘	PERVIOUS AREA
▩	BIORETENTION AREA
⤳	FLOW DIRECTION
— · · —	FLOWLINE
—31—	PROPOSED CONTOUR

ABBREVIATIONS

BLDG	BUILDING
BIO	BIORETENTION AREA
BW	BALK OF WALK
DMA	DRAINAGE MANAGEMENT AREA
EP	EDGE OF PAVEMENT
EX	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISHED SURFACE
IMP	INTEGRATED MANAGEMENT PRACTICE
MA	MATCH
PERF	PERFORATED
PK	PARKING
SD	STORM DRAIN
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TW	TOP OF WALL

Integrated Management Practice (Bioretention Area) Sizing

DMA/IMP #	Impervious Area (SF)			Pervious Area (SF)	Total Tributary Area (SF)	Bioretention Area Required (SF)	Bioretention Area Provided (SF)
	Roof	Hardscape	Total				
1.1	-	12,379	12,379	3,203	15,582	0*	0*
1.2	-	5,042	5,042	758	5,800	0*	0*
1.3	11,772	-	11,772	-	11,772	0*	0*
1.4	5,620	-	5,620	-	5,620	0*	0*
3.1	-	8,300	8,300	1,666	9,966	332	335
3.2	6,152	-	6,152	-	6,152		
IMP 3	**6,152**	**8,300**	**14,452**	**1,666**	**16,118**	**578**	**580**
4	-	3,258	3,258	336	3,594	130	130
5	-	5,288	5,288	3,648	8,936	212	225
8.1	-	3,737	3,737	750	4,487		-
8.2	-	967	967	-	967		-
IMP 8	**-**	**4,704**	**4,704**	**750**	**5,454**	**138**	**138**
9	5,824	-	5,824	-	5,824	233	241
10	5,097	-	5,097	-	5,097	204	210
11	2,404	2,224	4,628	687	5,315	185	196
12	6,433	2,305	8,738	744	9,482	352	375
13	-	14,376	14,376	3,893	18,269	575	696
14	-	6,716	6,716	1,180	7,896	198	216
15.1	-	4,302	4,302	-	4,302	172	-
15.2	13,339	-	13,339	-	13,339	534	-
IMP 15	**13,339**	**4,302**	**17,641**	**-**	**17,641**	**706**	**728**
17	-	2,117	2,117	1,019	3,136	89	115
18	-	2,678	2,678	945	3,623	111	134
19	-	5,015	5,015	1,899	6,914	208	221
20	-	8,575	8,575	3,702	12,277	259	262
21	-	5,485	5,485	2,354	7,839	219	225
22	-	3,306	3,306	1,182	4,488	137	152
23	-	7,409	7,409	474	7,883	216	281
24	-	3,557	3,557	179	3,736	104	108
25.1	-	2,475	2,475	163	2,638		-
25.2	9,294	-	9,294	-	9,294		-
IMP 25	**9,294**	**2,475**	**11,769**	**163**	**11,932**	**340**	**386**
26	-	2,612	2,612	593	3,205	78	79
27	-	1,526	1,526	35	1,561	61	74
28	-	2,408	2,408	700	3,108	99	131
29	-	1,153	1,153	142	1,295	34	44
Total	65,935	117,210	183,145	30,252	213,397	-	-

* Existing Via Arriba to receive new stormwater treatment in-lieu of treating this area. Refer to Alternative Compliance Treatment Summary table.

Notes:

1) Bioretention areas were sized using the "4 percent method" flow-based sizing and combination flow and volume-based sizing criteria in the 2016 Alameda County C.3 Stormwater Technical Guidance Handbook.

Alternative Compliance Treatment Summary

Existing Via Arriba To Receive Treatment (SF)	Total New/Replaced Impervious Area Not Receiving Treatment (SF)	Existing Greater Than Or Equal To New?
34,864	34,813	True

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

BKF
100+ YEARS
ENGINEERS
SURVEYORS
PLANNERS

BKF Engineers
300 Frank Ogawa Plaza, Suite 380
Oakland, CA 94612
510-899-7300

BKF Project No: 20171017

DEMMON PARTNERS

Company: DEMMON PARTNERS
Address: 1451 River Park Dr. Suite 121
Sacramento, CA 95815
Phone No. 916-514-0426

VILLAGE GREEN
SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL	11/30/2017
1ST SUBMITTAL	04/09/2018
2ND SUBMITTAL	08/15/2018
3RD SUBMITTAL	11/12/2018
4TH SUBMITTAL	01/21/2019

C5.0
PRELIMINARY
STORMWATER
CONTROL PLAN

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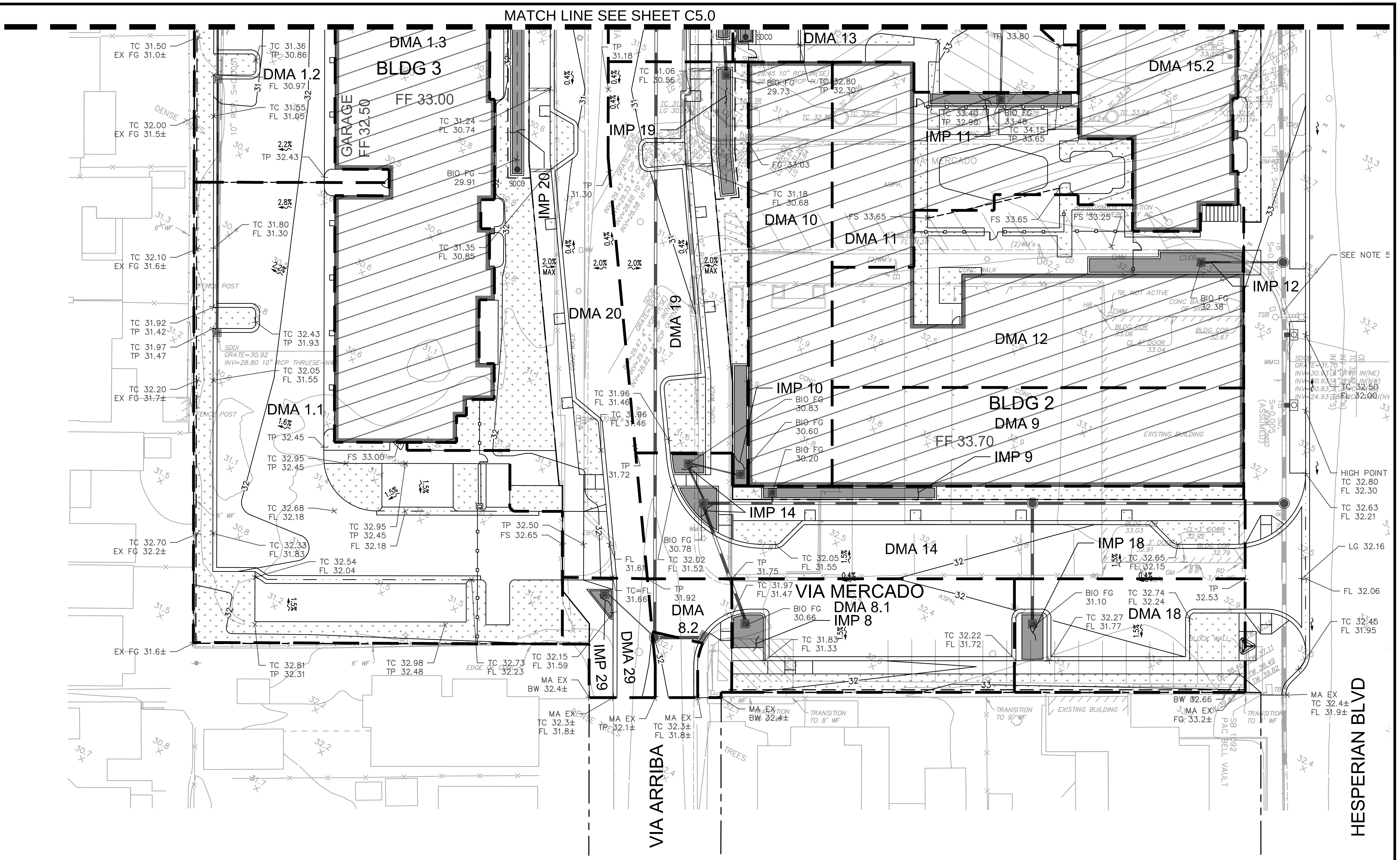
Figure 27b--Preliminary Stormwater Control Plan Part 2



LEGEND

▬ ▬	DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
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Total	65,935	117,210	183,145	30,252	213,397	-	-

* Existing Via Arriba to receive new stormwater treatment in-lieu of treating this area. Refer to Alternative Compliance Treatment Summary table.

Notes:

1) Bioretention areas were sized using the "4 percent method" flow-based sizing and combination flow and volume-based sizing criteria in the 2016 Alameda County C.3 Stormwater Technical Guidance Handbook.

Alternative Compliance Treatment Summary

Existing Via Arriba To Receive Treatment (SF)	Total New/Replaced Impervious Area Not Receiving Treatment (SF)	Existing Greater Than Or Equal To New?
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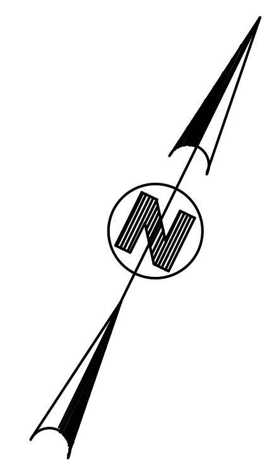

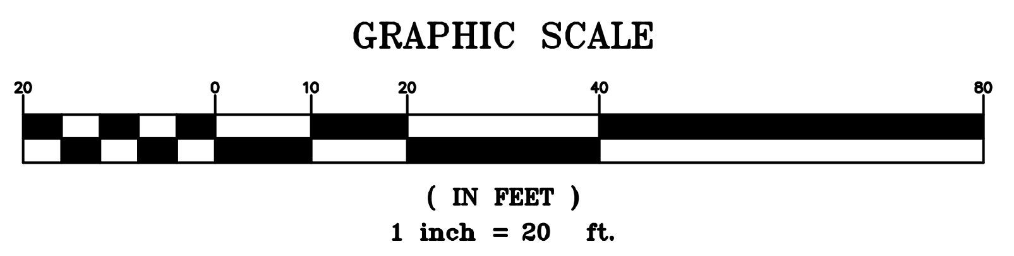

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4TH SUBMITTAL 01/21/2019

C5.1
PRELIMINARY
STORMWATER
CONTROL PLAN

With implementation of source controls, design measures, and treatment controls as identified above, the Project would comply with stormwater construction permit requirements and Alameda County's MS4 permit requirements for water discharges, and would ensure that water quality impacts would be **less than significant**.

b): Depletion of, or Interference with Groundwater Supplies

2004 Specific Plan EIR

The prior EIR found that domestic water requirements for the Specific Plan area would be served by the East Bay Municipal Utilities District. There would be no use of groundwater resources for projects implemented pursuant to the Specific Plan and therefore implementation would result in no impact on groundwater supplies.

Project Analysis

Depth to groundwater is approximately 11 to 18 feet below ground surface (bgs), although groundwater was encountered between approximately six to nine feet (below ground surface) bgs in recent soil borings[38]. The Project is not expected to adversely affect groundwater recharge because implementation of LID measures, such as bioswales as described above, would improve groundwater recharge at the site. If groundwater dewatering is required during construction, the Project Sponsor would comply with dewatering requirements of the San Francisco Bay Water Board. With compliance with the Regional Stormwater Permit and compliance with applicable dewatering requirements, impacts on groundwater would be considered **less than significant**.

c, d,): Alter existing drainage patterns

2004 Specific Plan EIR

The prior EIR concluded that no aspect of the Specific Plan would affect the existing drainage pattern of the area. The Specific Plan area is fully developed with buildings and paved surfaces and existing drainage patterns and collect5ion systems would remain essentially unchanged, although some underground piping infrastructure could be replaced and/or upgraded.

The prior EIR also discussed the unnamed creek that runs east-west through the southerly portion of the Specific Plan Area, generally following the alignment of Paseo Grande, flowing towards the west from its starting point east of the I-880 freeway and turning south along Hesperian Boulevard until it reaches the southern boundary of the Specific Plan area, at which point it turns westerly and heads towards San Francisco Bay along Via Mariposa and Via Manzanas Streets. This creek has been placed into underground storm drain pipes and implementation of the Specific Plan would not affect this facility. Therefore, implementation of the Specific Plan would result in no impact to the course of any stream or river or result in no substantial erosion or siltation on- or offsite.

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[38] The Project's Geotechnical Investigation conducted by KC Engineering reported groundwater between 11-18 ft bgb. Recent soil borings conducted for the Limited Site Investigation by Terracon encountered groundwater been 6-9 ft bgs.

Project Analysis

As discussed above, the biotreatment and filtration measures proposed for the Project would result in improved groundwater infiltration at the site. Given that the Project will increase the treatment capability of the overall stormwater management system surrounding the Project site as necessary to maintain the proper sizing per the requirements of the C.3 Stormwater Technical Manual for the ACCWP), the Project would have a **less than significant impact** on the rate or amount of surface water runoff, and therefore the impact on capacity of the existing stormwater drainage system would also be less than significant.

e) Exceed stormwater drainage capacity or produce substantial sources of polluted runoff

2004 Specific Plan EIR

The prior EIR noted that, according to County Department of Public Works staff, the existing system of catch basins and underground storm drain pipes would be adequate to serve the new development under the Specific Plan in much the same way as at the present time. The existing area is either paved with asphalt parking lots, or is improved with existing commercial buildings. The only unpaved surfaces within the Specific Plan area consist of minor landscaped areas and street trees. Therefore, essentially 100 percent of the Specific Plan area consists of impervious surfaces at the present time. All rainfall within the San Lorenzo Village Center therefore becomes part of the storm water run-off from the area, most of which flows to the catchment basins and is conveyed by gravity flow in underground pipes to the Bockman Canal.

However, the prior EIR noted that in considering specific sites within the Specific Plan area for new development and construction of new buildings in accordance with the Specific Plan, engineering staff of the Flood Control and Water Conservation District should make an evaluation of the affected parts of the system to determine whether new or upgraded pipes would be needed in order to maintain the District's standards. This requirement was stated in the prior EIR and a Condition of Approval.

- **Condition of approval**: **Incorporate needed improvements into project development plans.** All plans for new construction under the Specific Plan should be referred to the Alameda County Flood Control and Water Conservation District for review and analysis to determine whether the existing storm drain facilities would be adequate to serve the proposed project and whether new or upgraded facilities would be needed. The applicant for any such building permits would be responsible for complying with the requirements of the Flood Control and Water Conservation District.

The prior EIR concluded that implementation of the BMPs, controls, and treatment measures included in the approved SWPPP would prevent contaminants from entering the storm drain system. The impact was found to be **less than significant**.

Project Analysis

The proposed Project will increase the amount of impervious surface at the site by 46,372 sf. . As required by the Condition of Approval identified in the prior EIR, the Project's construction plans should be referred to the Alameda County Flood Control and Water Conservation District for review and analysis to determine whether the existing storm drain facilities would be adequate to serve the proposed Project and whether new or upgraded facilities would be needed.

The Project’s design also includes additional stormwater collection and drainage infrastructure that connects to existing stormwater infrastructure at several points around the perimeter of the Project site: at the corner of Paseo Grande and Paseo Largovista (15” storm drain line connection to existing line); at Paseo Grande at Via Arriba (15” storm drain line connection to existing line); and at three points along the Hesperian Blvd side of the Project: one is south of Building A (15” storm drain line connection to existing line); one between Building A and Building B (6” storm drain line connection to existing line); and the third is just north of the relocated Via Mercado (6” storm drain line connection to existing line).

Therefore, with the site design and source control measures identified above, construction of utility infrastructure, and the implementation of erosion control measures in the approved SWPPP, the Project operations would not be expected to contribute substantial additional sources of polluted runoff. The Project would result in **less-than-significant** impacts to drainage capacity and polluted runoff.

g,h,i) Flooding-related Issues

2004 Specific Plan EIR

The prior EIR noted that the portion of San Lorenzo Creek that intersects the northernmost parcel of the Specific Plan area (subarea 1) is noted as a 100-year flood hazard area, as reflected on the Flood Insurance Rate Map 06001CO267G of the Federal Emergency Management Agency. Also, the unnamed creek that runs east-west across the southern end of the Specific Plan area (sub areas 5B, 5C, and 5D) is rated as a 500-year flood hazard—that is, with a 0.2% annual chance of flooding. Designated as Line N in Zone 2 in the Alameda County Flood Control and Water Conservation District, this creek has been placed in an underground storm drain facility through the entire Specific Plan area. It surfaces southwest of the Specific Plan area, below Bockman Road. Housing is proposed for sites along Paseo Grande in the Specific Plan (part of the proposed Project), but the prior EIR concluded that, since Line N is already underground, any impact from implementation of the Specific Plan on this drainage channel would be less than significant.

Project Analysis

The Federal Emergency Management Agency Flood Insurance Rate Map (dated 8/3/2009) classifies the site as "Zone X500", meaning it is within the 500-yr floodplain of the unnamed creek. As noted above, the portion of this creek that flows under the Project site is enclosed in an underground storm drain facility. No portion of this creek is open within the Project area. Therefore, the Project would not place housing or other structures that would impede or redirect flood flows within a 100-year flood hazard area. The impact would be **less than significant**.

j) Inundation by seiche, tsunami, or mudflow

2004 Specific Plan EIR

The prior EIR noted that, because the Specific Plan area is essentially flat in topography, and there are no lakes or other surface water bodies at higher elevations nearby and uphill that could potentially flood the area, or exposed slopes that could cause mudflows, there would be little or no risk of impacts from implementation of the Specific Plan associated with seiche or mudflow events. And because the Specific

Plan area is approximately 30 feet higher in elevation from the San Francisco Bay, and over one mile east, there would be little risk of impact from a rare seiche or tsunami event.

The prior EIR also noted that potential impacts associated with risk of personal injury or loss of life associated with flood hazards are addressed in the County's General Plan, under Findings and Policies for the Central Metropolitan, Eden and Washington Planning Units, Subsection C, Environmental Resources and Hazards. Adherence to those policies in the review and approval of any new developments within the Specific Plan area would result in **less than significant** impact.

Project Analysis

The Project is outside the tsunami hazard zone, as identified in the Association of Bay Area Governments (ABAG) Resilience Program Map .[39] The Project site and surrounding area are flat; accordingly, there is little potential for mudflow or landslides to affect the site. Therefore, the Project would not contribute to inundation by seiche, tsunami, or mudflow. There would be **no impact**.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any hydrology or water quality impacts related to inundation from a tsunami or seiche identified in the prior EIR, nor would it result in any new significant hydrology or water quality impacts that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on hydrology and water quality within the site and surrounding areas. Impacts to water quality would be less than significant.

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[39] Map available at http://gis.abag.ca.gov/website/Hazards/?hlyr=tsunami. Accessed April 2, 2018.

10. Land Use

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Physically divide an established community?	☑	☐	☐
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?	☑	☐	☐
c): Conflict with any applicable habitat conservation plan or natural community conservation plan?	☑	☐	☐

a): Physically Divide an Established Community

2004 Specific Plan EIR

The prior EIR found that implementation of the Specific Plan would not divide an established community. The Specific Plan would reunite the community by strengthening the economic base with new retail uses to replace vacant parcels and vacant lease space, and would enhance the "pull" of the civic functions by renewing, expanding, and bringing together various civic uses **(no impact)**.

Project Analysis

The existing site is vacant, consisting of surface parking and a vacant commercial property. There are residential uses to the south and west of the site. Hesperian Blvd runs along the entire eastern boundary of the site, and Paseo Grande forms the northern boundary. Via Arriba is currently used by vehicles traveling to and from the residential neighborhood south of the proposed Project. It is now a 30' roadway with approximately 4' of parallel parking on both sides, leaving a 22' roadway for existing vehicles. The proposed Project will widen Via Arriba and incorporate diagonal parking, but the drive aisle will remain 22' wide, so the Project will not impede existing use of Via Arriba as a connector between the residential neighborhood and Paseo Grande. The Project will not physically divide an established community.

b): Land Use Compatibility

Consistency with Plans and Policies

2004 Specific Plan EIR

The prior EIR compared the consistency of elements of the Specific Plan with the Zoning Code provision existing at that time. In general, the Specific Plan was found to be consistent with zoning existing at that time, and therefore result in no impacts, or impacts that would be less than significant, except in the following aspects:

- C-1 zoning (existing in 2004) did not include residential use as a permitted use (although the General Plan did permit residential uses when occurring in conjunction with ground floor commercial). The overall intensity of combined residential plus commercial, office and/or civic development could result in land use impacts.
- The potential proximity of four-story buildings adjacent to residential districts on the east side of Hesperian, as permitted under the General Plan (and similarly proposed under the Project), would exceed the maximum height limits established under current zoning. Exceeding the established height limits could result in a significant adverse effect on the light, air, views, privacy and livability of existing residential areas.

The prior EIR also found that the minimum standards in the Specific Plan for usable open space would represent a reduction in required open space compared with comparable standards in the Zoning Ordinance. This reduction in open space requirements could result in an increased need for recreational resources for the future residents of the planning area. The provision of such additional recreational resources could involve potentially significant impacts in terms of acquisition of sites for new parks or facilities outside the planning area, demolition of existing structures, and construction of new facilities.

Project Analysis

Table 9 compares the development parameters of the Village Green Project to the maximum development potential detailed in the Revised (Final) Specific Plan. In the Final Specific Plan, the maximum number of dwelling units proposed for subareas 5A, 5B, 5C, and 5D (comprising Village Center subarea) totaled 150. The Village Green Project proposes to provide 163 units in subareas 5B, 5C, and 5D (excluding subarea 5A, north of Paseo Grande). However, this does not render the residential density of the proposed Project inconsistent with the Specific Plan, because the Specific Plan states that "The number of units shown (150) is intended to indicate that this area is anticipated to receive a portion of the maximum of 450 units allowed within subareas 2, 4 and 5. **Densities may be shifted or reallocated among these subareas** provided that the maximum number of units within these subareas does not exceed 450" [emphasis added].

With the addition of the 163 dwelling units proposed for Village Green, cumulative development in subareas 2, 4, 5A-5D would total 241 dwelling units and 12,184 sf of retail. Retail land uses would be split into six discrete spaces: approximately 2000 sf for a café/restaurant, with the remaining spaces tentatively proposed for a dry cleaner, seamstress, jewelry store, or specialty clothing. The Specific Plan provided for a maximum development capacity of 69,500 sf in subareas 5A-5D, Village Square. Both the residential and retail uses proposed by the Project are well within the maximum development potential identified in the Specific Plan.

The Project therefore does not conflict with the development potential identified in the Specific Plan, given that the total number of dwelling units assigned to each subarea was designed to be flexible, as long as the total of 450 dwelling units for subareas 2, 4, and 5A-5D is preserved.

Table 9. Maximum Expected Development Potential (2004 Specific Plan) Compared to Village Green Project

Subarea	2004 Existing Retail, Office and Civic Space (sf)	2004 SP Maximum Expected Retail (sf)	2004 SP Total New Space (Retail/ Ofc/Civic)	2004 SP Existing Space to Remain in Use	2004 SP Total Space at Buildout	2004 Potential New Residential Dwelling Units	2018 Cumulative Proposed (including Village Green Project)	
1: Tool Rental	13,500		0	13,500	13,500	0		
2: San Lorenzo Plaza	143,000	80,000	100,000	0	100,000	150 *	78 du (Mercy Housing)	
3: Homes Assoc.	23,000		35,000	11,000	46,000	0		
4: Theater Area	28,500	18,500	18,500	11,000	29,500	150 *		
5: Village Square	**55,000**	**69,500**	**89,500**	**12,000**	**101,500**	**150 ***	**163 du**	**12,184 sf**
6: Self Storage	15,000[40]			15,000	15,000	130		
Total	278,000	168,000	243,000	62,000	305,000	580	**241**	

Notes:

*: From the Specific Plan, p. III-2: “The number of units shown (150) is intended to indicate that this area is anticipated to receive a portion of the maximum of 450 units allowed within subareas 2, 4 and 5A-5D. Densities may be shifted or reallocated among these subareas provided that the maximum number of units within these subareas does not exceed 450.”

Consistency with Land Use Controls and Design Guidelines in Specific Plan

Table 10 summarizes the consistency of the Project with the Design Guidelines and Land Use Controls of the Specific Plan. In accordance with the language of this threshold, where an inconsistency with a plan, policy or regulation is identified, it is considered to be a potentially significant environmental impact only when the plan, policy or regulation was adopted “…for the purpose of avoiding or mitigating an environmental effect.”

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[40] Existing retail strip building facing Hesperian Boulevard; does not include space in existing storage lockers.

Table 10. Consistency of Project Design and Land Use with Specific Plan Guidelines			
Issue	**Specific Plan Design Guidelines**	**Village Green Project**	**Consistent w/ Specific Plan?**
DESIGN GUIDELINES			
Siting of Buildings	1.1 Buildings should be situated to front onto streets. This can be achieved by having minimal or no setbacks, active street level uses, facades with a human scale and texture, and sensitivity to sightlines.	The buildings have been placed at minimal setbacks to allow for the required sidewalk widths and an appropriate setback for the residential uses. Hesperian Blvd buildings are street-facing.	Yes
	1.2 Corners sites and sites at the end of visual axes are opportunities for special buildings. Corners should be defined by buildings or by landscaping at open spaces.	The corner building along Hesperian Blvd. and Paseo Grande provides a distinct round corner element with lively retail frontages and unique blade signage.	Yes
Definition of Space	2.1 Streets are structured open spaces of a city. Interior streets should be defined by built edges, landscape, lighting structures and other similar devices. The street right-of-way should be a function of the combined issues of pedestrian scale, traffic volumes, parking, landscape and the height-to-width ratio of the street volume. Interior streets should have a minimum sidewalk width of 12’ and should be on both sides of streets. The typical street should have 1 traffic lane in each direction, in addition to parallel or diagonal parking. Crosswalks should be provided at all intersections. Streets should be adequately lit at night with fixtures sensitive to the pedestrian scale and the tree planting pattern.	Crosswalks are shown on the drawings at intersections. Street lighting and spacing to be determined at a later date during project design. Sidewalks on via Arriba are ~8’. Minimum widths of 12’ are required at locations with edge activities, such as storefronts.	Yes
	2.2 Built space, landscape, lighting structures and other devices should be used to create strongly defined edges and a sense of enclosure for urban open spaces.	Site edges are defined by a consistent green buffer of trees and landscape to provide comfort and visual softening to the site. Site edges are broken and enhanced at pedestrian and vehicular entries with	Yes

	Open spaces can be in the form of plazas, streets, sidewalks, alleys, courtyards and parks. A variety of people-oriented uses should be placed at the edges of open space to infuse it with people and activity.	monumentation, decorative walls with pilasters and enhanced paving and planting. Complimenting retail spaces, outdoor dining opportunities, enhanced paving and pottery bring attention to these public-facing amenities. Landscaped public walkways with street trees provide a comfortable pedestrian experience throughout the site.	
Parking on Streets	Parallel and diagonal parking on streets should be used to support adjacent building programs and buffer pedestrians from traffic. This applies to existing and new interior streets.	The Project provides angled parking on both sides of the road along Via Arriba and Via Mercado.	Yes
Parking Areas	Parking areas should have a design treatment that minimizes overall perceived lot size and improves appearance with the help of materials, landscape, lighting and other features. Parking areas should be tucked into the site and have a minimal presence on the street. If abutting a public area, the presence should be minimized with green buffers, screens and other devices. Parking areas should be divided and broken into smaller lots to reinforce the building and block size, and pedestrian scale.	The majority of the street frontages are building lined with the parking lots located behind the building. Wherever a parking lot can be visible from the street, landscape planters and tree wells have been proposed to help shield the view.	Yes
Signage	Building signage should be sensitive to the scale, material and style of the building. Signage should not block sightlines, a significant area of glazing, or a significant amount of natural light into a building or onto a public area space.	Locations for future signage have been provided; however, signage is not a part of this package.	N/A
	5.1 Signage should be on windows, awnings or canopies, on the sign band or overhanging on the sidewalk. Window signs should not exceed 10% of the area of the window opening. Awning or canopy signs should only be applied to vertical surfaces which are parallel	The proposed awnings that overhang the retail frontages can be utilized for future signage opportunities. Two signage blades have been proposed on the north and south end of Hesperian Blvd.	N/A

	to the storefront. Letter height in the sign band may be up to 18" subject to agency review. Signs overhanging the sidewalk should be at least 8' clear above the sidewalk.		
	5.3 Signs should not extend above commercial floors (onto residential floors) on mixed use buildings.	Future signage locations have been located near retail and the leasing office only.	N/A
Retail Frontage	Storefronts should be designed to ensure appropriate scale, character and continuity and to enhance presence on the street with show windows, entrances, signage, lighting and other similar devices.	The proposed retail frontages incorporate large storefront windows and overhanging awnings.	Yes
	6.1 Smaller storefronts should be at least 75% glazing which should be non-reflective, untinted or lightly tinted.	Each storefront bay is designed with 10' tall storefront window systems that are non-reflective and untinted.	Yes
	6.2 At least 50% of the storefront should be within 2' of the building or property line and any recessed portion may be set back no more than 10'.	The retail frontages along Paseo Grande and Hesperian blvd have been placed as close to the property line as possible (~8') to allow for a 12' sidewalk and a landscape parkway.	Yes
	6.3 Blank facades facing public areas should be avoided. The facades should be broken up by varying the façade plan, expressing structural bays, changing wall opening rhythm and articulation, change in materials, change in bulk, and other architectural devices.	The design of the retail elevations utilize pilasters, overhead awnings, and varying colors to create a variety of retail shop fronts and interest to the street level.	Yes
Streetscape	Make pedestrian comfort and civic amenity prime design considerations. Important pedestrian streets should have generous sidewalks, trees for shade and structure, appropriate materials, adequate lighting, street parking to support adjacent uses and buffer pedestrians, and other amenities.	Street parking has been provided along Via Arriba. Wide, 12 ft plus, sidewalks have been provided in front of retail frontages and 8 ft wide sidewalks in front of residential frontages. Street trees have been designed throughout the site.	Yes
	7.1 Key streetscape treatments are: Type A: Intended to line interior commercial streets with multiple storefronts, e.g., Main Street Paseo Grande. This is the most active street edge. The street width should support and encourage sidewalk cafes and vending,	A full-length sidewalk along Paseo Grande storefronts is activated with bike racks, outdoor dining opportunities, pedestrian scaled lighting and street trees. Trees, layered plantings and decorative pottery bring	Yes

	street furniture, street trees, bicycle racks, pedestrian scaled light fixtures and other amenities. Type B: Intended to line interior commercial streets with a single large user e.g., possibly the north end of Main Street. Emphasis should be on providing trees and other landscape elements to break down the mass of the façade and provide pleasant shaded access. Type C: Intended to line high traffic streets and to connect shopping areas, e.g., Hesperian Boulevard and Paseo Grande. The width should support large street trees, landscape and lighting, and to allow for easy access and pedestrian crossings. Traffic lights and sidewalk bulbouts, where applicable, should be provided at key intersections for comfortable pedestrian crossings and efficient linkages.	down the scale of the architectural façade, provide shade and soften the outdoor environment. Along Hesperian Blvd. a minimum 8′ sidewalk width is maintained adjacent to residential units to allow planting on both sides of walkway and a double row of trees. A parkway allows for large shade trees and lighting. Along Retail/Commercial areas, a full-length sidewalk supports opportunity for outdoor dining and furnishings.	
	7.2 Guidelines for Sidewalks Sidewalks should be a minimum of 8' wide. Sidewalks with edge activities, such as storefronts, shall have more generous widths (12' minimum from the building to the face of curb.) Portland cement concrete should be used throughout the plan area with an attractive standard pattern and color. Minor deviation in color, pattern or material is allowed to denote special features e.g., store entrances, courtyard activity, waiting areas, etc. Large expanses of hard-to-match custom paving materials should be avoided, to allow for easy repairs and maintenance to underground services and sidewalks. The same standards should apply to both interior sidewalks and publicly maintained sidewalks.	Sidewalks are 8′ wide minimum site-wide with few exceptions where space doesn’t allow. At retail/storefront locations a 12′ minimum is maintained with concrete being used throughout. Specialty pavers are utilized at main corner plaza and pedestrian entries.	Yes
Hesperian Blvd	Hesperian Boulevard should be a dense green corridor emphasizing and setting up access to the special area - the San Lorenzo Village	A 6′ parkway between Hesperian and the separated sidewalk creates a generous landscape buffer which will provide space for enhanced plantings and street trees.	Yes

	Center. Hesperian serves as the viewing gallery for passing vehicles and pedestrians, and as a promenade through the civic and commercial program on either side.	Walkways extend to retail facades to allow visibility to storefronts. An additional landscape buffer separates residential units from the public sidewalk for further greening and privacy.	
	1.1 Plan a continuous single (and where applicable) double, canopy of large shade trees along Hesperian Boulevard, including the median. Shown are 3 possible sections based on area specific conditions.	A continuous canopy of large shade trees is provided along Hesperian Blvd. with a secondary row of evergreen trees between residential units and public sidewalk.	Yes
	1.2 Situate entrances east of Hesperian to align and focus on major interior features such as the library. Frame and accentuate these with the help of built form and/or trees and landscape, lighting fixtures and other devices.	The existing Lorenzo Theater is located directly across Hesperian Blvd from our site. The proposed Art Deco architectural style has been carefully selected to compliment the architecture of the theater.	Yes
	1.3 Situate traffic lights at these junctions if possible.	Signalized intersection improvements to be determined, per final traffic study findings.	TBD
	1.4 Development west of Hesperian should have minimal or no setbacks with parking ideally at the rear of the parcel. Avoid large expanses of parking on Hesperian in all parcels.	The buildings have been located along the Hesperian property line, with the appropriate amount of room for the required sidewalk and landscape parkway widths. Parking facilities are located behind the buildings that front Hesperian Blvd.	Yes
	1.5 Aim for continuous development in the theater block. Develop and fill in the "missing teeth" to give an active street frontage.	The proposed project, located West of the Theater, is proposing buildings that front the length of the property along Hesperian to create a filled in block.	Yes
	1.6 Set up a "permeable wall" of development between the village green and Hesperian with the help of courtyards and streets to emphasize the civic buildings with view corridors.	Two pedestrian openings and Via Mercado are provided along Hesperian Blvd to provide a permeable wall of development. The common amenity spaces for the Project's residents have clear views to the Lorenzo Theater.	Yes
	1.7 Allow room for visible, comfortable and architecturally distinctive bus waiting areas.	A visible location along Hesperian Blvd has been designated for a bus waiting area.	Yes
	1.8 Sidewalk widths should support the above design aims including large trees, landscape buffers and bus shelters.	Sidewalks widths are sized to support large street trees, landscape buffers, bus shelters and retail/commercial zones as appropriate.	Yes
Courtyards	The courtyard creates a permeable wall along Hesperian to allow views of the civic buildings to the east. In designing the courtyard and adjacent structures, view corridor transparency,	Views from the Project site across Hesperian Blvd to the Theater have been maintained through the relocated Via Mercado and the pedestrian access corridor into the common amenities courtyard. There	Yes

	active retail corners, and ease of access should be paramount.	are no other civic buildings viewable from the Project site.	
	2.1 Space between new development with an opening of 35'-50' and interior of 50'-80' should be reserved to incorporate courtyards.	The relocated Via Mercado, with a set street width of 60', provides the required view corridor/courtyard to the Theater building across Hesperian Blvd. Since no other civic buildings are located adjacent to the site, no other courtyards are required. Additional courtyards have been provided along Hesperian Blvd to help boost the livability of the project but are not required.	Yes
	2.2 Courtyard should be centered on view corridors to important civic buildings.	The courtyard is located within the public/retail area of the site to provide the best benefit for the general public. No civic buildings are located directly across from the retail area of the site.	N/A
	2.3 Food use such as cafes, delis, and restaurants, is encouraged adjacent to the courtyard. Outdoor dining will activate the space.	Places for outdoor seating and dining have been provided in the courtyard between the retail spaces.	Yes
	2.4 The courtyards should allow pedestrian public thoroughfares to the civic area except on special occasions when they can be closed off.	The proposed courtyard provides access for the residents of the property to Hesperian Blvd and the adjacent retail spaces.	Yes
	2.5 The courtyard area is fundamentally public space. It is not exclusively for patrons of adjacent businesses except for special events.	The proposed courtyard is located within the public area of the project, access into the site from the courtyard is limited to residents only.	Yes
	2.6 Shading devices should be coupled with building bulk should keep 25%-50% of the court in shade at noon.	The four-story massing directly south along the courtyard should provide adequate shade throughout the middle of the day.	Yes
	2.7 The courts (*sic*) can be covered partially to provide shade and scale to the space. The cover e.g. glass vault, trellis, tensile structure, etc., should be of a transparent material which does not block more than 30% of natural light. The height of this structure should equal or be higher than the top of the parapet wall of the enclosing structure. The design should emphasize the view corridor and support	No covering is proposed for the courtyard. The courtyard is open to natural light.	Yes

	courtyard activities.		
	2.8 Trees and other landscape features are encouraged in the courtyard but shall not occupy more than 10% of the area.	Planters are being utilized in the courtyard but do not occupy more than 10% of the area.	Yes
	2.9 Tenants should have a presence through signage, entries and show windows on Hesperian, the civic area and the courtyard itself.	Storefront windows are proposed for the retail spaces that surround the courtyard along Hesperian Blvd. as well as facing inwards towards the courtyard.	Yes
	2.10 The courtyards should have adequate lighting to support evening and night activities. Lighting has the potential to draw attention to the courtyards.	Adequate lighting will be provided to support the use of the space.	Yes
	2.11 Bland facades facing the courtyard should be avoided.	Facades facing the courtyard are designed with storefront window systems and overhead awnings.	Yes
	2.12 The entrance to the courtyard should be emphasized both on Hesperian Boulevard and civic area by providing bulb-outs to the sidewalk. Further emphasis should be provided by architecturally moulding the corner, providing light fixtures, hard and soft landscape features and/or knee walls for seating, the opaque height of which is to be no more than 2'-6" and total height no more than 3'-6".	The entrance to the proposed courtyard falls along Hesperian Blvd and is defined by corner condition architecture where the retail shop frontages wrap around the corners and accented with the projects accent color.	Yes
	2.13 Permanent kiosks are not permitted.	No Kiosks are proposed.	Yes

Land Use Category	**Specific Plan Control**	**Village Green Project**	**Consistent w/ Specific Plan?**
LAND USE GUIDELINES			
Building Standards (all uses)			
Height & Bulk	50’ height limit; exceptions: 1. Hand rails, parapets, elevator or stair towers, mechanical equipment, flag poles, chimneys, and pavilions for roof top gardens (pavilions	The overall building height, including parapets, along Hesperian Blvd and Paseo Grande is 52’-11”. The overall building height, excluding the height of the parapets, will fall below the 50’ height limit. The portion of Via Arriba	Yes

	not to exceed 10% of roof area.) 2. Height limit along Paseo Largavista and residential portions of Via Arriba not to exceed 30 feet. 3. Height profile of new buildings shall be contained within a 45 degree angle, (or 1:1 ratio of setback to height) starting at grade from the common property line with parcels having single-family houses. 4. Future expansion and/or replacement of existing library may occur within the profile of the existing library building.	that will contain the new residential units has only been occupied by commercial structures in the past, and is not therefore considered to be a “residential portion” of Via Arriba, so the 30’ height limit does not apply. The proposed structure will comply with the 1:1 ratio of setback to height, because the distance from the Paseo Largavista property lines to the proposed structure will be greater than 36’.	
Landscape Buffer	Install trees within 10 feet of boundary adjacent to properties with existing single-family houses where new development exceeds 15 feet in height. Tree planting shall be designed to effectively screen new development from existing residences. Tree species and landscape plan shall be considered through the SDR process for new projects.	Trees are located within 10’ of all adjacent properties with single-family houses. Tree species will be selected to effectively screen new development from existing residences.	Yes
Front Setback	None; exception: along Paseo Largavista and residential portions of Via Arriba, setback to match residential standard	Buildings have been setback to provide the required sidewalk and landscaping widths. A 14’-2” setback along Via Arriba has been provided to allow for ample landscaping for resident privacy.	Yes
Side Setbacks	None; exception: at boundary adjacent to an R zone, setback to match residential standard	The side yard setback adjacent to the R zone properties is a min. 10’ as determined in the residential design guidelines. The proposed buildings are located 76’ and 78’ from the property line and therefore comply with the requirement.	Yes
Rear Setback	None, except as determined by Height and Bulk provisions noted above.	The buildings along the western property line are 36’-3” tall and are located 49’-4” away from the property line which conforms to the height and bulk provisions.	Yes
Use size	Site Development Review (SDR) by Planning Commission required for all new construction or additions exceeding 1,000 square feet.	The proposed Project is over 1,000 s.f. of new construction and is undergoing SDR.	Yes
Parking structures	All openings to be screened to protect privacy of nearby residential uses.	The parking garage at the corner of Via Arriba and Via Mercado is enclosed within the building architecture. Openings for natural air ventilation are provided with decorative screens to shield Pedestrian view within.	Yes

Lighting	All direct illumination to be contained within property boundaries and shielded to illuminate only areas of concern.	All direct illumination will be contained within the property boundaries and shielded to illuminate only areas of concern.	Yes
Commercial Use			
Retail and Office	Permitted on all floors of designated commercial and/or mixed-use buildings.	Over 12,000 sf of retail space is proposed along the Paseo Grande and Hesperian Blvd.	Yes
Off-street parking	As determined by parking demand study with SDR.	Will comply with requirements from parking demand study	Yes
Off-street loading spaces	None; exception: single uses exceeding 10,000 gross sf shall have not less than one loading space	No Off-street loading spaces proposed	Yes
Drive-thru uses	Not permitted	No Drive-thru's proposed	Yes
Signs	As established by master sign program with SDR, or same standards as for C-1 zoning district until *(sic)* where no sign program exists.	Locations for future signage have been provided, Signage is not a part of this package.	N/A

The Project is fully consistent with the Design and Land Use Guidelines of the Specific Plan. There would no 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.

c): Habitat and Natural Community Conservation Plans

2004 Specific Plan EIR

The prior EIR determined that there would be no conflict with a Habitat Conservation Plan or Natural Community Conservation Plan because there is no habitat conservation plan or natural community conservation plan in the vicinity of the planning area.

Project Analysis

The Project site is not located within or near an area guided by a Habitat Conservation Plan or Natural Community Conservation Plan. Therefore, the Project would not conflict with conservation land uses addressed by any plans for the surrounding vicinity.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any land use impacts, nor would it result in any new significant land use impacts that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on land use within the site and surrounding areas. Impacts to land use would be **less than significant**.

11. Mineral Resources

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
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? or	☑	☐	☐
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?	☑	☐	☐

2004 Specific Plan EIR

The prior EIR noted that there are no mineral resources in the Specific Plan area and the area is not designated as a resource recovery site in the County's General Plan. Adoption and implementation of the Draft Specific Plan would have no impact on mineral resources.

Project Analysis

For the reasons noted in the prior EIR, implementation of the Project would have no impact on mineral resources.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any impacts to mineral resources identified in the prior EIR, nor would it result in any new impacts to mineral resources that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on mineral resources within the site and surrounding areas. There would be no impacts to mineral resources.

12. Noise

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☑	☐	☐
b) Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels?	☑	☐	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☑	☐	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☑	☐	☐
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, expose people residing or working in the project area to excessive noise levels?	☑	☐	☐
f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?	☑	☐	☐

a, d) Noise Levels in Excess of Standards, Temporary Increase in Ambient Noise Levels

2004 Specific Plan EIR

Construction Noise

The prior EIR concluded that construction activities necessary to implement the Specific Plan would temporarily and intermittently cause a substantial increase in noise levels at existing and future noise sensitive receivers within the planning area. Noise levels were expected to frequently exceed existing ambient noise levels within the interior of the Specific Plan area at all parcels adjoining Hesperian Boulevard. During construction, noise levels would intermittently and temporarily substantially exceed (by more than 5 dBA L_{dn}) the existing ambient noise levels. It characterized this as a **significant impact.** The following Mitigation Measure was identified:

- **Mitigation Measure IV.5.2A: Construction Noise Mitigation.** The following measures shall apply to any construction activity within the Specific Plan area.
    - Limit construction to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on Saturdays, with no noise-generating construction on Sundays or holidays.
    - Equip all internal combustion engine-driven equipment with mufflers that are in good condition and appropriate for the equipment.
    - Utilize "quiet" models of air compressors and other stationary noise sources where technology exists.
    - Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
    - Prohibit unnecessary idling of internal combustion engines.
    - Designate a "noise disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaints (e.g., starting too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site.

The prior EIR concluded that, although mitigation measures identified above would be capable of reducing noise levels during construction, these measures would not be capable of reducing such noise levels to the extent that they would be less than significant. No additional mitigation measures have been identified that are capable of achieving a less than significant noise impact. The resulting level of impact after mitigation would still be **significant and unavoidable**.

Operational Noise

The prior EIR concluded that the Specific Plan would permit new land uses to be developed where existing and future noise levels would exceed those considered normally acceptable. It characterized this as a **potentially significant impact.** Specifically, subarea 5 faces Hesperian Boulevard and is subject to vehicular traffic noise from that roadway. The Specific Plan proposed a variety of mixed residential/commercial uses for this subarea. Residential units would be exposed to noise levels exceeding 60 L_{dn}, causing a potentially significant impact. Noise generated by operation of the Specific Plan development would be subject to the requirements of the County Noise Ordinance.

The prior EIR identified several Mitigation Measures to avoid, reduce, or minimize noise impacts experienced by Project residents.

- **Mitigation Measure IV.5.1A: Multi-Family Residential Uses.** Incorporate noise control treatments in the design for all new multi-family residential housing sufficient to reduce interior noise levels to a noise level of 45 dB L_{dn} or less. Depending upon the noise exposure for a particular site, such treatments may include but not be limited to:
    - High performance sound rated double glazed windows,
    - Sound rated doors,
    - Sound rated exterior wall constructions,

  - Special acoustical details for vents,
  - Acoustical caulking at all exterior façade penetrations,
  - Sound rated roof ceiling constructions, and
  - Adequate mechanical ventilation so that windows and doors may be kept closed at the discretion of the building occupants to control environmental noise intrusion.
- **Mitigation Measure IV.5.1B: Outdoor Use.** Private and public outdoor space shall be shielded through site planning by locating buildings between Interstate 880 or Hesperian Boulevard and the outdoor spaces requiring protection. Such spaces may include, but are not necessarily limited to, private outdoor space, community outdoor space such as courtyards, and public green space areas.
- **Mitigation Measure IV.5.1C: Residential Interior Noise Requirements.** The design for housing shall be reviewed by a qualified acoustical specialist as required by Title 24, Part 2, of the California Administrative Code. The review shall result in a letter, submitted to the Building Department, which stipulates the noise control treatments that have been included in the design and their adequacy in obtaining the mandated maximum interior noise level of 45 dB L_{dn}.
- **Mitigation Measure IV.5.1D: Commercial/Retail Use**. Commercial, retail and office spaces exposed to an L_{dn} exceeding 70 dB (e.g., along I-880) shall be reviewed by an acoustical specialist who shall determine appropriate criteria for the spaces and recommend noise control treatments as necessary to achieve the recommended interior noise level criterion.
- **Mitigation Measure IV.5.1E: Commercial Noise Controls**. Noise generated by new commercial/retail developments shall be controlled so as to comply with the County Noise Ordinance.

The prior EIR concluded that, with implementation of all identified mitigation measures above, the compatibility of land uses within the planning area to the existing noise environment could be mitigated to levels of **less than significant**.

Project Analysis

Construction

Construction noise associated with the Project would temporarily elevate existing ambient noise levels. One of the thresholds used to determine whether a significant noise impact would occur is if the Project would generate noise levels that would exceed local criteria established in the General Plan or General Code. According to Chapter 6.60.070 of the County's General Code, established noise standards do not apply to temporary noise sources associated with construction, provided that all construction activities occur between 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on weekends.

The second applicable threshold is whether the Project would substantially increase temporary and/or periodic ambient noise levels in the Project vicinity above levels existing without the Project. Construction activities are considered to be temporarily or periodically significant if they would increase ambient noise levels by sensitive receptors (typically existing building walls, not at property lines) by an hourly average noise level exceeding 60 dBA L_{eq}, and/or increase the ambient noise levels by a least 5 dBA L_{eq} for a period of more than 1 year. A detailed construction equipment list and expected constructed timeframe was not provided, but construction activities are expected to include demolition, site preparation (clearing trees and vegetation), excavation and grading work, building construction, paving, and architectural coating, each of which will result in increased noise levels in the surrounding area. The construction period for all of these activities combined could take up to 24 months to complete. Therefore, construction noise is considered to be **potentially significant**.

Estimated Construction Noise Levels

Construction noise levels will vary on a day-to-day basis, depending on the type and amount of equipment operating on site and the specific task that is being completed on a particular day. Certain construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The highest maximum noise levels generated by Project construction would typically range from about 80 to 91 dBA L_{max} at a distance of 50 feet from the noise source. For the proposed Project, pile driving, which generates high noise levels, would not be expected.

The typical range of hourly average noise levels generated by different phases of construction for new residential development, measured at a distance of 50 feet, are shown in Table 11.[41]

Table 11. Typical Ranges of Energy Equivalent Noise Levels at 50 Feet— Leq in dBA, at Construction Sites

	Domestic Housing		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station	
	I	II	I	II
Ground Clearing	83	83	84	83
Excavation	88	75	89	71
Foundations	81	81	77	77
Erection	81	65	84	72
Finishing	88	72	89	74

I - All pertinent equipment present at site.

II – Minimum required equipment present at site.

Source: USEPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

During busy early phases of construction, typical hourly average construction-generated noise levels range from about 81 to 88 dBA L_{eq} measured at a distance of 50 feet (e.g., ground clearing activity averages 83 dBA L_{eq} at 50 feet, excavation activity ranges from 88 to 75 dBA L_{eq} at 50 feet, and foundation construction and pouring averages approximately 81 dBA L_{eq} at 50 feet).

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[41] Source: U.S. Environmental Protection Agency, 1973, Legal Compilation on Noise, Vol. 1, p. 2-104.

Hourly average construction noise levels associated with the erection of the residential buildings, such as hammer and drilling related noise, typically range from approximately 65 to 71 dBA L_{eq} at a distance of 50 feet, but can reach as high as 81 dBA L_{eq} for large projects with multiple pieces of equipment. The noise levels associated with construction of the residential units is typically substantially less than noise levels associated with grading and pavement activities during Project site preparation. Construction-generated noise levels attenuate at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors. Once construction moves indoors, minimal noise (typically in the range of 72 dBA at 50 feet) would be generated at off-site locations.

Adjacent residences are located within 10 feet of the shared property lines to the west and south of the Project site. At these distances, typical hourly average noise levels experienced by adjacent receptors would be higher than the levels noted above. Noise generated by construction activities would be expected to temporarily elevate noise levels at adjacent noise-sensitive receptors to levels exceeding ambient levels by more than 5 dBA.

The Project would be required to implement **Mitigation Measure IV.5.2A** identified in the Specific Plan EIR**.** Additional measures that have been identified in subsequent County CEQA documents that could further reduce construction noise impacts[42] include:

- Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.
- Construct solid plywood fences around construction sites adjacent to operational business, residences or other noise-sensitive land uses where the noise control plan analysis determines that a barrier would be effective at reducing noise.
- Erect temporary noise control blanket barriers, if necessary, along building façades facing construction sites. Noise control blanket barriers can be rented and quickly erected.

Implementation of these additional mitigation measures would further reduce the impact of construction noise on sensitive receptors from the levels anticipated in the prior EIR, but given the proximity of adjacent residences and the construction period of up to 24 months, the impacts would most likely continue to be **significant and unavoidable**.

Operation

Short-term ambient noise measurements were recorded for the nearby Manor Housing Project in March 2014. The closest measurement locations to the Village Green Project were at Paseo Grande and Via Primero (425’ east of Hesperian Blvd) and at Hesperian Blvd and Post Office Rd (>800‘ north of Paseo Grande). Long-term measurements were recorded next to the Lollipop Lane Preschool portable building, about 1500’ east of Hesperian Boulevard. Given the relatively small distance from the Village Green site,

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[42] Chinese for Christ Church Initial Study/Mitigated Negative Declaration. Prepared for Alameda County Community Development Agency. 2017. Available at https://www.acgov.org/cda/planning/landuseprojects/documents/ChineseForChristPublicDraftIS_MND.pdf.

the recency of the measurements, and the proposed Project's exposure to the same noise sources (freeway noises from I-880, and roadway noise from Hesperian Blvd and Paseo Grande), these measurements serve to approximate the existing ambient noise conditions at the Village Green site.

Based on these measurements, existing ambient noise levels in the Project area generally exceed the non-commercial noise ordinance limits specified in the Alameda County Noise Ordinance and the exterior noise levels in the Alameda County General Plan Noise Element. L_{dn} values for each day of the long-term noise monitoring analysis exceeded 60.0 dBA. Thus, residents at the new residences at the Project site could be exposed to noise levels that exceed the applicable standards of Alameda County.

Implementation of the mitigation measures identified in the prior EIR would reduce ambient noise measures during operation. **Mitigation Measure IV.5.1C**, noted above, requires multi-family residential units to incorporate noise control treatments in the design for all new units. This mitigation measure incorporates Policy P.5 of the County of Alameda Eden Area General Plan Noise Element. **Mitigation Measure IV.5.1A** of the Specific Plan EIR requires an acoustical specialist to review the design of the Project facilities. This would reduce interior noise levels to an acceptable level by implementing noise control recommendations called for by the specialist. With the appropriate noise control recommendations in place, interior noise levels would be below the County's applicable noise thresholds. New residents at the Project facilities would be protected from excessive outdoor noise generated by vehicles on I-880 and Hesperian Boulevard through spacing requirements, as specified in **Mitigation Measure IV.5.1B** from the Specific Plan EIR. Implementation of these mitigation measures would reduce operational noise impacts to **less-than-significant** levels.

b) Excessive Groundborne Vibration

Project Analysis

Project construction would not require any impact equipment, such as pile drivers, jackhammers, impact hammers, or blasting equipment, which can cause substantial ground vibration. Therefore, it is not expected that any construction equipment used at the Project site would result in excessive groundborne vibration or noise. This impact would be **less than significant** and no mitigation is required.

c): Permanent Increase in Ambient Noise

2004 Specific Plan EIR

The prior EIR concluded that vehicular traffic noise increases resulting from implementation of the Specific Plan would cause noise levels to increase along the street network by less than 3 dBA L_{dn}. This is considered a less than significant impact.

As detailed in Section 15 Traffic and Transportation, traffic noise level increases resulting from Specific Plan-generated traffic were analyzed in the prior EIR for 17 intersections in the study area. AM and PM peak-hour traffic volumes for the Existing plus Project traffic scenario, provided by Dowling Associates, Inc., were compared to Existing traffic volumes. Traffic noise increases resulting from implementation of the Specific Plan were estimated to range from about 0 to 2 dBA L_{dn} along roadways with adjacent noise sensitive receivers. No roadway segments where noise sensitive receptors exist were projected to experience an increase of 3 dB or greater. Therefore, the prior concluded that noise levels would not substantially increase as a result of Plan-generated traffic.

Cumulative noise level increases were also calculated in the prior EIR for the 17 intersections, including the contribution from the proposed Plan combined with cumulative traffic conditions. AM and PM peak-hour traffic volumes for the Cumulative plus Project traffic scenario were compared to Existing traffic volumes. Traffic noise increases resulting from cumulative projects were estimated to range from about 0 to 2 dBA L_{dn} along roadways with adjacent noise sensitive receivers. Cumulative noise level increases are also projected to be less than 3 dBA. This is a **less than significant impact.**

Project Analysis

Increases in ambient noise would come from increased traffic associated with the new building and from other stationary sources, particularly the large rooftop HVAC system. Fehr & Peers has prepared a Traffic Impact Analysis (TIA) to address the Project's incremental traffic impacts, and estimated that the Project would generate 134 new vehicles trips during the AM peak hour and 129 trips during the PM peak hour. This compares to the total of 404 new AM peak hour trips and 965 new PM peak hour trips estimated for the full buildout of the Specific Plan in the Final EIR. To date, the only other development within the Specific Plan area has been the San Lorenzo Senior Housing Project, which was projected to generate 15 AM peak hour trips and 18 PM peak hour trips. Clearly, the level of trip activity analyzed in the Specific Plan EIR far exceeds the cumulative traffic noise that would be generated by the Senior Housing project plus the Village Green Project. Because the Specific Plan EIR concluded that the impact from full buildout of the Specific Plan would be less than significant, the noise increases from similar land uses that are within the development capacity analyzed in the prior EIR, as is the case when Village Green development is included, would also be **less than significant**.

In addition, because the HVAC system condensers would be installed on the building roof, and the adjacent single family residences along Paseo Largavista are approximately 15' feet lower than Building C and using conventional sound insulation, the noise from the HVAC equipment would be reduced below the indoor insulation standard of 45 dBA. This would be a **less-than-significant** impact.

e, f) Location within an Airport Land Use Plan

2004 Specific Plan EIR

The prior EIR noted that the Hayward Executive Airport is located within two miles of the southerly portion of the Specific Plan area. However, the EIR also noted that the Specific Plan area is well outside of the area that would be subject to the guidelines of the 2002 Airport Master Plan, which includes guidelines for risk identification developed by CalTrans. The prior EIR therefore concluded that adoption and implementation of the Specific Plan would not result in a safety hazard for the residents or employees who would come to the project area as a result of the Specific Plan

Project Analysis

Subsequent to the publication of the Specific Plan EIR, the Alameda County Airport Land Use Commission prepared the Hayward Executive Airport Land Use Control Plan (ALUCP) (2010). The Project is within the Hayward Airport Influence Area (AIA). However, noise contour maps presented in the ALCUP indicate that the Project area is outside specific Noise Compatibility Zones (see Figure 28). In addition, the Project is outside Oakland International Airport's AIA and its Noise Compatibility Zones (it is approximately two miles east of Oakland International Airport's 65dB noise contour).[43] Therefore, noise impacts from either airport would be **less than significant**.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any noise impacts as identified in the prior EIR, nor would it result in any new significant noise impacts that were not identified in the prior EIR. The 2010 ALUCPs for both Oakland International and Hayward Executive Airport represent new information that was not available at the time the Specific Plan EIR was prepared, but these plans confirm that noise impacts from the airports would be **less than significant**.

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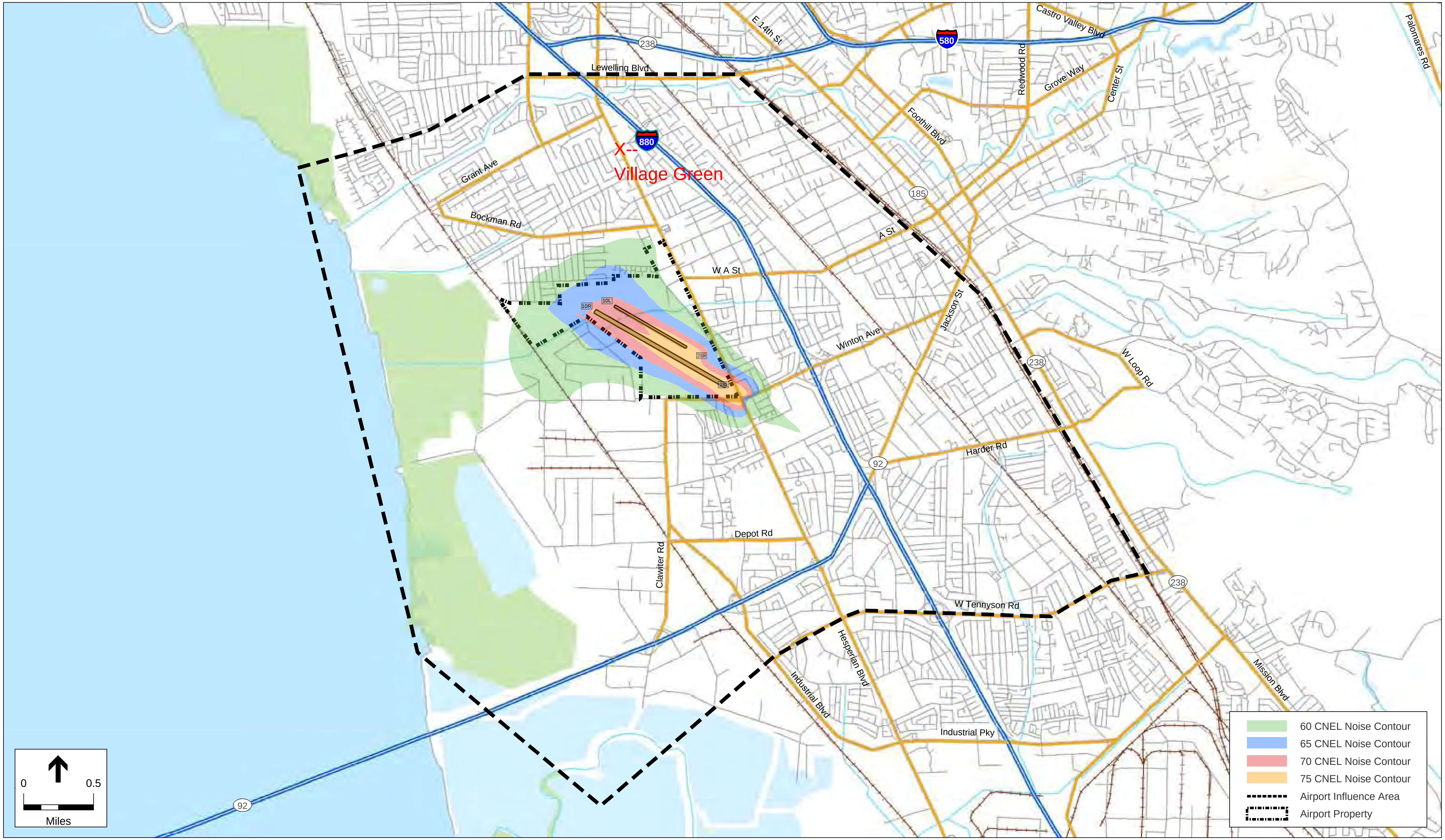
[43] Oakland International Airport Land Use Compatibility Plan, 2010. Available at https://www.acgov.org/cda/planning/landuseprojects/documents/Draft_OAK_ALUCP_091510.pdf. Accessed April 6, 2018.

Figure 28--Hayward Executive Airport Noise Compatibility Zones



SOURCE: ESA Airports, ESRI, City of Hayward GIS Department, Hayward Executive Airport Master Plan (2000)

Hayward Executive Airport Land Use Compatibility Plan . 202229

Figure 3-3

Noise Compatibility Zones

13. Population, Housing and Employment

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Induce substantial population growth in a manner not contemplated in the General Plan, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads and other infrastructure), such that additional infrastructure is required, but the impacts of such were not previously considered or analyzed?	☑	☐	☐
b): Displace substantial numbers of businesses and jobs, necessitating the construction of replacement facilities elsewhere, in excess of that contemplated in the County's General Plan?	☑	☐	☐
c): Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere, in excess of that contained in the County's Housing Element?	☑	☐	☐

a, b, c): Population Growth and Displacement

2004 Specific Plan EIR

Population Growth

The Draft Specific Plan included a maximum of 850 residential units across the entire Specific Plan area. The revised Specific Plan reduced that number to 580 residential units. The Final Specific Plan EIR concluded that, under the revised Specific Plan, the actual number of new residents relative to the sub-regional base population would represent an increase of approximately 1,700 persons within a sub-region of 77,408 people, or approximately a 2% increase in the total population. Under CEQA Guidelines the Specific Plan would still generate population growth in excess of ABAG projections.

The Final EIR noted that the mixed-use development envisioned under the Specific Plan would be "infill development" utilizing an existing developed site for more intense urban uses where infrastructure, including public transit, already exists. This is prototypical of "smart growth" development concepts that attempt to utilize land more efficiently and to reduce the impacts that the same amount of new growth would bring to more distant and undeveloped locations elsewhere in the Bay Area. In addition, the intensification of land use called for in the Specific Plan would be limited to the Specific Plan area. There would not be any further growth inducement effects of the Plan. The surrounding area is essentially at full build-out already, and there are no proposals to further intensify any of the surrounding areas. Therefore, the prior EIR concluded that the impact on population growth would be **less than significant** for the Specific Plan.

Residential Displacement

The prior EIR found that implementation of the Specific Plan would not result in displacement of existing residents because there is no resident population within the Specific Plan area at the present time. Thus, the Plan would have **no impact** on displacement.

Project Analysis

The average population per housing unit in San Lorenzo was 3.2 in 2016.[44] Therefore, the Project's 163 dwelling units would be expected to house approximately 522 people. According to the Association of Bay Area Governments (ABAG), the population of San Lorenzo was projected to grow from approximately 27,265 in 2010 to 28,100 in 2020, an increase of approximately 3.1 percent, which represents a substantially smaller growth rate than Alameda County overall[45].

The 163 dwelling units proposed, when added to the 79 housing units already built pursuant to the Specific Plan (Manor Housing, in subarea 2), are still well within the maximum development capacity of 450 dwelling units analyzed in the Specific Plan EIR for subareas 2, 4, and 5A-5D. Therefore, the growth represented by these households would not result in a significant population growth impact.

In addition to the residents, the Project would include employment for one full-time property manager who may live onsite. The Project would also employ 1.5 full-time equivalent (FTE) leasing agents, one maintenance person, and one janitor, for a total of 4.5 FTE employees.

The Project proposes approximately 12,184 square feet of commercial/retail space. A leasing strategy and business plan have not yet been prepared for the space. However, using estimates developed by the Institute of Transportation Engineers and the San Diego Association of Governments for the square feet per employee needed to support various retail uses[46], the retail space for Village Green could employ approximately 40 people.

There would be no impact from displacement of existing housing (there is none) or existing employment (the commercial land use on the property has been vacant for several years).

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[44] U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates. Available at https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed April 9, 2018.

[45] Association of Bay Area Governments (ABAG). Projections 2013. https://abag.ca.gov/planning/research/forecasts.html

[46] Average sf/employee was estimated by assigning the six proposed retail spaces among the following uses: one high turnover restaurant @2000 sf (100 sf/employee), the remaining 10,000 sf split equally among specialty retail (549 sf/employee), two community retail (383 sf/employee), and two neighborhood retail (588 sf/employee). This yields an estimate of 20 restaurant employees and 20 other retail employees. Employment averages available at: https://www.usgbc.org/Docs/Archive/General/Docs4111.pdf. Accessed April 9, 2018.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the prior EIR, implementation of the Project would not substantially increase the severity of any impacts related to population growth or displacement of persons or jobs as identified in the prior EIR, nor would it result in any new significant impacts related to population growth or displacement of persons or jobs that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on population and housing within the site and surrounding areas. Impacts to population and housing would be less than significant.

14. Public Services and Recreation

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a): Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the 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: Fire? Police protection? Schools? Parks? Other public facilities?	☑	☐	☐
b): 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?	☑	☐	☐
c): Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☑	☐	☐

Fire and Emergency Services

2004 Specific Plan EIR

The Final EIR noted that the projected 580 new residential units and potentially 1,700 new residents coming to the Specific Plan area would increase the population served by ACFD Station #1, and would increase the frequency of service calls but would not impact the ability of the overall ACFD to maintain its 5-minute response time standard. Further, the potential construction of taller (i.e. 4-story) mixed-use buildings within the Specific Plan area could trigger the need for Station #1 to be expanded to include a fire truck capable of dealing with taller buildings. This potential expansion of capital equipment and personnel would not result in a significant impact on the ACFD's operation or result in any environmental impact. Thus, the environmental impact of the current Specific Plan as a result of increased demands on the delivery of fire or emergency medical services would be **less than significant**.

Project Analysis

The ACFD's total fiscal year (FY) budget for 2017-2018 is $138.0 million (up from $120 million in 2013-2014), with a staffing level of 538 authorized positions (up from 375 in FY 2013-2014, although there has been a reduction of the reserve firefighting contingent from 100 to 50 since FY 2013-2014). The Project is anticipated to result in an increase residential population of approximately 522 people, assuming full occupancy of 163 dwelling units. In addition, the Project would include a total of 4-5 employees who could live within the ACFD's service area. At the current level of ACFD staffing (538 fire safety personnel), the ratio of authorized positions per 1,000 residents, at 1.37 (based on an existing service population of 394,000 people[47]) would be higher than the ratio in 2003 (0.95), which was concluded in the prior EIR not to require additional firefighting facilities. No additional firefighters would need to be hired to maintain the current service ratio.

The Project would be required to comply with all applicable ACFD codes and regulations and would be required to meet ACFD standards related to fire hydrants (e.g., water fire flow requirements, spacing of hydrants), design of driveway turnaround and access points to accommodate fire equipment, and other fire code requirements.

The site would have two fire access lanes of 26' width each: one would extent from the vehicle entry gate at the south end of Via Arriba through the parking area west of Buildings 3 and 4 to an emergency vehicle-only exit onto Paseo Grande; the second extends from the relocated Via Mercado along Hesperian, and curves west along Paseo Grande to Via Arriba. No additional firefighters would need to be hired to accommodate the population increase at the Project site. As such, the Project would not result in substantial adverse physical environmental impacts associated with the provision of new or physically altered fire and emergency service facilities in order to maintain acceptable service ratios, response times, or other performance objectives. Fire service impacts as a result of the Project would be **less than significant**.

Police Protection

2004 Specific Plan EIR

The prior EIR (Final) noted that the Sheriff's Department indicated it would be capable of absorbing the demand for additional services that would result from development of up to 580 new residential units under the revised Specific Plan. Therefore, any increase in demand for police services that could result from the Specific Plan would have no environmental impact.

Project Analysis

The Sheriff's Office has a current adjusted net budget of approximately $185.7 million and has over 1500 authorized positions, including in excess of 1000 sworn personnel. Because the Project is within the full

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[47] ACFD website. Available at https://www.acgov.org/fire/about/index.htm. Accessed April 10, 2018

buildout development capacity of the Specific Plan, the demand for police services was fully considered in the prior EIR, which found less-than-significant impacts from implementation of the Specific Plan, of which the Project is a small part. In 2014, when the County analyzed the Senior Housing Project within the Specific Plan area, the service ratio of sworn officers per 1,000 population was 1.15. There have been no changes to relevant circumstances since the prior EIR was prepared that would alter the conclusion that no additional police facilities would be required to service the proposed Project.

Public Schools

2004 Specific Plan EIR

The prior EIR found that the Revised Specific Plan would have the potential to add approximately 230 new elementary school students, 58 new middle school students and 146 new high school students to the local school population. While there was currently some capacity for absorbing additional students at some of the schools that serve the planning area, the potential school-age population that could live in the Specific Plan area as a result of the current Specific Plan would still exceed this excess capacity and would require the purchase, construction, and/or installation of up to 13 additional classrooms.

The Draft EIR recommended the following mitigation measure/condition of approval pertaining to school impacts, which would also apply to the current Specific Plan:

- **Condition of Approval IV.7.1 School Impact Fees:** Developers proposing to construct new commercial and/or residential structures within the planning area shall comply with the San Lorenzo Unified School District (SLUSD) Developer Impact Fee requirements at the time of new construction. Applicable fees shall be those in effect at the time of building permit application that are consistent with state law. The School District shall use all revenues received pursuant to such fees to expand classroom capacity either through new construction or acquisition and placement of pre-fabricated classroom facilities (“relocatables”) at the schools to which new students from the planning area would be assigned. The expansion of existing school facilities to meet the need generated by the Plan shall be considered a “Project” under CEQA and the District, as lead agency, will be responsible for conducting any necessary environmental analysis for such new facilities.

The payment of school impact fees by future developers within the Specific Plan area will assist the SLUSD in providing additional capacity for incoming students generated by development pursuant to the Specific Plan, by acquiring and/or installing new relocatables or constructing new classrooms, or through other means. Payment of these fees would reduce the impact of the Specific Plan on local schools to a level of less than significant. The SLUSD owns two school facilities in the vicinity of the Specific Plan area that are currently leased to private schools. Although changes to public facilities and services brought on by a project are not regarded as significant impacts under CEQA, an analysis is required under CEQA to discuss impacts related to physical changes to the environment from the construction and operation of new or expanded facilities. The prior EIR concluded that, as no new school facilities were proposed as part of the Plan, there was no CEQA analysis required of the potential environmental effects associated with the provision of new school facilities.

Project Analysis

The San Lorenzo Unified School District (“District”) uses the following Student Generation Rates to determine the number of new students, by school grade level, from proposed new residential development:

Elementary School Students (Grades K – 5): 0.4 Students/household
Middle School Students (Grades 6 – 8): 0.1 Student/household
High School Students (Grades 9 – 12): 0.2 Students/household

Based on the forecasting ratios that the District has adopted, and assuming that 163 new residential units would be constructed on the Project site as a result of the Specific Plan, the potential number of new students that could be added to the local school population would be as follows (all estimates rounded up, conservatively):

Elementary School Students: 0.4 * 163 = 65
Middle School Students: 0.1 * 163 = 17
High School Students: 0.2 * 163 = 33
Total Number of students generated: 115

According to the District, enrollment has been declining for the past several years, such that the District has lost more than 600 students over the past few years. The District believes it would have no trouble accommodating this number of additional students at all grade levels.[48] There the impacts to schools would be **less than significant**.

Parks

2004 Specific Plan EIR

As analyzed in the prior EIR, development anticipated under the revised Specific Plan would increase local demand for parks, recreational facilities and open space. This increased demand would be met through the acquisition of land and construction or expansion of parks and recreational facilities, which could result in adverse physical effects on the environment. Such effects, though not expected, would represent a potentially significant impact associated with the implementation of the Specific Plan.

The prior EIR recommended the following mitigation measure/condition of approval pertaining to park impacts which would also apply to the current Specific Plan:

- **Mitigation Measure IV.7.2: Acquire and Develop Nearby Park and Recreation Resources or Pay In-Lieu Fees.** Development of new housing within the Specific Plan area shall be required to obtain and dedicate to the Hayward Area Recreation District (HARD) an amount of land based on a ratio of 5.0 acres per 1,000 population. This would be the same as 5.0 acres per every 338 dwelling units.

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[48] Personal communication via email with Superintendent Brill, April 10, 2018.

- Sites for such new parks could be either on-site, i.e., within the boundaries of the Specific Plan area, or within the broader San Lorenzo community, in accordance with applicable HARD policies relative to proximity of new parks to proposed new residential development.
- Developers of residential projects within the Specific Plan area should work with HARD to identify appropriate locations for potential new parks, such as the site adjacent to Mervyn Morris Park. Acquisition and development of parks too far away from the Specific Plan area would not adequately satisfy the increased demand for recreation space or services that will be generated by the implementation of the Plan.
- As an alternative, developers shall pay *in lieu* park dedication fees to Alameda County, on behalf of HARD, based on the expectation that HARD would aggregate such fees from additional future development in the area and apply the funds to the purchase and development of expanded park and recreation resources near where the development is to take place.

Implementation of the foregoing measures would mitigate these impacts to a level of **less than significant**. However, the prior EIR concluded that, in the event that sites for new parks within the proximity range administered by HARD cannot be identified, acquired and/or developed, either by the residential developers of projects within the planning area or by HARD using *in-lieu* fees, then the recreational needs of the future residents of the planning area would not be adequately met and the impact on local park and recreation resources would then be considered significant and unavoidable. The construction of any new parks or recreational facilities (or the expansion of existing recreational facilities) pursuant to this mitigation measure will be subject to its own environmental review process under CEQA. This separate process would determine the extent of any physical effects associated with the construction of such a facility that could have adverse impacts on the environment.

Project Analysis

The Project would include onsite amenities to residents, including fitness club and an amenity courtyard with pool (18’ by 30’), spa (8’ by 8’), and barbecue area. In addition, there is a dog park proposed on synthetic turf (18’ by 90’) at the northwestern parcel of the site with bench seating.

The Project would be subject to the County Municipal Code Section 12.20, which codifies the mitigation measure identified above. The requirement for multiple dwelling unit development such as the Project is 555 sf per unit (90,465 sf) or $10,200 per dwelling unit ($1.66M). However, HARD has the option to request dedication of land instead or a combination of land dedication and in-lieu fees on a sliding scale.[49] Payment of the fee would ensure that the Project would fund its incremental share of improvements to accommodate the cumulative demand for park and recreation facilities resulting from the increase in population. Payment of the County Park Dedication Fee would result in a **less-than-significant impact** on recreational facilities.

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[49] Personal communication via email, Rodrigo Orduna, Assistant Planning Director, April 13, 2018.

Other Public facilities

Libraries

<u>2004 Specific Plan EIR</u>

The Final EIR noted that upgrading or replacing the existing library building was retained as one of the main land use goals of the revised Specific Plan. The Final EIR revised a mitigation measure identified in the Draft EIR pertaining to library impacts (modified based on responses to public comments on the DEIR).

The expansion of the San Lorenzo was completed in 2015, doubling its size and creating a cutting edge facility for the community of San Lorenzo.

<u>Project Analysis</u>

The Project's additional residences would not overburden the capacity of the newly expanded San Lorenzo Library, or require expansion or additional library capacity in the community. There would be **no impact** to library services.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 SLVSP EIR, implementation of the Project would not substantially increase the severity of any impacts related to the use of public services, including schools, police or fire protection services, or parks or recreational facilities as identified in the prior EIR, nor would it result in any new significant impacts related to the use of public services that were not identified in the prior EIRs. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on the availability of public services in the area. Impacts to public services would be **less than significant**.

15. Traffic and Transportation

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a) Conflict with an applicable plan, ordinance 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?	☑	☐	☐
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?	☑	☐	☐
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?	☑	☐	☐
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	☑	☐	☐
e) Result in inadequate emergency access?	☑	☐	☐
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?	☑	☐	☐

a) Conflict with applicable performance measures for circulation system

2004 Specific Plan EIR

The SLVCSP Draft EIR presented an intersection level of service (LOS) calculated for the existing-plus-Draft Plan conditions (at the original number of 850 proposed residential units). It concluded there were no significant impacts to intersection LOS caused by the implementation of the Draft Plan. However, calculations for two of the intersections indicated that they would operate at LOS F conditions under existing conditions. After more detailed study, neither of these intersections was projected to be impacted significantly by implementation of the Specific Plan (and neither intersection was considered relevant for study in the current analysis).

As previously noted, the Draft Specific Plan was revised subsequent to the publication of the Draft Specific Plan EIR in 2003. As adopted by the County in 2004, the Final Specific Plan reduced the residential development intensity analyzed in the Draft EIR, from a maximum of 850 dwelling units to a maximum of 580. Therefore, the revised Specific Plan (580 residential units) would generate fewer residential (and total) trips than the Draft Plan. Since the Draft EIR found that the Draft Plan (at 850 residential units) would result in no significant impacts to intersection level of service, the Final EIR reasoned that the revised Specific Plan (at 580 residential units) would have an even less significant impact on traffic and intersection operation, with the exception of Parking, where the Final Specific Plan raised the residential parking requirement from 1.5 spaces per dwelling unit to 2. With respect to parking, mitigation measures recommended in the Draft EIR were retained and found to reduce the impact below the level of significance in the Final EIR.

To further analyze the effects of reduced development, an analysis was performed for the Final EIR of the traffic impacts associated with several reduced development alternatives. The analysis concluded that the traffic generated by the revised Specific Plan would not have any significant impact on traffic and intersection operations compared to the then-existing conditions.

The Draft EIR also concluded that the Specific Plan provided adequate access and circulation and there was an appropriate level of redundancy proposed for the various circulation components. No significant impacts pertaining to access and circulation were identified.

Parking

The Specific Plan’s parking proposal was to utilize parking facilities in as efficient a manner as possible, sharing the same parking facilities by different uses at different times during the day. The prior EIR concluded that there were likely to be at least temporary imbalances between the demand for parking and the number of parking spaces provided under any given development phase of the Specific Plan. Additionally, there is no guarantee that the ultimate mix of uses developed within the planning area will be fully consistent with the Specific Plan’s shared parking concept. The Draft EIR found that these conditions could result in a potentially significant, if temporary, parking shortfall, with “spill-over” parking causing an impact on adjacent residential areas.

The Draft EIR recommended the following mitigation measure pertaining to parking:

- **Mitigation Measure IV.3.2: Require Parking Demand Study with All Development Proposals.** The County Planning Department should require a parking demand study by a qualified traffic engineer in connection with all development applications submitted following adoption of the Plan. With the parking standards and parking policies of the Plan as a guide, and with due consideration to the even lower standards of the ITE, the parking study should evaluate the adequacy of the proposed parking for the development plan application. The study should also make recommendations to ensure adequate off-street parking is provided for each proposed use in the development proposal. The parking study should take into account all reasonable opportunities for the maximum effective use of shared parking.

The revised (final) Specific Plan contains modified development policies that would increase the parking requirements for residential land uses from 1.5 spaces per unit to 2 parking spaces per unit or more as may be determined by a parking demand study. Additionally, the revised Plan requires that all commercial off-street parking be determined based upon a parking demand study. The conclusions of the parking demand study are also to be reviewed by the County using Site Development Review procedures.

The Final EIR concluded that implementation of these revised Specific Plan standards would implement the mitigation measures as recommended in the Draft EIR and reduce potential parking inadequacies to a level of **less than significant**.

Project Analysis

A Project-specific transportation impact assessment (TIA) was conducted by Fehr & Peers (Attachment E) to evaluate the proposed Project's access, circulation, and parking.[50] The following 10 study intersections (see Figure 29) were identified for study based on coordination with Alameda County staff:

1. Hesperian Boulevard/Lewelling Boulevard
2. Hesperian Boulevard/Grant Avenue/I-880 Southbound On-Ramp
3. Hesperian Boulevard/Paseo Grande
4. Hesperian Boulevard/Via Mercado
5. Hesperian Boulevard/Ducey Way
6. Hesperian Boulevard/Hacienda Avenue
7. Paseo Largavista/Paseo Grande
8. Via Arriba/Paseo Grande
9. Ducey Way/Paseo Grande
10. Via Arriba/Via Mercado

For this study, the following scenarios were evaluated during the typical weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods:

- Existing – Existing (2018) conditions based on March 2018 traffic counts
- Existing with Project – Existing (2018) conditions plus Project-related traffic
- Cumulative without Project – Forecasts for the cumulative scenario are based on year 2040 forecasts from the Alameda County Transportation Commission (Alameda CTC) Countywide Travel Demand Model.
- Cumulative with Project – Year 2040 forecast conditions plus Project-related traffic.

Significance Thresholds

Alameda County's current Eden Area General Plan (2010) level of service standard is to maintain LOS D or better at intersections. Based on this standard, automobile traffic impacts are significant if the proposed Project would:

- Cause (a) signalized intersection LOS to degrade from LOS D or better to LOS E or F, or (b) the

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[50] Final Transportation Impact Analysis, Village Green Mixed- Use Project, prepared by Fehr & Peers, January 2019.

LOS to degrade from LOS E to LOS F.

- Cause (a) unsignalized intersection LOS to degrade from LOS D or better to LOS E or F and meet the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant; or (b) the LOS to degrade from LOS E to LOS F and meet the MUTCD Peak Hour Signal Warrant.

The Alameda County Transportation Commission (Alameda CTC), the County's congestion management agency, identifies LOS E or better as acceptable for most Congestion Management Program (CMP) roadway segments, which include Hesperian Boulevard and I-880 in the Project area. The CMP roadway analysis presented in this report identifies automobile traffic impacts as significant if the proposed Project would:

- Cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase more than 0.03 along a roadway segment that would operate at LOS F without the Project.

The CMP also sets an LOS F standard for the following roadway segments in the study area:

- Southbound I-880 between Hegenberger Road and A Street
- Northbound I-880 between State Route 92 (SR 92) and Lewelling Boulevard
- Southbound Hesperian Boulevard between Springlake Drive and Lewelling Boulevard

The following thresholds were also considered in the evaluation of the Project from a transportation perspective:

- Would the Project substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with County design standards or incompatible uses (e.g., farm equipment)?
- Would the Project fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bicycle routes, pedestrian facilities, etc.)?
- 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?

Intersection Operations

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak-period intersection turning movement counts, including separate counts of pedestrians and bicyclists, were collected at all existing study intersections. All intersection data were collected on Tuesday, March 27, 2018, a typical weekday with local schools in session and with moderate weather and no observed traffic incidents. For the study intersections, the single hour with the highest traffic volumes during the count periods was identified. The AM peak hour in the study area is generally from 7:30 to 8:30 AM and the PM peak hour is generally from 5:00 to 6:00 PM. Peak hour intersection volumes and raw traffic counts for existing conditions are provided in Appendix F.

Figure 29--Traffic Study Intersection Locations

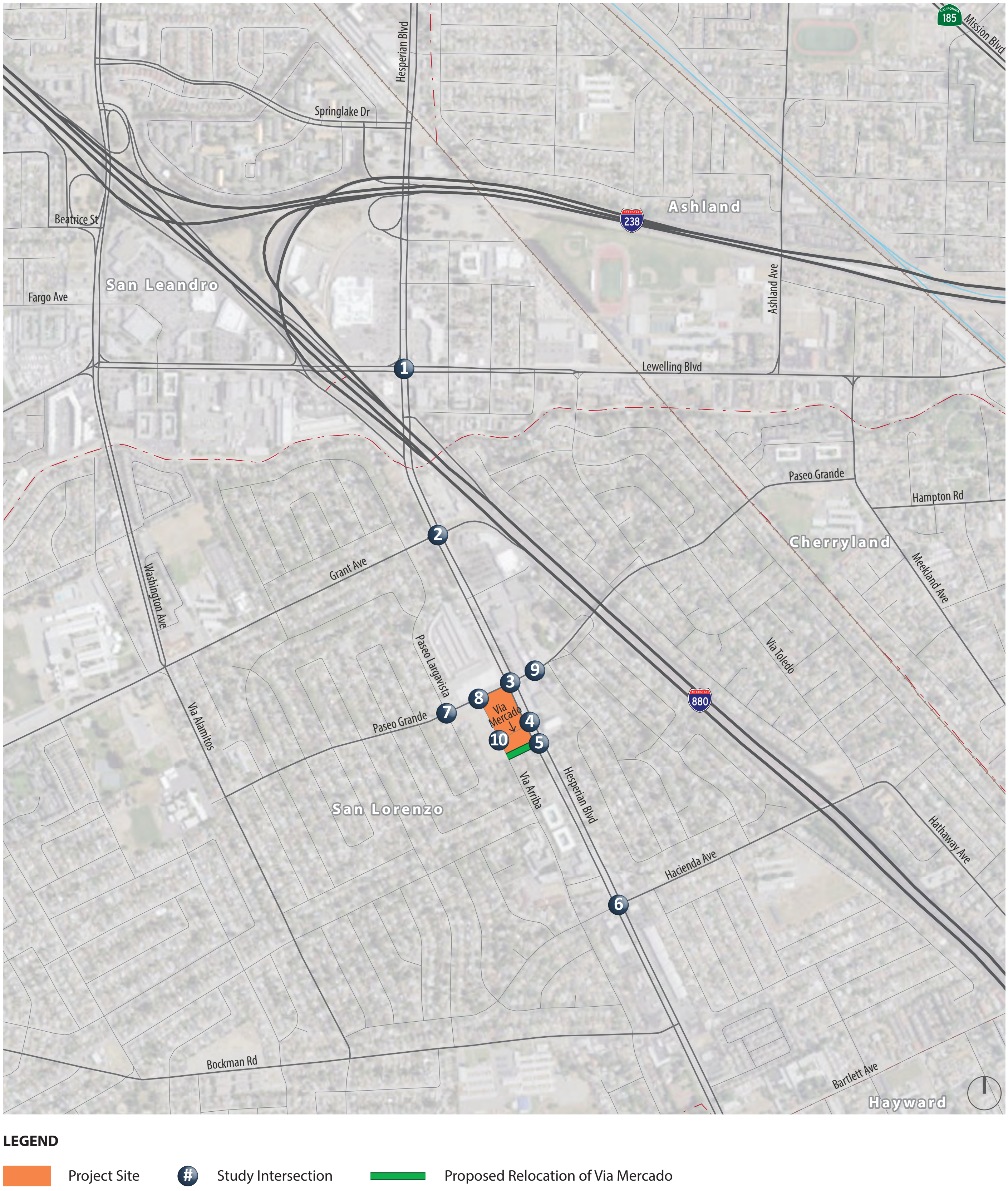
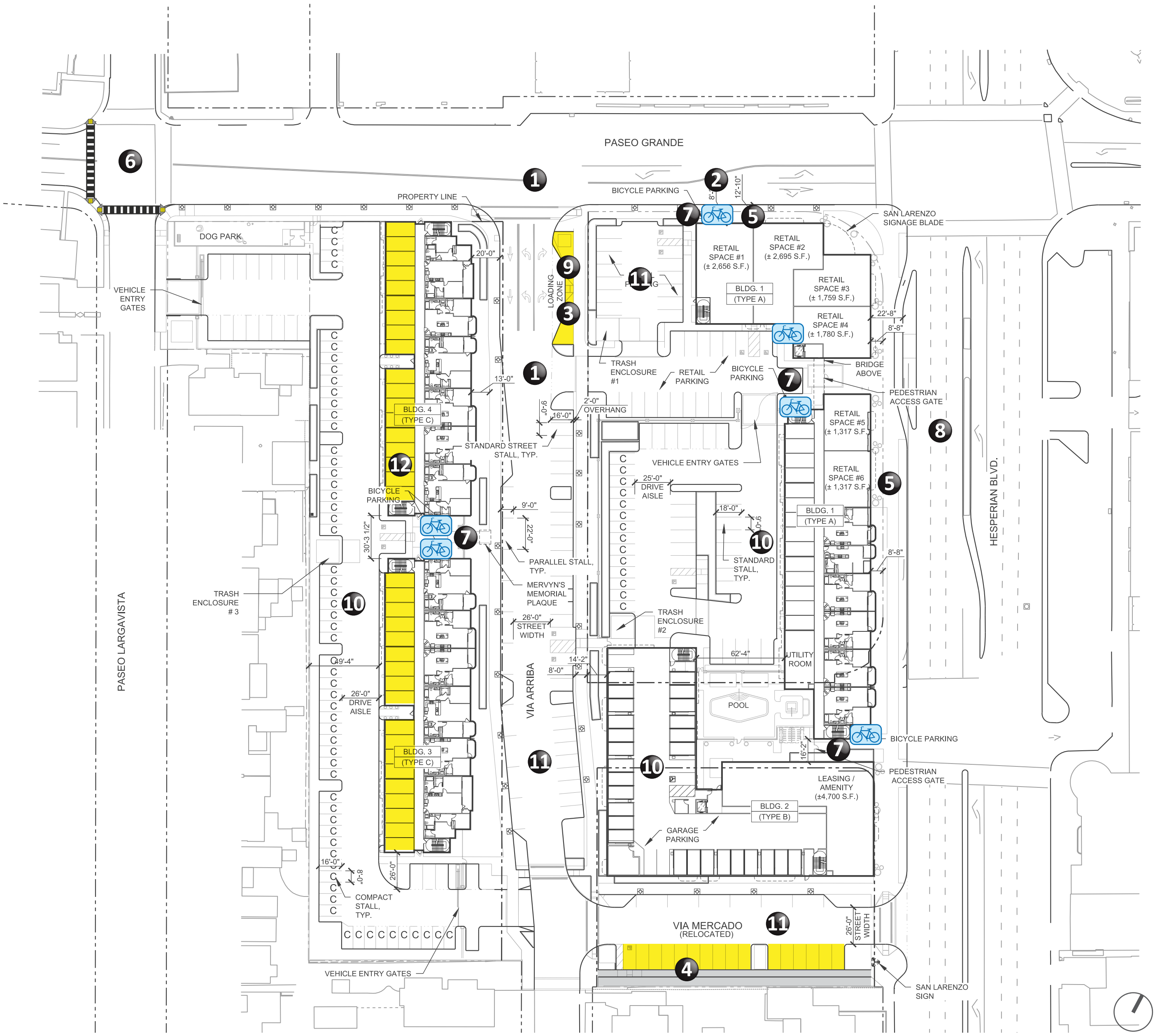


Figure 1

Project Area and Study Intersection Locations

Graphics\Memo_Graphics\2018_October_Update\OK16-0147_1_ProjectArea

Figure 30--Site Plan Traffic Recommendations



Site Plan Source: Architecture Design Collaborative, 1/21/19

Recommendations:

1. Provide "Keep Clear" pavement striping
2. Extend the EB left-turn lane at Hesperian Boulevard/Paseo Grande and the WB left-turn lane at Via Arriba/Paseo Grande to 200 feet
3. Re-design loading zone to be no less than 10-feet in width and 60-feet in length
4. Provide 8-foot sidewalk width and parking wheel stops along the south side of Via Mercado
5. Provide pedestrian-scale lighting along all sidewalks
6. Provide marked crosswalks and ADA-compliant directional curb ramps
7. Provide 9 short-term and 41 long-term bicycle parking spaces bicycle lanes on Hesperian Blvd
8. Ensure that site improvements would not preclude planned Class II bicycle lanes on Hesperian Blvd
9. Project Applicant should participate in AC Transit's EasyPass program in lieu of operating private shuttle service
10. Unbundle parking costs from housing costs for the off-street parking spaces designated for residential uses only
11. Enforce time limits for the shared commercial/residential parking lot and on-street parking spaces on Via Arriba and Via Mercado during business hours
12. Limit private garage use for vehicle storage only

Figure 9

Project Site Plan Recommendations

Table 12 displays the existing Levels of Service at the study intersections. Table 13 displays changes to the existing levels of service from 2004, when the traffic analysis for the Specific Plan EIR was conducted.

Table 12. Intersection Peak Hour LOS-- Existing Conditions

Intersection	**Control**	**Peak Hour**	**Existing Conditions**	
			Delay	**LOS**
1. Hesperian Blvd/Lewelling Blvd	Signal	AM PM	39 33	D C
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	25 23	C C
3. Hesperian Blvd/Paseo Grande	Signal	AM PM	20 11	B B
4. Hesperian Blvd/Via Mercado	Signal	AM PM	8 1	A A
5. Hesperian Blvd/Ducey Way	SSSC	AM PM	0 (20) 0 (19)	A (C) A (C)
6. Hesperian Blvd/Hacienda Ave	Signal	AM PM	30 26	C C
7. Paseo Largavista/Paseo Grande	SSSC	AM PM	1 (17) 1 (13)	A (C) A (B)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (17) 2 (12)	A (C) A (B)
9. Ducey Way/Paseo Grande	SSSC	AM PM	0 (15) 0 (16)	A (B) A (C)
10. Via Arriba/Via Mercado	SSSC	AM PM	2 (10) 1 (9)	A (A) A (A)

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.

2. Signal = signalized intersection; SSSC= side-street stop-controlled intersection. Source: Fehr & Peers, 2019.

Delays and LOS have deteriorated at Hesperian/Lewelling in the AM Peak Hour and at Hesperian/Hacienda in the AM and PM peak hours.

Table 13. Change in Delay and LOS for Key Intersections between 2004 and 2018

	AM Peak Hour				PM Peak Hour			
	2004		2018		2004		2018	
Intersection	**Delay[1]**	**LOS**	**Delay[1]**	**LOS**	**Delay[1]**	**LOS**	**Delay[1]**	**LOS**
Hesperian/Lewelling	31.5	C	39	D	39	D	33	C
Hesperian/Grant/I-880 SB	26	C	25	C	28	C	23	C
Hesperian/Paseo Grande	20	B	20	B	20	B	11	B
Hesperian/Via Mercado	3	A	8	A	5	A	1	A
Hesperian/Hacienda	19	B	30	C	20	B	26	C
Paseo Grande/Via Arriba (unsignalized)	12	B	17	C	12	B	13	B

[1] In 2004 data, "Delay" is rounded to nearest whole second to conform with 2019 data

Trip Generation and Trip Distribution

Trip generation and trip distribution estimates were prepared for the Project, to develop projections of potential impacts from the Project on intersection operations. They are shown in Tables 14 & 15.

Table 14: Automobile Trip Generation Estimate

Land Use	Size[1]		Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Apartments[2]	163	DU	890	15	41	56	43	28	71
Coffee Shop without Drive-Through[3]	2.0	KSF	1,870	104	99	203	37	36	73
Shopping Center[4]	9.5	KSF	360	6	3	9	18	19	37
Subtotal Net Raw Project Trips			**3,120**	**125**	**143**	**268**	**98**	**83**	**181**
Walk/Bike/Transit Reduction (13%) – Apartments[5]			*-120*	*-4*	*-3*	*-7*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Coffee Shop[5]			*-240*	*-13*	*-13*	*-26*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Shopping Center[5]			*-50*	*-1*	*0*	*-1*	*-3*	*-2*	*-5*
Internalization Reduction (3%) – Apartments[6]			*-20*	*-1*	*0*	*-1*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Coffee Shop[6]			*-50*	*-3*	*-2*	*-5*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Shopping Center[6]			*-10*	*0*	*0*	*0*	*-1*	*0*	*-1*
Net External Trips (Total Driveway Volumes)			**2,630**	**103**	**125**	**228**	**82**	**71**	**153**
Pass-by Adjustment (44% Daily/55% AM/21% PM) - Coffee Shop[7]			*-690*	*-47*	*-47*	*-94*	*-7*	*-7*	*-14*
Pass-by Adjustment (17% Daily/0% AM/34% PM) - Shopping Center[8]			*-50*	*0*	*0*	*0*	*-5*	*-5*	*-10*
Total Net-New External Vehicle Trips			**1,890**	**56**	**78**	**134**	**70**	**59**	**129**

Notes:

1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE *Trip Generation* (Tenth Edition) land use category 221 (Multi-Family Mid-Rise - Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 5.45*X-1.75
   AM Peak Hour: Ln(T)=0.98Ln(X)-0.98 (26% in, 74% out)
   PM Peak Hour: Ln(T) = 0.96Ln(X)-0.63 (61% in, 39% out)
3. ITE *Trip Generation* (Tenth Edition) land use category 936 (Coffee/Donut Shop without Drive-Through Window-Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 9.22*(AM Peak Hour Trip Generation)
   No daily rate is provided. The ratio between daily trips and AM peak hour trips for land use 937– Coffee/Donut Shop with Drive-Through Window was applied.
   AM Peak Hour: T = 101.14*(X) (51% in, 49% out)
   PM Peak Hour: T = 36.31*(X) (50% in, 50% out)
4. ITE *Trip Generation* (Tenth Edition) land use category 820 (Shopping Center- Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 37.8*(X)
   AM Peak Hour: T = 0.94*(X) (62% in, 38% out)
   PM Peak Hour: T = 3.81*(X) (48% in, 52% out)
5. The 13-percent adjustment is based on census data for the surrounding areas that indicates that about 13% of employed residents walk, bike, or take transit to work.
6. Fehr & Peers' in-house tool, MainStreet, was applied to determine the percent internalization for the site.
7. Coffee shop pass-by rates are based on data collected at two Starbucks locations without drive-through in Fountain Valley, California. The pass-by rates applied are the average of two sites' observed rates. (www.scribd.com/document/34431881/Trip-Generation-Analysis, accessed in April, 2018).
8. The shopping center peak hour pass-by rates are based on ITE *Trip Generation Handbook* (Third Edition) data. The AM peak hour pass-by rate is assumed to be zero and the daily rate is assumed to be half of the PM rate.

Source: Fehr & Peers, 2019.

Project trip distribution percentages were assigned as summarized in Table 15. The trip distribution percentages are based on existing travel patterns and data from the Alameda CTC Countywide Travel Demand Model. The net-new external Project trips were then assigned to the roadway network based on the directions of approach and departure for the AM peak hour and PM peak hour.

Table 15: Project Trip Distribution

Roadway	Residential	Retail
I-880 to/from the North	15%	2%
I-880 to/from the South	15%	2%
Paseo Grande to/from the West	15%	30%
Hesperian Boulevard to/from the North	25%	15%
Paseo Grande to/from the East	10%	30%
Hesperian Boulevard to/from the South	10%	15%
Lewelling Boulevard to/from the East	5%	3%
Lewelling Boulevard to/from the West	5%	3%

Source: Fehr & Peers, 2019.

Existing Plus Project Trip Volumes

To estimate the Existing Plus Project peak hour traffic volumes, the net-new Project trip assignment (Figure 14 above) was added to the Existing conditions peak-hour traffic volumes, and pass-by trips were applied at the Project driveways. The Project proposes the following changes to roadway geometry and traffic control, which are included as part of the Existing with Project analysis:

- Modify the existing Hesperian Boulevard/Via Mercado intersection (study intersection #4) to eliminate the Via Mercado connection, but maintain the existing traffic signal to provide access to the existing shopping center driveway. Maintain the northbound left-turn lane to allow U-Turn movements.
- Relocate Via Mercado approximately 150 feet south, to align with Ducey Way (study intersection #5) and the proposed southern end of the Project site. The new intersection would be unsignalized with side-street stop control and right-turn in/right-turn out only access.
- Modify the stop-controlled northbound approach of the existing Via Arriba/Paseo Grande intersection (study intersection #8) to provide a left-turn lane and a separate right-turn lane.

The Existing with Project conditions analysis assumes the same signal timings as Existing conditions, at the existing Hesperian Boulevard/Shopping Center Driveway intersection (study intersection #4),, which is assumed to be optimized as part of the Project.

The Existing with Project analysis results are presented in Table 16, along with the operations results for Existing conditions. All study intersections are expected to operate at LOS D or better during the AM and PM peak hours under Existing and Existing with Project conditions. The Project is expected to increase delay at study intersections, but the increases in delay would result in **less than significant** impacts based on the significance criteria detailed above. No mitigation measures are needed.

As shown in Table 16, the Project is expected to increase delay at study intersections, but the increases in delay would not trigger significant impacts based on the Alameda County significance criteria described above.

Cumulative Conditions Plus Project

Cumulative (Year 2040) intersection turning movement forecasts were developed based on an annual growth factor derived from the Alameda County Transportation Commission (CTC) Countywide Travel Demand Model. An annual growth factor of 1.4 percent was applied to the Existing conditions intersection turning volumes. The annual growth factor was applied at all study intersections, with the exception of the Via Arriba/Via Mercado (#10) intersection, the westbound approach of the Hesperian Boulevard/Via Mercado (#4) intersection, and the Paseo Largavista approaches of the Paseo Largavista/Paseo Grande (#7) intersection. The annual growth factor was not applied to these locations because these locations are fully developed and therefore not expected to experience a significant amount of traffic growth. The Project trip assignment was added to the peak hour traffic volumes and pass-by trips were applied to estimate the Cumulative with Project peak hour traffic volumes.

Table 16: Existing with Project Intersection Peak Hour Levels of Service[1]						
Intersection	Control[2]	Peak Hour	Existing Conditions		Existing with Project Conditions	
			Delay	LOS	Delay	LOS
1. Hesperian Blvd/Lewelling Blvd	Signal	AM PM	39 33	D C	40 34	D C
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	25 23	C C	25 23	C C
3. Hesperian Blvd/ Paseo Grande	Signal	AM PM	20 11	B B	21 19	C B
4. Hesperian Blvd/Shopping Center Driveway[3]	Signal	AM PM	8 1	A A	2 2	A A
5. Hesperian Blvd/ Ducey Way/Via Mercado[4]	SSSC	AM PM	0 (20) 0 (19)	A (C) A (C)	0(21) 0(20)	A (C) A(C)
6. Hesperian Blvd/ Hacienda Ave	Signal	AM PM	30 26	C C	33 27	C C
7. Paseo Largavista/ Paseo Grande	SSSC	AM PM	1 (17) 1 (13)	A (C) A (B)	2 (18) 1 (14)	A (C) A (B)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (17) 2 (12)	A (C) A (B)	5 (26) 3 (19)	A (D) A (C)
9. Ducey Way/Paseo Grande	SSSC	AM PM	0 (15) 0 (16)	A (B) A (C)	0 (15) 0 (16)	A (B) A (C)
10. Via Arriba/Via Mercado	SSSC/AWSC[5]	AM PM	2 (10) 1 (9)	A (A) A (A)	8 8	A) A

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.
2. Signal = signalized intersection; SSSC= side-street stop-controlled intersection; AWSC = all-way stop-controlled intersection.
3. The Via Mercado connection would be eliminated at this intersection (#4) as part of the Project.
4. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
5. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2019.

As shown in Table 17 (page 147), all signalized study intersections are projected to operate at an overall acceptable LOS E or better at intersections on Hesperian Boulevard, or at LOS D or better at intersections along non-CMP roadways, under Cumulative without Project conditions, except for the following signalized intersections:

- Hesperian Boulevard/Lewelling Boulevard (#1) would operate at LOS F during the AM peak hour under Cumulative without and with Project conditions.

Unsignalized study intersections are generally expected to continue to operate at similar LOS with the addition of Project traffic, except at the unsignalized Via Arriba/Paseo Grande intersection (#8) where the Project is expected to degrade intersection LOS from C to E during the AM peak under Cumulative with Project Conditions. This is the same impact that was concluded in the Specific Plan EIR. The significance threshold for unsignalized intersections is a two-part threshold, requiring that the affected intersection experience degraded LOS performance AND meet the applicable signal warrant criteria found in the Manual on Uniform Traffic Control Devices (MUTCD).

Therefore, as part of the analysis of impacts to unsignalized intersections, the peak hour volume traffic signal warrant for urban conditions (Warrant 3B), found in the Manual on Uniform Traffic Control Devices (MUTCD), was evaluated for the unsignalized study intersections. Warrant 3B is based on the combination of the total through-volume on the major street and the highest approach-volume on the stop-controlled minor approach at the intersection during the peak hour. The warrant is satisfied when the combination of these volumes is above the established threshold. As detailed in the signal warrant calculations (see Attachment E), none of the unsignalized study intersections (including Via Arriba/Paseo Grande) meet the peak hour volume traffic signal warrant under Cumulative without or with Project Conditions. The impact of Project traffic on the Cumulative Conditions would therefore be **less than significant**.

The changes to roadway geometries and traffic controls assumed under Existing with Project conditions are also assumed under Cumulative with Project conditions. Alameda County is currently in the design phase of the Hesperian Boulevard Corridor Improvement Project. However, the improvement project does not include extensive changes to roadway geometry. The project does include signal modifications; therefore, the Cumulative without and with Project analysis assumes the traffic signal timings would be modified.

Parking

As part of its TIA, Fehr & Peers conducted an analysis to determine the amount of parking required for the site uses, 163 dwelling units of multi-family apartments, a 2,000 square-foot coffee shop, and 9,520 square-feet of retail. The Specific Plan requires that mixed-used developments provide parking based on applying basic parking ratios for each use or based on a parking demand study, whichever is greater.

Shared Parking

In response to the Specific Plan goals, the Project would provide a total of 93 shared parking spaces (60 on-street and 33 off-street parking spaces) to be used by residents, guests, commercial patrons, and employees of the Project. About 29 percent of the Project parking supply would be designated as shared-use, the remaining 71 percent of the parking supply (233 off-street parking spaces) is designated for residential use only.

The ULI shared parking methodology was applied to determine the minimum parking supply needed to accommodate the peak parking demand for the residential and commercial uses combined. The shared parking analysis accounts for the parking demand for residents, guests, commercial patrons, and employees, considering that the peak parking demand generated by residential and commercial uses occur during different hours of the day. For example, the peak parking demand for residents is typically after 9:00 PM, which is when commercial businesses are closed. Similarly, many residents depart for work between 7:00 and 9:00 AM, however most businesses open after 9:00 AM. The ULI shared parking methodology and results are summarized below; the shared parking demand analysis results were also used to inform the minimum parking required per the Specific Plan.

The Urban Land Institute (ULI) created a shared parking methodology to estimate peak parking demand for mixed-use developments. The ULI sponsored a national study in 1984 that established a basic methodology for analyzing parking demand in mixed-use developments and developed averages for parking rates by land use. The analysis presented in this memorandum utilizes the data from the updated Shared Parking, Second Edition report, as well as data from the International Council of Shopping Centers (ICSC).

In the shared parking methodology, the base-parking rate and daily, hourly, and seasonal patterns for each land use are established. Then, the unique travel characteristics of the Project establish the overall parking demand. Further adjustments occur for non-auto modes of travel in the area. The details of shared parking methodology are provided in Attachment E.

Table 17: Cumulative Conditions Intersection Peak Hour Levels of Service[1]						
Intersection	**Control[2]**	**Peak Hour**	**Cumulative without Project Conditions**		**Cumulative with Project Conditions**	
			Delay	**LOS**	**Delay**	**LOS**
1. Hesperian Blvd/ Lewelling Blvd	Signal	AM PM	101 71	F E	103 73	F E
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	46 40	D D	48 42	D D
3. Hesperian Blvd/ Paseo Grande	Signal	AM PM	40 20	D C	54 8	D C
4. Hesperian Blvd/Shopping Center Driveway	Signal	AM PM	5 2	A A	2 4	A A
5. Hesperian Blvd/ Ducey Way/Via Mercado[4]	SSSC	AM PM	0 (31) 0 (29)	A (D) A (D)	1(30) 0(28)	A(D) A(D)
6. Hesperian Blvd/Hacienda Ave	Signal	AM PM	57 56	E E	65 60	E E
7. Paseo Largavista/ Paseo Grande	SSSC	AM PM	3 (30) 2 (17)	A (D) A (C)	3 (33) 2 (18)	A (D) A (C)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (23) 2 (14)	A (C) A (B)	6 (42) 3 (24)	A (E) A (C)
9. Ducey Way/Paseo Grande	SSSC	AM PM	1 (33) 1 (31)	A (D) A (D)	1 (34) 1 (31)	A (D) A (D)
10. Via Arriba/Via Mercado	SSSC/AWSC[5]	AM PM	2 (10) 2 (10)	A (B) A (A)	8 8	A A

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop-controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.
2. Signal = signalized intersection; SSSC= side-street stop-controlled intersection. AWSC = all-way stop-controlled
3. The Via Mercado connection would be eliminated at this intersection (#4) as part of the Project.
4. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
5. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2019.

Table 18 summarizes the results of the shared parking analysis for the Village Green Project. As shown, the proposed off-street parking alone will not meet the estimated peak demand, resulting in a deficit of 47 parking spaces during the weekday peak parking demand hours and 49 parking spaces during the weekend peak demand hour. By adding the on-street parking, the proposed total parking supply results in a 29 and 27-space parking surplus during the weekday and weekend peak periods, respectively. Note that, the parking demand results summarized in Table 18 are for the yearly peak period, which is a typical evening in December.

Table 18: Shared Parking Peak Hour Demand Results

Land Use	User	Weekday Estimated Parking Demand	Weekend Estimated Parking Demand
Retail	Customer	21	23
Retail	Employee	6	6
Residential	Resident	231	231
Residential	Guest	23	23
Total Peak Hour Parking Demand		281	283
Total Peak Hour Parking Demand Plus 5% Circulation Factor		298	300
Proposed Off-Street Parking Supply		266	266
Proposed Off-Street Parking Deficit		-32	-34
Proposed On-Street Parking Supply		60	60
Total Off-Street and On-Street Parking Supply		326	326
Proposed Off-Street and On-Street Parking Surplus		**28**	**26**

Notes:

1. These results are for the yearly peak period, this Project is expected to have the highest parking demand during a typical December evening. The parking demand study estimates a peak hour shared parking demand of 268 spaces (243 spaces for residents and 25 spaces for guests) for the residential uses, and 32 spaces (25 spaces for shopping center customers and 7 spaces for employees) for the commercial uses.
2. Estimated parking demand is based on the square-feet of retail space and number of dwelling units for residential land use, as well as the adjusted Project parking demand rates.

Source: *Shared Parking, Second Edition*; Fehr and Peers, 2019.

Parking Required Per Specific Plan

The Specific Plan defines parking regulations by establishing basic ratios for required auto parking spaces or requiring a parking demand study to establish parking supply for various land uses. **Table 19** summarizes the minimum parking requirement for the proposed Project using the Specific Plan requirements for residential and commercial uses. As shown in Table 18 and Table 19, the Project is estimated to generate a peak shared parking demand of 300 spaces for the following uses during a weekend evening peak hour in the month of December:

- A parking demand of 243 spaces generated by residents
- A parking demand of 25 spaces generated by guests
- A parking demand of 25 spaces generated by commercial patrons
- A parking demand of 7 spaces generated by commercial employees

The Specific Plan establishes a parking requirement for residents of two parking spaces per dwelling unit, or as determined by a parking demand study, whichever is greater. The Specific Plan also specifies that the parking supply for residential guests and commercial uses should be determined based on a parking demand study. As previously mentioned, slightly less than one-third of the proposed Project parking supply would be designated as shared-use among residential and commercial uses; thus, the parking demand analysis considers the demand for residential and commercial uses combined.

Therefore, the Specific Plan minimum parking requirement is based on the greater of the two parking spaces per dwelling unit or the shared parking demand results for residential and commercial uses combined. As shown in Table 19, the parking requirement is greater using the basic ratio compared to the peak hour shared parking demand estimate, therefore the minimum parking requirement for the Project is 326 spaces. The total off-street and on-street parking supply proposed by the Project meets the minimum parking requirement.

Table 2: Specific Plan Parking Requirements

Land Use	**Size**	**Unit**	**Required Parking**
Parking Required by Applying Basic Ratio			
Apartments	163	Dwelling Units	326 Spaces
Shared Parking Demand Study Results			
Apartments	163	Dwelling Units	268 Spaces (243 spaces for residents, 25 spaces for guests)
Shopping Center	11,520	Square Feet	32 Spaces (25 spaces for customers, 7 spaces for employees)
Peak Hour Shared Parking Demand Estimate			300 Spaces
Parking Required by Specific Plan			
Minimum Parking Requirement Based on Specific Plan[1]			*326 Spaces*
Proposed Off-Street Parking Supply			266 Spaces
Off-Street Parking Supply Deficit			***-60 Spaces***
Proposed Off-Street and On-Street Parking Supply			326 Spaces
Off-Street and On-Street Parking Supply Surplus or Deficit			***0***

Notes:

1. The required parking using the ratio of two spaces per dwelling unit is greater than peak hour parking demand estimate as determined by a shared parking demand study; therefore, the parking requirement for all uses based on the *San Lorenzo Village Center Specific Plan* is 326 spaces. The 326 spaces include 93 shared residential and commercial spaces, per the Specific Plan.

Sources: *San Lorenzo Village Center Specific Plan*; Fehr & Peers, 2019.

Parking Demand Management

- **Traffic Recommendation[51]--** Unbundle parking costs from housing costs for the off-street parking spaces designated for residential uses only. This would result in residents paying one price for the residential unit and a separate price for parking, should they opt for a space. The price of a parking space can be adjusted so that resident parking demand matches the building's parking supply.

- **Traffic Recommendation--**Enforce time limits for the shared commercial/residential parking lot and on-street parking spaces on Via Arriba and Via Mercado during business hours to encourage turnover of parking spaces to provide short-term parking for visitors and encourage residents to park within the assigned residential parking lots and garages. In addition, require retail/commercial employees to park on-street to maximize the parking supply available to customers within the shared commercial/ residential parking lot.

- **Traffic Recommendation --**Limit private garage use for vehicle storage only to ensure that residents always have space in their garage to park their vehicle.

- **Traffic Recommendation--**Site management should provide residents and employees information about transportation options. This information can be posted at central locations and be updated as necessary. This information can include:

    - *Transit Routes* – Promote the use of transit by providing user-focused maps. These maps provide residents and employees with wayfinding to nearby transit stops and transit-accessible destinations and are particularly useful for those without access to portable mapping applications.

    - *Transit Fare Discounts* – Provide information about local discounted fare options offered by BART and AC Transit, including discounts for youth, elderly, and persons with disabilities.

    - *Ridesharing* – Provide residents and employees with phone numbers and contact information for ride sharing options including Uber, Lyft, and local taxi cab services.

    - *Carpooling* – Provide residents and employees with phone numbers and contact information for carpool matching services such as the Metropolitan Transportation Commission's 511 RideMatching.

    - *Guaranteed Ride Home* – Encourage residents to register for the Alameda County Guaranteed Ride Home (GRH) program operated by Alameda CTC. GRH programs encourage the use of alternative modes of transportation by offering free rides home if an illness or crisis occurs, if a resident is required to work unscheduled overtime, if a carpool or vanpool

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[51] Figure 30 depicts all Traffic Recommendations.

is unexpectedly unavailable, or if a bicycle problem arises. The GRH program is free to commuters who work in Alameda County and participants can use the program up to six times in a calendar year and no more than two times in any one calendar month. GRH programs are also be available for Project residents that work outside of Alameda County.

- *Walking and Biking Events* – Provide information about local biking and walking events, as events are planned.

b) Conflict with applicable congestion management plan

2004 Specific Plan EIR

The prior EIR noted that the Alameda County Congestion Management Agency's travel demand model for the years 2005 and 2025 indicated that cumulative traffic volumes on Hesperian Boulevard were projected to decrease over time. This seeming contradiction is due to the assumed widening and upgrading of State Route 238/Foothill Boulevard, extending southward from the junction of I-580 and SR-238. The I-238 widening was completed in 2010, widening I-238 from 4 lanes to 6 lanes between the I-880 and I-580.[52]

The Draft EIR assumed the worst-case scenario for its analysis: that the SR 238/Foothill Boulevard project would not be constructed until 2020 or beyond, and that Hesperian Boulevard would instead bear its full share of cumulative traffic growth. Under the "worst case" cumulative conditions (assuming that the planned State Route 238 is not constructed) the traffic volumes would cause the intersection's level of service to be degraded from LOS D to LOS E during the PM peak hour. This would be considered a significant cumulative impact.

The Specific Plan EIR identified the following Mitigation Measure, which it found would result in a cumulative-plus-plan level of service of LOS D, thus mitigating the impact to **less than significant**:

- **Mitigation Measure IV.3.6A: Provide Southbound Right-Turn Lane if SR 238 Project is Not Started by 2015.** The southbound Hesperian Boulevard approach to Lewelling Boulevard should be widened to provide a separate right-turn lane of at least 250 feet. New development within the planning area should pay its fare-share contributions toward this improvement needed for cumulative traffic congestion.

This measure has since been constructed by the City of San Leandro, rendering this mitigation measure moot for the proposed Project.

Project Analysis

The Alameda County Congestion Management Program (CMP) requires the Near-Term (2020) and Cumulative Year (2040) assessment of development-driven impacts to regional roadways. Because the Project would generate more than 100 "net-new" PM peak hour trips, Alameda CTC requires the use of the Countywide Travel Demand Model to assess the impacts on regional roadways in the Project vicinity. The CMP roadways in the vicinity of the Project include I-880 and Hesperian Boulevard.

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[52] Personal email communication, with Natalie Chyba, Transportation Engineer, Fehr & Peers, May 21, 2018.

The Alameda CTC Countywide Travel Demand Model used in this analysis is a regional travel demand model that uses socioeconomic data and roadway and transit network assumptions to forecast traffic volumes and transit ridership. This version of the Countywide Travel Demand Model is based on Association of Bay Area Governments (ABAG) Projections 2013 land uses for year 2020 and 2040.

For the purposes of this CMP analysis, the Project is assumed to not be included in the ACTC Countywide Travel Demand Model in order to present a more conservative analysis. The "constrained" traffic forecasts for the 2020 and 2040 scenarios were extracted from the Alameda CTC Countywide Travel Demand Model for the CMP roadway segments from that model and used as the "No Project" forecasts. Vehicle trips generated by the proposed Project were added to the "No Project" forecasts to estimate the "Plus Project" forecasts. [53]

The CMP segments were assessed using a volume-to-capacity (v/c) ratio methodology (Transportation Research Board, 1985). For freeway segments, a per-lane capacity of 2,000 vehicles-per-hour (vph) was used, consistent with the latest CMP documents. For arterials, a per-lane capacity of 800 vph was used. Roadway segments with a v/c ratio greater than 1.00 signify LOS F. The "Plus Project" results were compared to the baseline results for years 2020 and 2040.

The proposed Project would contribute to 2020 and 2040 increases in traffic congestion on CMP roadways. However, the Project would not cause a CMP roadway segment to degrade from LOS E or better to LOS F or increase the v/c ratio by more than 0.03 for roadway segments that would operate at LOS F without the Project. Therefore, the impacts to CMP roadways would be **less than significant**.

c) Change in Air Traffic Patterns

Project Analysis

There are no features of the Project that would require a change in air traffic patterns. The Project is within the Hayward Airport Influence Area (AIA); however, it is located at the very outer edge of Zone 6 on the Airport's safety zone map, adjacent to zone 7. In safety zones 6 and 7, residential development is not restricted.[54] In addition, the Project is outside Oakland International Airport's AIA. The Project would result in **no impact** to air traffic patterns.

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[53] The Cumulative Year (2040) Forecasts assumed in the CMP evaluation are not the same as the forecasts used in the analysis summarized in Table . The main difference is the approach for estimating forecasts; the CMP evaluation assumes unadjusted 2040 forecasts from the off-the-shelf Alameda CTC model. Cumulative Year (2040) forecasts summarized in Table were estimated by applying annual growth rates (obtained from the 2010 and 2040 Alameda CTC model outputs) to the existing year (2018) roadway peak hour counts.

[54] Hayward Executive Airport, Airport Land Use Compatibility Plan, prepared by ESA. September 2010.

d,e) Increased Hazards, Inadequate Emergency Access

Project Analysis

Vehicular Access

The proposed Project would provide four vehicular full-access points: (1) On Hesperian Boulevard at a relocated Via Mercado (side-street stop controlled, right-turn in/right-turn out only access); (2) On Paseo Largavista just south of Paseo Grande (side-street stop controlled, full access); (3) On Paseo Grande at Via Arriba (side-street stop controlled, full access) ; and (4) On Via Arriba at Via Mercado (all-way stop controlled, full access).

- **Traffic Recommendation--** Provide "Keep Clear" pavement striping on eastbound Paseo Grande at the Via Arriba intersection (#8) and on northbound Via Arriba at the commercial/ residential driveway. The pavement striping would provide a queuing gap along eastbound Paseo Grande and northbound Via Arriba to minimize the occurrence of vehicles blocking left-turn movements at either intersection.
- **Traffic Recommendation**- Extend the existing eastbound left-turn lane at the Hesperian Boulevard/Paseo Grande intersection (study intersection #3) and the existing westbound left-turn lane at the Via Arriba/Paseo Grande intersection (study intersection #8) to provide 200 feet of queue storage capacity.

Adequate sight distance should be provided at all four Project driveways to minimize conflicts between vehicles entering and exiting the driveways and vehicles on the adjacent street. According to the Caltrans Highway Design Manual, for streets with a posted speed limit of 25 mph (e.g. Paseo Largavista, Paseo Grande, and Via Arriba), a minimum corner sight distance of 275 feet should be provided for vehicles exiting the Project driveways. For streets with a posted speed limit of 35 mph (e.g., Hesperian Boulevard), a minimum stopping sight distance of 385 feet should be provided. Based on the Project site plan, all Project driveways provide adequate sight distance except for the Via Mercado/Via Arriba intersection (#10), which provides a corner sight distance less than 275 feet at the eastbound approach due to the provision of angled on-street parking proposed along northbound Via Arriba. However, the sight distance impact at the Via Mercado/Via Arriba intersection (#10) would be reduced with the all-way stop control proposed by the Project.

On-Site Circulation

The proposed Project would provide angled (90 degrees) on-street parking on one side and parallel on-street parking on the other side of Via Mercado and Via Arriba. Off-street parking would be provided via uncovered parking stalls (all of which would be 90-degree stalls with two-way circulation aisles), individual private garages, and an on-site parking garage, which includes mechanical parking lifts proposed to manage a subset of the off-street parking supply. In total, 60 on-street parking spaces would be provided along both sides of Via Arriba and Via Mercado within the Project site. These spaces would be available to the public but would most likely be used by residents and visitors of the Project. Off-street parking would include 124 surface parking spaces reserved exclusively for the residential units, 59 spaces in a parking garage reserved exclusively for the residential units, 33 surface parking spaces to be shared by residential and commercial uses, and 50 spaces in private garages reserved exclusively for residential units. All off-street parking would be accessible to residents of the Project, with 33 surface parking spaces accessible to retail/commercial customers and employees. Alameda County's Residential Design Standards and Guidelines (2014) specify drive aisle dimensions, which are dependent on the angle of parking adjacent to the aisle. For 90-degree angled parking, 25-foot drive aisles are required, and 22-feet for 60-degree parking. The Project site plan indicates that all on-site drive aisles with 90-degree parking provide 25-foot widths, meeting the Residential Design Standards and Guidelines requirements.

The Alameda County Fire Department requires a minimum width of 26 feet for local streets. Via Arriba and Via Mercado would provide 26-foot clear widths, meeting the Alameda County Fire Department requirements. The proposed 90-degree angled on-street parking can potentially result in vehicles crossing the roadway centerline and temporarily blocking both directions of Via Arriba and Via Mercado while vehicles maneuver into or out of the parking stalls. However, Alameda County Public Works and Fire Department staff directed the Project team to provide 90-degree angled parking on one side of Via Arriba and Via Mercado to enable access to the on-street parking spaces from both directions of travel and so fire trucks could more easily access adjacent building structures. For this reason, the current Project site plan provides 90-degree angled parking on northbound Via Arriba and eastbound Via Mercado; parallel parking spaces are proposed along southbound Via Arriba and westbound Via Mercado.

Emergency Vehicle Access

An auto-turn analysis was used to confirm emergency vehicle access at the site access driveways of Hesperian Boulevard (study intersection #5) and Via Arriba (study intersections #8 and #10). Fire trucks driving southbound on Hesperian Boulevard turning right onto Via Mercado would cross over the centerline on Via Mercado. Fire trucks driving eastbound on Paseo Grande turning right onto Via Arriba would also cross over the centerline on Via Arriba. Single-unit trucks (or ambulances) driving southbound on Hesperian Boulevard and eastbound on Paseo Grande could make the right-turn onto Via Mercado and Via Arriba, respectively, without encroaching past the centerline. Neither fire trucks nor single-unit trucks are expected to encroach on the proposed sidewalks at any of the Project site access driveways.

Parking Circulation

The Project would meet the minimum dimension requirements for standard and compact stall dimensions at all surface parking lots. The 90-degree angled parking stalls along northbound Via Arriba provide a 9-foot width and 16-foot stall length; however, the sidewalk accommodates a 2-foot vehicle overhang, extending the effective parking stall length to 18-feet. The enclosed parking proposed for Building C also meets the minimum dimension requirements for enclosed parking spaces. About 23 percent of the total on-street and off-street parking supply proposed by the Project is designated as compact; the San Lorenzo Village Center Specific Plan allows up to 25 percent of the parking supply to be designated as compact. All 74 compact parking spaces would be provided within the off-street surface parking lots that are reserved exclusively for the residential units.

The Project site plan does not currently provide off-street loading spaces for retail/commercial uses or residential uses. Although not required by the Specific Plan, providing a minimum of one off-street or on-street loading space for retail/commercial uses is recommended. Not providing off-street loading zones within the residential uses is less of a concern as moving trucks will likely access available on-street or off-street parking for loading operations.

The Project site plan does identify an on-street loading space on northbound Via Arriba just south of Paseo Grande. The proposed loading space is 9 feet wide and 30 feet in length. The Project site plan does not specify if the loading space would be designated for commercial loading, passenger loading, or both. The proposed loading zone can only accommodate one passenger vehicle or one delivery truck less than 30 feet in length at a time. Although the proposed loading is within 40 feet of the Via Arriba/Paseo Grande intersection (#8), loading operations are not expected to occur frequently during the AM and PM peak hours; therefore, the location of the loading zone is not expected to impact traffic operations at the adjacent intersection. Section 17.52.820 of the Alameda County Municipal Code specifies that every required loading space shall be not less than 10 feet in width and 60 feet in length. Although loading spaces are not required for the Project, the proposed loading zone should be re-designed, if feasible, to meet the minimum loading space dimension requirements specified in the Alameda County Municipal Code without impacting the sight distance at adjacent intersections.

- **Traffic Recommendation--**Re-design the proposed loading zone on northbound Via Arriba south of Paseo Grande to be not less than 10 feet in width and 60 feet in length, if feasible. Re-designing the proposed loading zone should not impact the sight distance at adjacent intersections. Furthermore, designate the loading zone for commercial loading with up to a 20-minute limit for commercial loading activities and a 3-minute limit for passenger loading, enforced 24 hours a day, seven days a week.

The Project is not expected to cause significant impacts to vehicle and on-site circulation surrounding the Project site. Project site access and circulation could be improved if traffic recommendations are implemented.

f) Conflict with Alternative Modes

<u>2004 Specific Plan EIR</u>

The prior EIR found that the Specific Plan would encourage and facilitate transit use through enforcement of County transit-related policies and programs. The Specific Plan anticipates an improved environment for pedestrians within the planning area, with textured pavement crossings on Hesperian Boulevard, a more pedestrian-oriented retail area, and retention of the pedestrian-friendly configuration of blocks and storefronts within the Village and Theater areas. The EIR concluded there would be no significant negative impacts to pedestrians.

The Specific Plan also provides for continuance of the existing Class III bikeway routes that cross through the planning area and includes polices that are supportive of bicycle use. It identifies the different forms of transit service available within the planning area, including seven lines of the AC Transit bus system, some of which provide express buses to the Bayfair BART station and others provide direct access into downtown San Francisco. The Specific Plan EIR concluded that implementation of the current Specific Plan's policies and programs relative to encouraging, strengthening and facilitating pedestrian, bicycle and transit use would achieve beneficial environmental effects.

Project Analysis

Pedestrian Access and Circulation

The Specific Plan guidelines suggest that all interior street sidewalks should have a minimum width of 8 feet. Along Hesperian Boulevard, sidewalk widths should be a minimum of 12 feet with a landscape buffer along the project site frontage. The Project proposes a minimum sidewalk width of 8 feet with 4-foot wide tree planters spaced more than 30-feet apart along the Project frontage on Paseo Grande, both sides of Via Arriba, and on the north side of Via Mercado; however, the Project would provide a sidewalk width of 5 feet without tree planters along the south side of Via Mercado. Furthermore, the Project site plan does not show any wheel stops proposed for the 90-degree angled parking on the south side of Via Mercado, which would result in about a 2-foot parking overhang onto the sidewalk, reducing the effective sidewalk width to 3 feet when vehicles utilize the on-street parking spaces on Via Mercado.

The proposed site plan shows Hesperian Boulevard with a 8- to 17-foot width, including a landscaped buffer. The sidewalk width on the west side of Hesperian Boulevard adjacent to the proposed transit island is 8 feet, which is less than the suggested 12-foot minimum. Although this segment of the sidewalk width is less than the suggested minimum, the reduced sidewalk width was necessary to accommodate a Class 2 bicycle lane and transit island along southbound Hesperian Boulevard; the bicycle and transit improvements are also consistent with the planned improvements proposed as part of the Hesperian Boulevard Corridor Improvement Project. There are no proposed walkways along the internal drive-aisles, except between the Americans with Disabilities Act (ADA) parking spaces and the closest Project pedestrian access point.

The proposed site plan shows marked crosswalks at key locations, including at Project intersections and connections between ADA parking spaces and pedestrian facilities.

- **Traffic Recommendation***:* Provide a minimum sidewalk width of 8-feet along the south side of Via Mercado, if feasible. In addition, provide wheel stops at each on-street parking stall on the south side of Via Mercado to prevent the vehicle parking overhang along the proposed sidewalk.
- Provide pedestrian-scale lighting along all sidewalks such as the Project frontage on Hesperian Boulevard and Paseo Grande, and within the Project on Via Arriba and Via Mercado.

Traffic Recommendation: Provide marked crosswalks across the west and south approaches and ADA-compliant directional curb ramps at the southeast corner of the Paseo Largavista/Paseo Grande intersection (#7).

The site plan for pedestrian access does not conflict with adopted policies, plans, or programs regarding pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Impacts of the Project would be **less than significant**. The Project is not expected to cause significant impacts to vehicle and on-site circulation surrounding the Project site. Project site access and circulation could be improved if traffic recommendations are implemented.

Bicycle Access and Circulation

Required short-term bicycle parking for residential uses is one bike space per 25 units (7 spaces for 163 dwelling units), and two percent of the required auto parking for retail uses (2 spaces). Long-term bicycle parking requirement for multi-family residential uses is one space for every four units (41 spaces). Long-term bicycle parking is not required for the proposed retail space. The Project will provide 41 long-term bike parking spaces and 9 short-term spaces, meeting the County requirement.

Planned bicycle facilities along Hesperian Boulevard include Class II bicycle lanes based on Alameda County's Bicycle and Pedestrian Master Plan for Unincorporated Areas (2012). The proposed improvements to Hesperian Boulevard consider the planned Class II bicycle facilities. With these previously-planned improvements, the Project would have **less-than-significant** impacts to bicycle circulation. Project site access and circulation could be improved if traffic recommendations are implemented.

- **Traffic Recommendation**-- Ensure that proposed site improvements along the Project frontage on Hesperian Boulevard would not preclude the implementation of the Class II bicycle lanes planned as part of the Hesperian Boulevard Corridor Improvement Project.

Transit Access and Ridership

AC Transit currently provides transit service at one bus stop on the Project site frontage in the southbound direction on Hesperian Boulevard, just south of Paseo Grande. The existing stop has a bench and shelter. Alameda County staff are considering implementing a transit island at the existing bus stop on the Project site frontage as part of the upcoming Hesperian Boulevard Corridor Improvement Project. The transit island would provide a buffer between the future Class II bicycle lane and the bus stop on southbound Hesperian Boulevard. The Project site plan includes the provision of the planned far-side transit island along southbound Hesperian Boulevard at Paseo Grande. The Project Applicant will continue to coordinate with Alameda County and AC Transit staff to ensure that the proposed site improvements along the Project frontage on Hesperian Boulevard do not preclude the bus stop improvements planned as part of the Hesperian Boulevard Corridor Improvement Project.

The Project Applicant has indicated interest in providing private shuttle service for Project residents and employees between the Project site and the Bay Fair BART Station during the weekday AM and PM peak periods. The shuttle would be provided as an amenity to Project residents and employees, free of charge. Although the operating details for the shuttle are not currently available, if implemented, the Project applicant would operate a single shuttle during the weekday AM and PM peak periods with about 30-minute headways. The Project Applicant is also considering designating the proposed loading zone on northbound Via Arriba just south of Paseo Grande as the shuttle stop.

In general, implementing private shuttle service with connections to major transit centers can be an effective strategy for reducing the automobile commute mode share and increasing transit ridership of residents and employees of a mixed-use development. However, the Project site is currently served by high-quality transit service along Hesperian Boulevard: AC Transit currently operates Line 97 along Hesperian Boulevard, with the nearest stops located at the Hesperian Boulevard/Paseo Grande intersection (#3). Line 97 operates with 15-minute headways during the weekday AM and PM peak periods with connections to the Bay Fair BART Station to the north and the Union City BART Station to the south.

AC Transit, in partnership with Alameda County, the City of San Leandro, the City of Hayward and Union City, recently implemented the Line 97 Improvement Project; the improvements include the installation of a transit signal priority (TSP) system at all signalized intersections along the route to reduce transit delays in addition to a variety of bus stop improvements. Since the Project site is currently served by high-quality transit service, implementing a private shuttle with connections to the Bay Fair BART Station is not expected to substantially increase transit ridership among Project residents and employees. Implementing a private shuttle service is however expected to decrease the number of Project residents and employees that would otherwise use AC Transit to commute between the Project site and the Bay Fair BART Station. In lieu of implementing private shuttle service, the Project Applicant should consider participating in AC Transit's EasyPass program, by which the Project applicant and on-site employers, can purchase annual bus passes for residents and employees in bulk at a discount. The passes allow unlimited rides on all AC Transit buses.

- **Traffic Recommendation**-- In lieu of implementing private shuttle service, the Project Applicant should consider participating in AC Transit's EasyPass program, by which the Project applicant and on-site employers, can purchase annual bus passes for residents and employees in bulk at a discount. If the Project applicant prefers to implement the private shuttle service, the Project applicant should coordinate with Alameda County and AC Transit staff to ensure that shuttle operations do not impact AC Transit bus stop operations adjacent to the Project site and at the Bay Fair BART Station. Furthermore, if the Project applicant designates the proposed loading zone on northbound Via Arriba just south of Paseo Grande as the shuttle stop, the proposed loading zone should prohibit commercial and passenger loading operations during the weekday AM and PM peak periods, when the shuttle is in operation.

The Project will likely produce a small increase in transit usage among new residents and shoppers. By retaining and enhancing the AC Transit bus stop on southbound Hesperian Boulevard, the Project would have **no impact** on transit access.

In summary, the Project would not conflict with any plans, policies or programs intended to facilitate pedestrian, bicycle, or transit modes.

Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2004 Specific Plan EIR and the TIA conducted for the Project, implementation of the Project would not substantially increase the severity of any previously identified transportation or circulation impacts, nor would it result in any new significant transportation or circulation impacts that were not previously identified in these prior documents. No additional mitigation measures are required.

16. Utilities

Would the Project:	Equal or Less Severity of Impact as Previously Identified in 2004 Specific Plan EIR	Substantial Increase in Severity of Previously Identified Significant Impact in 2004 Specific Plan EIR	New Significant Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☑	☐	☐
b) Require or result in the construction of new water or wastewater treatment or distribution facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☑	☐	☐
c) Require or result in the construction of a new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☑	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☑	☐	☐
e) Result in a determination by the wastewater treatment provider that serves the project area that it does not have adequate capacity to serve the project area's projected demand in addition to the provider's existing commitments?	☑	☐	☐
f) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?	☑	☐	☐
g) Fail to comply with federal, state, and local statutes and regulations related to solid waste?	☑	☐	☐

a, b, e) Wastewater Treatment, Facilities

2004 Specific Plan EIR

As indicated in the Draft EIR, the main treatment plant for wastewater from the Specific Plan area has the capacity for the increment of daily treatment demand generated by the Specific Plan. The Oro Lomo

Sanitary District's (District) Sanitary Sewer System Capability Study and Master Plan does indicate, however, that there are potential capacity deficiencies in sewer lines that serve the site. Specifically, the prior EIR noted that the sewer lines that collect and convey wastewater from existing buildings in the Specific Plan area to the District's main trunk sewer lines in Grant Avenue and Bockman Road may require replacement and/or upsizing in order to comply with current design standards and to accommodate the additional wastewater flows that would result from the 580 new residential households in the area under the current Specific Plan.

The prior EIR noted that engineering studies required to make determinations about the adequacy of the existing facilities should ideally be done in the context of a specific development proposal so that precise aspects of any proposed development project within the Specific Plan area would be known and the specific parts of the wastewater system that would be affected by a proposed project could be identified and evaluated.

The cost of engineering studies of this type would be paid by the project developer. The results of any such studies would be provided to the Oro Loma District engineering staff for review. The Draft EIR recommended the following measure pertaining to wastewater water distribution pipelines:

- **Mitigation Measure IV.7.8: Sewer Pipeline Replacements or Upgrades**. If installation of new sewer lines or upsizing of the system is required, the developer shall construct the required improvements as part of the development. Any approved sewer system upgrades should be completed prior to connection to the District's sanitary sewer system.

Project Analysis

The Project's utility plan calls for construction of additional sanitary sewer infrastructure on the Project site, including two separate 6" sewer lines that would connect the Project to the existing sanitary sewer system: (1) ~350 linear feet (LF) of new sewer line under the proposed parking lot running north-south under the parking area west of Building C. This line connects to the existing sewer line along Paseo Grande and would also be fed by two new sanitary sewer manholes; (2)~ 150 LF of new sanitary sewer line that would connect Building A residences to the existing sewer line that runs north-south under Via Arriba. The Project would also install connecting lines from proposed buildings to the existing system: one under the proposed parking garage connecting to sewer line under Via Arriba, and one from the Building A retail to the existing line under Paseo Grande.

The Oro Loma Sanitary District wastewater treatment plant, which serves the Project site, is located less than 2 miles from the Project site. It has a permitted capacity of 20 mgd and estimates a Non-Recycled Wastewater Flow of 14.24 million gallons per day (MGD) for 2020 (equal to 5,198 MGY).[55] For the purposes of conservative (worst case) estimation of impacts, it is assumed that 100% of the water demand generated by the Project will ultimately become wastewater conveyed to the wastewater treatment plant. Based on this assumption and the Project water demand estimated in Table 20, the Project would generate an annual wastewater flow of 11.18 MGY. This represents 0.2% of the projected

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[55] EBMUD Urban Water Management Plan 2015. Table 6-2. Available at http://www.ebmud.com/water-and-drought/about-your-water/water-supply/urban-water-management-plan/. Accessed April 9, 2018.

2020 wastewater flows for the Oro Loma District. Therefore, impacts on wastewater treatment requirements would be **less than significant** for the following reasons: (1) the Project is well within the residential and commercial development capacity analyzed in the Specific Plan, which found less than significant impacts; (2) the Project's estimated wastewater flow of 11.18 MGY represents less ~6% of the 182.5 MGY growth in flows projected for the District between 2015 and 2020[56]; and (3) the Project's estimated wastewater flows represent 0.2% of the District's estimated future flows of 5,198 MGY in 2020.

Table 20. Estimated Project Water Demand

Land Use	Number of units	Average Daily Demand/unit (Gallons)	Potential Daily Demand (gpd)	Estimated Annual Demand (mgy)
Multifamily residential	163 households	170	27,710	10.1
Retail average*	28 employees	128[57]	3,584	1.08
TOTAL			**31,294**	**11.18**

*using 300-day year for retail.

Sources:

Housing: Personal email communication with Priyanka Jain, Senior Civil Engineer, EBMUD April 29, 2018
Retail: Pacific Institute, "Waste Not, Want Not: the Potential for Water Conservation in California", Appendix E: Details of Commercial Water Use and Potential Savings, by Sector. 2003. Available at https://www.pacinst.org/reports/urban_usage/appendix_e.pdf. Accessed April 11, 2018.

Mitigation Measure IV.7.8 would apply as a Condition of Approval to the Project. This measure would further ensure that the impacts to wastewater treatment requirements of the Bay Area Regional Water Quality Control Board would be **less than significant**. No additional wastewater treatment facilities would be required to accommodate the Project's needs.

c) Stormwater Drainage

2004 Specific Plan EIR

The prior EIR found that the existing system of catch basins and underground storm drain pipes would be adequate to serve the new development under the Specific Plan. The existing area is either paved with asphalt parking lots, or is improved with existing commercial buildings. The only unpaved surfaces within the Specific Plan area consist of minor landscaped areas and street trees. Therefore, essentially

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[56] Ibid.

[57] Estimate based on water demand per employee for restaurants and retail. Retail stores use water in kitchens and restrooms and for cooling and irrigation. Estimate of total demand is based on a 300-day year. The total estimate for the Project's retail water demand assumes that 2000sf (16%) of total retail space would be occupied by a restaurant (SIC Code 58), which uses ~199 gpd/employee; the rest would be miscellaneous (non-grocery store) retail (SIC codes 53,55,56,57,59), which uses 114 gpd/employee. Estimated employees based on # employees per square foot of retail type.

100 percent of the Specific Plan area consists of impervious surfaces. All rainfall within the San Lorenzo Village Center therefore becomes storm water run-off from the area, most of which flows to the catchment basins and is conveyed by gravity flow in underground pipes to the Bockman Canal.

Implementation of the Specific Plan would not be likely to result in an increase in the amount of impervious surface or the amount of surface run-off compared with existing conditions. For this reason, there would be no impact on the County's storm drain and flood control system as a result of the Plan. However, more detailed examination of the condition of specific flood control pipes and conveyance facilities that would serve new development within the planning area could identify where new pipes or other facilities would need to be built or installed to replace existing parts of the system. In considering specific sites within the Project area for new development and construction of new buildings, in accordance with the Plan, engineering staff of the Flood Control and Water Conservation District should make an evaluation of the affected parts of the system to determine whether new or upgraded pipes would be needed in order to maintain the District's standards.

The prior EIR recommended the following mitigation measure pertaining to storm drainage facilities which would also apply to the current Specific Plan:

- **Condition of Approval IV.7.9: Incorporate Needed Improvements into Project Development Plans.** All plans for new construction under the Specific Plan should be referred to the Alameda County Flood Control and Water Conservation District for review and analysis to determine whether the existing storm drain facilities would be adequate to serve the proposed project and whether new or upgraded facilities would be needed. The applicant for any such building permits would be responsible for complying with the requirements of the Flood Control and Water Conservation District.

Project Analysis

The Project will increase the amount of impervious surface at the site by 42,384 sf. The proposed intensity of residential development—at 31.8 dwelling units per acre--is higher than the average density of 19 dwelling units per acre in the Specific Plan. As required by the Condition of Approval identified in the prior EIR, the Project's construction plans should be referred to the Alameda County Flood Control and Water Conservation District for review and analysis to determine whether the existing storm drain facilities would be adequate to serve the proposed Project and whether new or upgraded facilities would be needed.

The Project's design also includes new storm water collection and drainage infrastructure that connects to existing storm water infrastructure at several points around the perimeter of the Project site:

- ~140 LF of new 15" storm line connecting to existing 15" line at the corner of Paseo Grande and Paseo Largavista;
- ~350 LF of new storm lines (12", 10", and 8") along Via Arriba, connecting to existing 15" line at Paseo Grande at Via Arriba; and
- Connections along the Hesperian Blvd side of the Project:
    - ~220 LF of 15" and 10" storm line connecting to existing line south of Building A
    - 6" storm line between Building A and Building B connection to existing line; and

    - 6” storm line just north of the relocated Via Mercado connecting to existing line.

Therefore, with the site design and source control measures identified in Section 9 Hydrology and Water Quality, construction of utility infrastructure, and the implementation of erosion control measures in the approved SWPPP, the Project would not require or result in the construction of a new storm water drainage facilities or expansion of existing facilities. The Project would result in **less-than-significant** impacts to storm water system capacity.

d) Water Supply

<u>2004 Specific Plan EIR</u>

The Draft prior EIR analyzed the potential increase in water consumption that would result from the possible development of up to 850 residential units in the Specific Plan area. Based on an estimated household consumption of approximately 250 gallons per day, the Draft Specific Plan was estimated to generate an increased demand of approximately 212,500 gallons per day. A request for a Water Supply Assessment was submitted to EBMUD pursuant to §10910 of the California Water Code. EBMUD’s response, which is set forth in Appendix B of the Draft EIR, states, in pertinent part:

> Pursuant to Section 10910-10915 of the California Water Code, the project meets the threshold requirement for an assessment of water supply availability based on the Specific Plan limit of 850 new residential units. However, pursuant to Section 66473.7(b)(i) of the Government Code, the Specific Plan area is already urbanized and therefore not subject to a written verification of sufficient water supply.
>
> “The water demands for redevelopment of the San Lorenzo Village Center Specific Plan Area are accounted for in the District’s water demand projections as published in the District’s 2000 Urban Water Management Plan. The District’s water demand projections account for anticipated future water demands within District service boundaries and for variations in demand-attributed changes in development patterns. Alameda County’s estimated demand of 212,500 gallons per day is consistent with the District’s demand projections for the area.

Thus, because the Specific Plan area is within EBMUD’s existing service area, and because the Plan would become part of the Alameda County General Plan, EBMUD indicated it could serve the proposed future development without expansion of its existing water rights or supply capacity, or expansion or upgrading of its existing water treatment facilities. Therefore, the original Specific Plan was found not to result in a significant impact on water resources.

Under the revised Specific Plan, the potential development of residential units was reduced to 580 units from 850 units in the Draft Plan. Therefore, the level of increase as a result of the current Specific Plan would be considered to have even less of an impact on the need for additional water supply or water treatment facilities. However, the Draft EIR recommended the following mitigation measure/condition of approval pertaining to water supply impacts which would also apply to the current Specific Plan:

- **Condition of Approval IV.7.6**: **Water Conservation Requirements.** Prudent planning practices and adherence to adopted water conservation policies and guidelines of Alameda County and EBMUD require that all land use approvals for future development within the planning area be subject to the following water conservation requirements:
    - Compliance with the Landscape Water Conservation Guidelines of the Alameda County

Community Development Agency.

- All irrigated landscape shall meet a landscape water budget not exceeding 80 percent of reference evapotranspiration (ET). The ET for San Lorenzo is 36 inches; 80 percent of 36 is 28.8 inches of irrigation per year. This represents an upper-limit, not-to-exceed amount of annual irrigation. Project sponsors for development within the planning area are encouraged to design projects in such a way that requires even less demand than this upper-limit amount for landscape irrigation.
- All applications for development approvals following adoption of the Specific Plan shall include a description of how landscape improvements and design concepts will employ low water-use plants and irrigation systems designed to water pants efficiently and minimize over spray and runoff.
- All future development within the planning area shall be subject to the EBMUD Water Service Regulations at time of application for service.
- All landscaping plans shall call for maximum use of drought resistant plants, maximum use of inert materials, and minimal use of turf areas for ornamental purposes. The County of Alameda shall review all proposed landscaping plans for conformity to this directive.
- All landscaping plans shall specify use of new ET based irrigation timers for automatic irrigation systems and the use of drip irrigation for irrigating planting areas.
- All construction plans shall specify use of water efficient appliances (e.g. horizontal-axis clothes washers) and other devices in and around the residences to further water conservation practices.
- To the extent feasible, all plans for future construction within the planning area shall include provisions for sub-metering of landscape irrigation for common areas.

Implementation of the foregoing water conservation measures would be expected to reduce overall water consumption in the Specific Plan area by 20 percent.

Water Distribution Facilities

As indicated in the prior EIR, the revised Specific Plan could necessitate pipeline improvements to meet water service and fire flow requirements for those portions of the Specific Plan area proposed for new construction or redevelopment. This is a potentially significant impact.

The prior EIR recommended the following mitigation measure pertaining to water distribution pipelines which would also apply to the Specific Plan:

- **Mitigation Measure IV.7.7: Pipeline Replacements or Upgrades**. Determinations regarding the need for upgraded or replacement of existing underground transmission facilities would be made by EBMUD at the time subdivision maps or building permit applications for new development within the planning area are circulated for public or agency review, or at such other time as requests for water service are filed with EBMUD. Implementation of pipeline replacement or upgrading shall be done in accordance with EBMUD's current engineering standards and requirements.

Implementation of the foregoing mitigation would reduce the impact to a level of **less than significant**.

Project Analysis

Table 19 shows that the Project's residential and retail uses are expected to require a total of 31,294 gpd of water. EBMUD's Planning Level of Demand for water in 2020 is estimated to be 217 mgd.[58] Assuming the Project is fully operational in 2020, the Project's water demand would represent approximately 0.0014 percent of the total daily water demand in the EBMUD service area. This would not represent a significant portion of overall water demand and EBMUD could accommodate the Project with existing supply sources. Since the development associated with the Project was contemplated as part of the Specific Plan, future development at the Project site is included in the growth projections in the UWMP. Through the UWMP, EBMUD has demonstrated that it would accommodate the Project. The analysis above is presented to illustrate the small percentage of overall demand generated by the Project. Impacts related to water demand would be **less than significant**.

Water Treatment Facilities

EBMUD provides 100 percent of the water for Alameda County. Alameda County is served by the Orinda Water Treatment Plant (WTP) and the Upper San Leandro WTP. The Orinda WTP has the largest output, with a maximum capacity of 200 mgd. The Project would require approximately 44,530 gpd of treated water, which is 0.02 percent of the total capacity at the Orinda WTP. This amount is not significant enough to require the expansion of existing water treatment facilities. Therefore, implementation of the Project would not require the expansion of existing water treatment facilities or the construction of new facilities. The Project would have a **less-than-significant** impact with regard to existing water treatment facilities.

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[58] EBMUD, Urban Water Management Plan, 2015. Table 4-1, p. 52. Available at http://www.ebmud.com/water-and-drought/about-your-water/water-supply/urban-water-management-plan/. Accessed April 16, 2018.

f) Solid Waste Disposal

2004 Specific Plan EIR

The prior EIR concluded that, given that the existing level of solid waste generated by businesses in the Specific Plan area represents only a very small fraction of the total solid waste received at the current landfill, the net increase attributable to the land uses called for in the Specific Plan would not be likely to result in a need to expand the current solid waste disposal facility in a manner that would cause significant environmental effects.

Project Analysis

Waste generated by the Project would be collected by Waste Management and hauled to either the Altamont Landfill Resource Recovery Facility (ALRRF) or the Vasco Road Sanitary Landfill (VRSL). ALRRF is permitted to receive 11,150 tons of refuse per day, or approximately 4.2 million tons per year.[59] VRSF is permitted to receive 2,518 tons per day, or approximately 919,100 tons per year, and has a remaining capacity of over 5.9 million cubic yards[60]. Solid waste generated by operation of the Project would represent approximately 0. 005 percent of the permitted throughput of ALRRF and approximately 0.003 percent of remaining capacity at VRSL. Accordingly, both ALRRF and VRSL would have sufficient capacity to serve the Project. Therefore, the Project would be served by a landfill with sufficient capacity, resulting in a **less-than-significant** impact.

Table 21 displays the estimate solid waste generation for the residential and retail uses of the Project.

Table 21. Estimated Project Solid Waste Generation

Land Use	Number of units	Solid Disposal Waste Generation Rate	Potential Solid Waste (Tons/yr)
Multifamily residential	163 households	0.74 (Tons per dwelling unit per year)*	121
Retail average	20% restaurant/75% other (non-grocery) retail	Rates vary by commercial use (20 restaurant employees, 20 non-grocery retail employees, plus 5 FTE Project employees)**	96
TOTAL			**217**

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[59] Cal Recycle, Facility Site/Summary Details. Available at http://www.calrecycle.ca.gov/SWFacilities/Directory/01-aa-0009/Detail/. Accessed April 11, 2018.

[60] Estimated remaining capacity as of August 2018 is based on an average disposal rate of 80,700 cy per month, which is the disposal rate from March 2014, when the Manor Housing IS/MND estimate was taken, to October 2016, the date of the most recent available estimate of remaining capacity. This rate was then applied to the 18 months of operation since October, 2016 to yield current remaining capacity.

Sources:
**Housing*: Cal Recycle, Residential Waste Stream by Material Type.
https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams. Accessed April 11, 2018.
***Retail*: Cal Recycle, Business Group Waste Stream Calculator. Available at
https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupCalculator. Accessed April 17, 2018.

Conclusion

Based on an examination of the analysis, findings and conclusions of the 2004 Specific Plan EIR, implementation of the Project would not substantially increase the severity of any impacts related to utility demands as identified in the prior EIR, nor would it result in any new significant impacts related to utility demands that were not identified in the prior EIR. There is no new information that was not known and could not have been known at the time the prior EIR was certified that shows that the Project would have more, or more severe, significant effects on utility services in the surrounding areas. Impacts to utilities would be **less than significant**.

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References

Alameda County, C.3 Technical Guidance Manual. Available at: https://www.cleanwaterprogram.org/c3-guidance-table.html. Accessed April 5, 2018.

Alameda County Fire Department, website. Available at https://www.acgov.org/fire/about/index.htm. Accessed April 10, 2018.

Alameda County General Ordinance Code. Available at https://library.municode.com/ca/alameda_county/codes/code_of_ordinances.

Alameda County (Unincorporated Areas) Community Climate Action Plan. 2014. Available at http://www.acgov.org/cda/planning/generalplans/documents/110603_Alameda_CCAP_Final.pdf. Accessed April 4, 2018.

Brill, Fred Z., Superintendent, San Lorenzo Unified School District. Personal e-mail communication. April 10, 2018.

California Department of Forestry, Fire Hazard Severity Zone Map. Available at http://www.fire.ca.gov/fire_prevention/fhsz_maps_alameda. Accessed April 4, 2018.

California Department of Transportation. Available at http://www.dot.ca.gov/trafficops/census/volumes2011/Route505-980.html. Accessed May 23, 2018.

FHWA, Highway Traffic Noise Analysis and Abatement Policy and Guidance. Available at: https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/polguide/polguide02.cfm. April 12, 2018.

California Geological Survey, Earthquake Zones of Required Investigation for San Leandro Quadrangle. Available at http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/SAN_LEANDRO_EZRIM.pdf. Accessed March 30, 2018.

Cal Recycle, Facility Site/Summary Details. Available at http://www.calrecycle.ca.gov/SWFacilities/Directory/01-aa-0009/Detail/. Accessed April 11, 2018.

Cal Recycle, Residential Waste Stream by Material Type. Available at https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams. Accessed April 11, 2018.

Hayward Executive Airport Land Use Compatibility Plan. P. B-8. Prepared by ESA Airports. Available at http://www.acgov.org/cda/planning/landuseprojects/documents/Draft_HWD_ALUCP_091510.pdf. Accessed April 4, 2018.

Hope, Andrew. 2000. P-01-010742, San Lorenzo Village Historic District. Prepared as part of the Historic Architecture Survey Report for the Widening of I-238 between I-580 and I-880, in Hayward and San Lorenzo, Alameda County. Prepared by Caltrans District 4. July 2000. Oakland, California.

Hope, Andrew. 2005. Evaluating the Significance of San Lorenzo Village, A Mid-20th Century Suburban Community, CRM Journal Summer 2005, p. 50-61 San Lorenzo Senior Housing Project, Initial Study/Mitigated Negative Declaration, April 2014. Available at https://www.acgov.org/cda/planning/landuseprojects/documents/San%20Lorenzo%20Senior%20Housing%20ISMND.pdf.

Oakland International Airport Land Use Compatibility Plan, 2010. Available at https://www.acgov.org/cda/planning/landuseprojects/documents/Draft_OAK_ALUCP_091510.pdf. Accessed April 6, 2018.

San Lorenzo Village Center Specific Plan, October 2004. Available at https://www.acgov.org/cda/planning/generalplans/documents/SanLorenzoSpecPlancombined.pdf.

San Lorenzo Village Center Specific Draft EIR. June 2003.

San Lorenzo Village Center Specific Final EIR. June 2004.

U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates. Available at https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed April 9, 2018.

U.S. EPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973. Available at https://nepis.epa.gov/Exe/ZyNET.exe/2001517N.txt?ZyActionD=ZyDocument&Client=EPA&Index=Prior%20to%201976&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C70THRU75%5CTXT%5C00000005%5C2001517N.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r105g16/r105g16/x150y150g16/i600&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=20&ZyEntry=246&slide. Accessed April 12, 2018.

U.S. Fish & Wildlife Service, Critical Habitat Mapper. Available at http://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.

U.S. Fish & Wildlife Service, National Wetlands Inventory Mapper. Available at https://www.fws.gov/wetlands/data/mapper.html.

U.S. Green Building Council, 2008. Building Area by Employee per Business Type. Available at https://www.usgbc.org/Docs/Archive/General/Docs4111.pdf. Accessed April 9, 2018.

Attachment A

Air Quality and Greenhouse Gas Analysis

VILLAGE GREEN MIXED-USE MULTI-FAMILY PROJECT

Air Quality Assessment

San Lorenzo, California

May 21, 2018

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INTRODUCTION

This report addresses air quality impacts and greenhouse gas (GHG) emissions associated with the Village Green project proposed at the southwest corner of the intersection of Paseo Grande and Hesperian Boulevard in San Lorenzo, California. The project proposes to construct 163 multi-family residential units in 3- to 4-story buildings and approximately 12,184 square feet (sf) of retail area.

Air quality impacts associated with San Lorenzo Village Center Specific Plan/Town Center Project were addressed in Section IV: Impact Analysis – Specific Plan, Page 31-40 of the Draft Environmental Impact Report (DEIR). The project would be consistent with the development proposed under the Specific Plan, and it follows that a project that falls within the maximum development capacity will not have new or more severe air quality impacts than were previously analyzed. Impacts and mitigation measures pertaining to the proposed specific plan development were identified in the DEIR. The air quality impacts and GHG emissions would be associated with site preparation/grading, construction of the new building and infrastructure, and operation of the project. Air pollutant and GHG emissions associated with construction and operation of the project were predicted using models. In addition, the potential construction health risk impact to nearby sensitive receptors and the impact of existing toxic air contaminant (TAC) sources affecting the proposed residences were evaluated.

The San Lorenzo Village Center Specific Plan/Town Center Project DEIR identified significant impacts with respect to construction period emissions (Impact IV.4.2). Projects constructed under the Specific Plan are subject to mitigation measures contained in the DEIR. Specifically, Mitigation Measure IV.4.2A and IV.4.2B affects construction TAC emissions by requiring dust abatement programs and diesel fuel reduction programs:

Mitigation Measure IV.4.2A: Implementation of Site-Specific Dust Abatement Programs. Each development project or development phase pursuant to implementation of the Specific Plan shall be required to demonstrate compliance with all applicable County regulations and operating procedures prior to issuance of building or grading permits, including standard dust control measures. The effective implementation of dust abatement programs, incorporating all of the following dust control measures, would reduce the temporary air quality impact associated with construction dust.

- All active construction areas shall be watered using equipment and staff that are provided by the project applicant or prime contractor, as needed, to avoid visible dust plumes. Appropriate non-toxic dust palliative or suppressant, added to water before application, may be used.
- All trucks hauling soil, sand and other loose materials shall be covered or shall maintain at least two feet of freeboard.
- All unpaved access roads, parking areas and construction staging areas shall be either paved, watered as necessary to avoid visible dust plumes, or subject to the application of (non-toxic) soil stabilizers.
- All paved access roads, parking areas and staging areas at the construction site shall be swept daily with water sweepers.

- If visible soil material is carried onto adjacent public streets, these streets shall be swept daily with water sweepers.
- All stockpiles of debris, soil, sand or other materials that can be blown by the wind shall either be covered or watered as necessary to avoid visible dust plumes.
- An off-pavement speed limit of 15 miles per hour for all construction vehicles shall be incorporated into the construction contract and enforced by the prime contractor.
- All inactive portions of the project site (those areas which have been previously graded, but inactive for a period of ten days or more) shall be watered with an appropriate dust suppressant, covered or seeded.
- All earth-moving or other dust-producing activities shall be suspended when the above dust control measures prove ineffective in avoiding visible dust plumes during periods of high winds. The wind speed at which this suspension of activity will be required may vary, depending on the moisture conditions at the project site, but suspension of such activities shall be required in any case when the wind speed exceeds 25 miles per hour.

Mitigation Measure IV.4.2B: Implementation of Site-Specific Diesel Reduction Programs. Each development project or development phase within the planning area shall be required to demonstrate compliance with all applicable County regulations and operating procedures prior to issuance of building or grading permits, including standard diesel reduction efforts.

- Diesel powered equipment shall be maintained in good working condition, with manufacturer-recommended mufflers, filters, and other equipment.
- Diesel powered equipment shall not be left inactive and idling for more than ten minutes, and shall comply with applicable Bay Area Air Quality Management District (BAAQMD) rules.
- Use alternative fueled construction equipment.
- Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use.

This report evaluates the project’s construction air quality impacts, with respect to air pollutant emissions and TAC exposure at nearby sensitive receptors (e.g., existing residences). In addition, this assessment describes the effects of nearby TAC sources upon future residents occupying the project site. Finally, greenhouse gas (GHG) emissions are addressed in this report.

SETTING

The project is located in western 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 (NOx). 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 or Federal programs.

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. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[1] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has

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[1] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.

recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[2] *Attachment 1* includes detailed community risk modeling methodology.

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 would be residences directly west of the site along Paseo Largavista and residences directly south of the site along Hesperian Boulevard and Via Arriba.

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, where were 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). 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). Because the Supreme Court's holding concerns the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment), and not the science behind the thresholds, the significance thresholds contained in the CEQA Air Quality Guidelines are applied to this project. BAAQMD's updated 2017 *CEQA Air Quality Guidelines* are the most recent guidance and address the Court's ruling. This guidance and the recommended significance thresholds were applied to this study.

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[2] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

Table 1. Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
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	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
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.			

Impacts and Mitigation Measures

Impact 1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

The Project is located in the Alameda County which is in the San Francisco Bay Area Air Basin. The Project is in an area currently designated nonattainment for the State 1-hour and 8-hour ozone standards, nonattainment for the State 24-hour and annual PM_{10} standards, and nonattainment for the State annual $PM_{2.5}$ standard. It is also designated as nonattainment for the national 8-hour ozone standard and nonattainment for the national 24-hour $PM_{2.5}$ standard. To meet planning requirements related to these standards, the BAAQMD has developed a regional air quality plan that is periodically updated. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[3] The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land Use Planning affects vehicle travel, which in turn affects region-wide emissions of air pollutants and GHGs. A significant impact would occur if a project conflicted with the Plan by not being consistent with the

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[3] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

population-growth and vehicle miles traveled assumptions of the Plan or if the project obstructed implementation of plan control measures.

The proposed project is part of the San Lorenzo Village Center Specific Plan/Town Center Project, in which the DEIR analysis found that the Plan would be inconsistent with the 1997 Clean Air Plan in regard to projections of population and vehicle miles traveled. However, with the implementation of transportation systems management (TSM) strategies as recommended by the BAAQMD and the construction mitigation measures, described later in this report, the Plan would then be consistent with Clean Air Plan. The TSM strategies would encourage urban infill mixed-use development with access to local and regional transit options, such that the amount of vehicle trips generated by such a project would be substantially reduced through pedestrian, bicycle and transit usage and internal trip capture as multiple uses will be located conveniently near each other. Mixed-use, transit-oriented growth, such as the Project, would generate fewer trips than growth elsewhere without these characteristics; thereby, supporting the goal to balance trip growth with population growth. The Final (Revised) Specific Plan EIR that analyzed 450 units in the combined Specific Plan subareas of 2,4, and 5A-5D, with the flexibility to shift units between subareas as long as the total of 450 was not exceeded. There has only been one project built or entitled since the Specific Plan was approved: a 77-unit housing project (in subarea 2). Therefore, growth with the Village Green Project would not exceed the growth assumptions evaluated in the Specific Plan EIR.

The Specific Plan was also found to support the goals of the Clean Air Plan, including applicable control measures, and would not disrupt or hinder implementation of any Clean Air Plan control measures. Since the Project is consistent with and part of the Specific Plan and plans to implement the TSM strategies and construction mitigation measures, it too would not conflict with the Clean Air Plan. As a result, the Project would not conflict with or obstruct implementation of the Plan, and this impact would be *less-than-significant*.

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)?

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 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as *Attachment 2*.

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 were input into CalEEMod, which included: 163 dwelling units entered as "Apartment Mid Rise," 9,500 sf as "Strip Mall," 2,000 sf as "Fast Food Restaurant w/o Drive Thru," 180 spaces as "Parking Lot," and 50 spaces as "Enclosed Parking with Elevator" on 5.12 acres. In addition, 25,000 sf of building demolition was entered into the model. *Attachment 2* includes the CalEEMod modeling output.

The construction schedule assumed that the project would be built out over a period of approximately 15 months, beginning in January 2019. Based on the CalEEMod default assumptions, there were an estimated 320 construction workdays. Average daily emissions were computed 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, predicted the construction period emissions would not exceed the BAAQMD significance thresholds.

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 Measures IV.4.2A and IV.4.2B* would implement applicable BAAQMD-recommended best management practices.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	1.6 tons	3.6 tons	0.2 tons	0.2 tons
Average daily emissions (pounds)[1]	10.3 lbs./day	22.3 lbs./day	1.2 lbs./day	1.1 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 320 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 for the construction period modeling.

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 late 2021. Emissions associated with build-out later than 2021 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 13-percent reduction for walk/bike/nearby transit for each apartment, coffee shop, and shopping center land use, the 3-percent reduction for internalization for each land use, and the 44-percent adjustment for trip pass-bys for the coffee shop and shopping center land use. For each land use type, the forecasted daily trip rate with trip reductions applied was divided by the quantity of that land use to identify the weekday daily trip rate. The Saturday and Sunday trip rates were assumed to be the weekday rate adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips. The default trip lengths and trip types specified by CalEEMod were used with the exception of the coffee shop use. Customer trip lengths for the coffee shop were set to two miles since there are other coffee shops in the area, such that customers are not likely to travel more than two miles to this particular shop.

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Given that the project would likely not be constructed prior to 2020, the recently approved Title 24 building standards for new residential buildings are assumed. This would reduce energy use by 30 percent through the construction of more energy efficient buildings and the installation of solar photo voltaic systems.

Indirect emissions from electricity were computed in CalEEMod. The model 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.[4]

Other Inputs

Default model assumptions for emissions associated with solid waste generation use were applied to the project. Water/wastewater use were changed to 100% aerobic conditions to represent wastewater treatment plant conditions. In the Area sources input, hearth use was changed to eliminate all wood fireplaces and stoves and the natural gas fireplaces was increased to include the number wood burning fireplaces.

Existing Uses

A CalEEMod model run was developed to computed emissions from use of the existing building as if it was operating in 2021. Inputs for this modeling scenario included a 5,000 sf of "Strip Mall" retail space and 68,000 sf of "Parking Lot" parking space to represent the existing uses and applied to the modeling in the same manner described for the proposed project.

As shown in Table 3, operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact.

Table 3. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2021 Project Operational Emissions (*tons/year*)	1.5 tons	3.7 tons	1.0 tons	0.3 tons
2021 Existing Use Emissions (*tons/year*)	0.1 tons	0.3 tons	0.1 tons	<0.1 tons
Net Annual Emissions (*tons/year*)	1.4 tons	3.4 tons	0.9 tons	<0.3 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	***No***	***No***	***No***	***No***
Net Annual Emissions (*lbs/day*)	7.7 lbs.	18.6 lbs.	4.9 lbs.	<1.6 lbs.
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	***No***	***No***	***No***	***No***

Notes: [1] Assumes 365-day operation.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

As discussed under Impact 1, the project would have emissions less than the BAAQMD thresholds. 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

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[4] Pacific Gas & Electric, 2015. *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*. November.

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 BAAQMD screening criteria and, thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.[5] The project would not cause the violation of an air quality standard or worsen an existing violation of an air quality standard. This would be a *less-than-significant* impact.

Impact 4: Expose sensitive receptors to substantial pollutant concentrations?

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 residents that are sensitive receptors. In addition, temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. Community risk impacts are addressed by increased predicting lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The methodology for computing community risks impacts is contained in *Attachment 1.*

Operational Community Risk Impacts

Operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. No stationary sources of TACs, such as generators, are proposed as part of the project. The project would introduce new sensitive receptors to the area in the form of future residences.

A review of the area indicates that Hesperian Boulevard and one stationary source permitted by BAAQMD are within 1,000 feet of the site and can adversely affect new residences. Since initial screening computations indicate increased cancer risks at the project dwelling units from Hesperian Boulevard would exceed significance thresholds, refined modeling was conducted. Permitted stationary sources of TACs were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool. Attachment 3* includes the screening community risk calculations from sources affecting the project.

Hesperian Boulevard TAC Impacts

Since screening computations indicate increases in excess cancer risk at the project dwelling units closest to Hesperian Boulevard that would exceed significance thresholds, a refined analysis of the impacts of TACs and $PM_{2.5}$ to new sensitive receptors is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations from Hesperian Boulevard. Refined modeling of local roadways

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[5] For a land-use project type, 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.

predicts lower and more accurate results, because project specific information is used in the modeling. This includes roadway orientation with respect to receptors (i.e., where dwelling units would be located with respect to traffic), emission estimates (i.e., based on traffic speeds and traffic mix), and meteorological conditions near the project. Based on the traffic report for this project the ADT for Hesperian Boulevard was calculated as 27,000 annual average vehicles per day. Truck volumes on Hesperian Boulevard were estimated based on the BAAQMD-recommended truck percentage of 4.09 percent for non-highway roads in Alameda County.[6] Approximately 67 percent of the truck traffic was assumed to be medium-duty trucks (i.e., delivery type trucks) and the remainder was assumed to be heavy-duty trucks.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on Hesperian Boulevard using the CARB EMFAC2014 emission factor model and the calculated traffic mix. DPM emissions are projected to decrease in the future and are reflected in the EMFAC2014 emissions data.

Residential occupation of the project was assumed to begin in 2021or later. In order to estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating increased cancer risks to new residents from traffic on Hesperian Boulevard, the EMFAC2014 model was used to develop vehicle emission factors for the year 2020. Year 2020 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (30 years), since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions will decrease in the future. Default EMFAC2014 vehicle model fleet age distributions for Alameda County were assumed. Average hourly traffic distributions for Alameda County roadways were developed using the EMFAC model,[7] which were then applied to the average daily traffic volumes to obtain estimated hourly traffic volumes and emissions for Hesperian Boulevard. An average travel speed of 35 mph was used for all hours except two hours in the morning and evening peak periods. Average travel speeds during those hours were assumed to be 25 mph between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m.

Emissions of total organic gases (TOG) were also calculated for 2020 using the EMFAC2014 model. These TOG emissions were then used in modeling the organic TACs (i.e., TACs associated with motor vehicle exhaust and evaporative emissions). TOG emissions from exhaust and for running evaporative loses from gasoline vehicles were calculated using EMFAC2014 default model values for Alameda County along with the traffic volumes and vehicle mixes.

$PM_{2.5}$ emissions for vehicles traveling on Hesperian Boulevard were modeled using the same basic approach that was used for assessing TAC emissions. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire

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[6] Bay Area Air Quality Management District (BAAQMD), 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0. May 2011.

[7] The Burden output from EMFAC2007, CARB's previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2011 does not include Burden type output with hour by hour traffic volume information.

and brake wear and from re-entrained roadway dust were included in these emissions. The assessment involved, first, calculating $PM_{2.5}$ emission rates from traffic traveling on the roadway. These emissions were calculated using the EMFAC2014 model and traffic volumes and were calculated in the same manner as discussed above. $PM_{2.5}$ re-entrained dust emissions from vehicles traffic were calculated using CARB emission calculation procedures.[8]

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD model, which is recommended by the BAAQMD for this type of analysis. North and south-bound traffic on Hesperian Boulevard within about 1,000 feet of the project site was evaluated with the model. A five-year data set (2009-2013) of hourly meteorological data from the Oakland International Airport prepared by CARB for use with the AERMOD model was used. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations.

The modeling used receptors spaced about every 8 meters (26 feet) in the proposed new residential areas. Receptor heights of 1.5 meters (4.9 feet) and 5.2 meters (17.1 feet) were used to represent the breathing heights of residents on the first and second floor levels, respectively. Figure 1 shows the project site area, roadway segments modeled and residential receptor locations on the first and second floor levels used in the modeling.

The maximum modeled TAC and $PM_{2.5}$ concentrations from Hesperian Boulevard occurred at first-floor receptors (in Building A) in the northeast portion of the project residential area closest to Hesperian Boulevard. TAC and $PM_{2.5}$ concentrations from Hesperian Boulevard traffic at the project site will decrease with distance from the roadway and with increasing height (floor levels).

Computed Cancer and Non-Cancer Health Impacts

The maximum increased lifetime cancer risk and annual $PM_{2.5}$ concentrations for new residents at the project site are shown in Table 4 and were computed using modeled TAC and $PM_{2.5}$ concentrations and the BAAQMD recommended methods and exposure parameters described in *Attachment 1*. The maximum cancer risks, $PM_{2.5}$ concentration, and non-cancer health impacts (hazard index) are below their respective BAAQMD significance thresholds. The location of the maximally exposed individual (MEI) where the maximum TAC and $PM_{2.5}$ impacts occurred is shown in Figure 1.

Table 4. Maximum Health Risk Impacts from Hesperian Boulevard Traffic

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Chronic Hazard Index
Hesperian Boulevard 1st Floor Maximum Impact:	2.7	0.21	<0.01
2nd Floor Maximum Impact:	1.7	0.13	<0.01
BAAQMD Thresholds	*10.0*	*0.3*	*1.0*

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[8] CARB, 2014. *Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust*. Revised and updated, April 2014.

Figure 1. Project Site, Roadway Links, and Project Residential Receptor Locations

Stationary Sources

BAAQMD's *Stationary Source Screening Analysis Tool* was used to identify stationary sources and their screening risk levels at the sources. BAAQMD provides distance multipliers for diesel generator and gasoline dispensing facility (GDF) sources that adjust the source level for the distance between the receptor and source. Adjustments were also made to account for new OEHHA guidance. Figure 2 shows the stationary sources affecting the project site.

Figure 2. Project Site and TAC Sources

Plant G8416 is a gas station. Screening provided by BAAQMD were used, adjusted for OEHHA guidance, and adjusted for distance based on BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities*. Based on a 750-foot distance from source to receptor, the estimated adjusted cancer risk from this stationary source would be 1.3 per million. The adjusted chronic or acute HI for the stationary source would be below 0.01. There are no $PM_{2.5}$ emissions from this source.

Cumulative Community Risk at Project Site

Community risk impacts from combined sources upon the project are reported in Table 5. As shown in Table 5, single and combined TAC sources within 1,000 feet of the project site would be below the BAAQMD cumulative risk thresholds.

Table 5. Community Risk Impact to New Project Residences

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Hesperian Boulevard	2.7	0.21	<0.01
Plant G11847 (gas station)	1.3	0.00	<0.01
Cumulative Total	*4.0*	*0.21*	*<0.02*
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?	***No***	***No***	***No***
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?	***No***	***No***	***No***

Project Construction Activity

Construction activities, particularly during demolition, 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 Measures IV.4.2A and IV.4.2B of the DEIR would generally 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 $PM_{2.5}$.[9] The closest sensitive receptors to the project site would be residences directly west of the site along Paseo Largavista and residences directly south of the site along Hesperian Boulevard and Via Arriba (see Figure 2). 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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[9] 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. Based on the CalEEMod modeling, construction of the project is expected to occur over an approximate 15-month beginning in January 2019. 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 CalEEMod defaults. The CalEEMod modeling included emissions from truck and worker travel, assumed to occur over a distance of one mile on or near the site.

The CalEEMod model provided total 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 0.1819 tons (364 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 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 0.1183 tons (237 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) that would be present in the vicinity of the project site during construction activities. The modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area source. 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 source. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. and 4 p.m.

Dispersion modeling of construction emissions was conducted using the EPA's AERMOD dispersion model and five-year data set (2009-2013) of hourly meteorological data from the Oakland International Airport prepared for use with the AERMOD model by CARB for use in modeling health risks. DPM and $PM_{2.5}$ concentrations from construction activities in 2019 and 2020 were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby residential locations at a receptor height of 1.5 meters (4.9 feet) to represent the breathing heights of nearby residents. Figure 3 shows the construction area and locations of nearby residential receptors.

The maximum-modeled $PM_{2.5}$ and DPM concentrations occurred at a residence on Hesperian Boulevard, adjacent to the southeast corner of the construction site. The location where the maximum $PM_{2.5}$ and DPM concentrations occurred is identified on Figure 3 as the location of maximum TAC impact.

<u>Health Impacts</u>

The maximum increased lifetime cancer risk, annual $PM_{2.5}$ concentrations, and non-cancer hazard index for residents near the project site from construction activities were computed using modeled DPM and $PM_{2.5}$ concentrations and the health risk calculation methods and exposure parameters described in *Attachment 1*. The cancer risk calculations are based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. BAAQMD-recommended exposure parameters were used for the cancer risk calculations. Results of this assessment are shown in Table 6. *Attachment 4* includes the modeling information.

The contribution of cumulative sources within 1,000 feet of the project site were also assessed in the same manner that they were for the proposed project site. This included use of BAAQMD screening data and distance multipliers for roadways and stationary sources. Since community risk levels for cancer risk and $PM_{2.5}$ concentration from construction are greater than the single source significance thresholds, the impact would be considered a *significant impact*.

Table 6. Impacts from Combined Sources at Construction MEI

Source	**Maximum Cancer Risk (per million)**	**$PM_{2.5}$ concentration ($\mu g/m^3$)**	**Hazard Index**
Unmitigated Project Construction	**47.3 (infant)**	0.49	0.05
Mitigated Construction	6.6 (infant)	0.15	<0.01
Hesperian Boulevard	2.7	0.21	<0.01
Plant G8416 (gas station)	0.8	0.00	<0.01
Combined Sources Unmitigated Construction	50.8	0.7	<0.07
Mitigated Construction	10.1	0.36	<0.03
BAAQMD Threshold – Combined Sources	*10.0*	*0.3*	*1.0*
BAAQMD Threshold – Combined Sources	*100*	*0.8*	*10.0*

Figure 3. Project Construction Site, Modeled Receptors and Location of Maximum Impact from Project

Cumulative Impact on Construction MEI

The cumulative impacts of TAC emissions from construction of the project, Hesperian Boulevard and stationary sources on the construction MEI have been summarized in Table 6. The screening levels reported for cumulative sources were computed in the same manner described above for project residential occupants. As shown in Table 6, the sum of impacts from combined sources at the construction MEI would be *less-than-significant*.

Mitigation Measure AQ-1: **Selection of equipment during construction to minimize emissions. Such equipment selection would include the following.**

The project shall develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average 79 percent reduction in particulate matter exhaust emissions or more. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment larger than 25 horsepower and operating on the site for more than two days shall meet, at a minimum, U.S. EPA particulate matter emissions standards for Tier 2 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[10] would meet this requirement. Other measures may be the use of added exhaust devices, alternatively-fueled equipment (i.e., non-diesel), 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 Measures IV.4.2A, IV.4.2B, and AQ-1

Implementation of Mitigation Measures IV.4.2A and IV.4.2B are considered to reduce fugitive dust emissions by over 50 percent. Implementation of Mitigation Measure AQ-1 would further reduce on-site diesel exhaust emissions by at least 85 percent and fugitive $PM_{2.5}$ by at least 45 percent. This would reduce the maximum cancer risk to 6.6 in one million and the maximum $PM_{2.5}$ concentration 0.15 $\mu g/m^3$, which are both less than their respective BAAQMD significance thresholds. After implementation of these mitigation measures, the project would have a *less-than-significant* impact with respect to community risk caused by construction activities.

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[10] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Greenhouse Gases

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Recent Regulatory Actions

Assembly Bill 32 (AB 32), California Global Warming Solutions Act (2006)

AB 32, the Global Warming Solutions Act of 2006, codified the State'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, the CARB, CEC, California Public Utilities Commission (CPUC), and 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's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (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.

Senate Bill 375, California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

SB 350 Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Executive Order EO-B-30-15 (2015) and SB 32 GHG Reduction Targets

In April 2015, Governor Brown signed Executive Order which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings (note that new
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit oriented housing;
- Develop walkable and bikeable communities
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce "super pollutants" by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population. This is calculated for 2030 based on the GHG reduction goals of EO B-30-15, taking into account the 1990 inventory and the projected 2030 statewide population and employment levels.[11]

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.

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[11] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

CalEEMod Modeling

CalEEMod was used to predict 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. CalEEMod output is included in *Attachment 2*.

Service Population Emissions

The project service population efficiency rate is based on the number of future residences plus full-time employees. The number of future residences is estimated at 538 based on the latest US Census data of 3.3 average persons per household for the City of San Lorenzo.[12] The number of future full-time employees is estimated at 29 based on an approximate 2.5 employees per 1,000 sf of retail space. The total service population considering future residence and employees was calculated as 567 people.

Construction Emissions

GHG emissions associated with construction were computed to be 584 MT of CO_2e for the total construction period. 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 daily emissions associated with operation of the fully-developed site under the proposed project. In 2021 as shown in Table 7, annual emissions resulting from operation of the proposed project in 2021 are predicted to be 1,671 MT of CO_2e. The annual emissions from operation of the existing buildings in 2021 are computed as 165 MT of CO_2e. The net emissions resulting from the project in 2021 would be 1,506 MT of CO_2e. The annual emissions resulting from operation of the proposed project in 2030 are predicted to be 1,421 MT of CO_2e. The net emissions resulting from the project in 2030 would be 1,256 MT of CO_2e. The net emission increase in both 2021 and 2030 would exceed the BAAQMD threshold of 1,100 MT of CO_2e/yr and, therefore, the service population threshold was used to determine the significance of this project. As shown in Table 7, service population emissions would be below the BAAQMD threshold for 2020 and the projected future threshold (i.e., for 2030) and, therefore, this would be considered a *less-than-significant* impact.

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[12] U.S. Census, 2012-16. See: https://www.census.gov/quickfacts/fact/table/sanlorenzocdpcalifornia,belmontcitycalifornia/PST045217 Accessed May 17, 2018.

Table 7. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Existing in 2021	Proposed Project in 2021	Proposed Project in 2030
Area	<1	8	9
Energy Consumption	11	228	228
Mobile	150	1,366	1,115
Solid Waste Generation	3	54	54
Water	1	15	15
Total	165	1,671	1,421
Net New Emissions		1,506	1,256
Service Population Emissions		2.95	2.51
Significance Threshold		4.6 in 2020	2.6 in 2030

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for both project construction and operational criteria air pollutant and GHG emissions. The operational output for existing uses is also included in this attachment. Also included are any modeling assumptions.

Attachment 3 includes the screening community risk calculations from sources affecting the project.

Attachment 4 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

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.[13] 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.[14] 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.[15] 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 in the BAAQMD guidance, 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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[13] 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.

[14] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

[15] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. January 2016.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors were 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 recommended in the BAAQMD guidance 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) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^{6}$
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 = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$
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:

Parameter	***Exposure Type →***	**Infant**		**Child**		**Adult**
	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

BAAQMD has provided screening tools for assessing impacts from stationary sources, highways and local roadways. These tools do not incorporate the latest OEHHA guidance described above. For these sources and sources with continuous emissions evaluated using the older 2010 guidance, BAAQMD recommends adjusting the lifetime cancer risk upwards with a 1.3744 factor. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.[16]

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[16] Email from Virginia Lau, BAAQMD to Bill Popenuck, Illingworth & Rodkin, Inc, dated November 15, 2015.

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 Modeling Output

Village Green - San Lorenzo

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	163.00	Dwelling Unit	5.12	163,000.00	466
Strip Mall	9.50	1000sqft	0.00	9,500.00	0
Fast Food Restaurant w/o Drive Thru	2.00	1000sqft	0.00	2,000.00	0
Enclosed Parking with Elevator	50.00	Space	0.00	20,000.00	0
Parking Lot	180.00	Space	0.00	72,000.00	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

Project Characteristics - PG&E 2020 rate

Land Use - Population = 9st*1+80 1br*1.5+64 2br*2.5+10 3br*3.5 = 324, 3*9.5ksf, 3*2ksf Site =5.12acres

Construction Phase - Using default conditions

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Assume crane is used a quarter of the time

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - Assume some marginal import/export

Demolition - use 25,000sf

Trips and VMT -

Vehicle Trips - Apts = 750/163=4.60Coffee=1580/2ksf=790(2miCust trip)Shop=300/9.5ksf=31.58 apts4.60,4.424.05coffee790.00,767.93,551.68shop31.58,29.96,14.56

Woodstoves - no wood 52 nat gas

Energy Use -

Water And Wastewater - WTP treatment Use 75gal/day/apt *365 days 466 people 12,756,750 (7909185ind and4847565outdoor)

Construction Off-road Equipment Mitigation - Tier 4/3 and BMPs

Energy Mitigation - Meet 2019 building standards with solar

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
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	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
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 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	24.45	52.00
tblFireplaces	NumberWood	27.71	0.00
tblGrading	MaterialSiltContent	6.90	4.30
tblGrading	MeanVehicleSpeed	7.10	40.00
tblLandUse	LotAcreage	4.29	5.12
tblLandUse	LotAcreage	0.22	0.00
tblLandUse	LotAcreage	0.05	0.00
tblLandUse	LotAcreage	0.45	0.00
tblLandUse	LotAcreage	1.62	0.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblVehicleTrips	CC_TL	7.30	2.00
tblVehicleTrips	PB_TP	12.00	44.00

tblVehicleTrips	PB_TP	15.00	17.00
tblVehicleTrips	PR_TP	51.00	19.00
tblVehicleTrips	PR_TP	45.00	43.00
tblVehicleTrips	ST_TR	6.39	4.42
tblVehicleTrips	ST_TR	696.00	767.93
tblVehicleTrips	ST_TR	42.04	29.96
tblVehicleTrips	SU_TR	5.86	4.05
tblVehicleTrips	SU_TR	500.00	551.68
tblVehicleTrips	SU_TR	20.43	14.56
tblVehicleTrips	WD_TR	6.65	4.60
tblVehicleTrips	WD_TR	716.00	790.00
tblVehicleTrips	WD_TR	44.32	31.58
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	10,620,106.18	7,909,185.00
tblWater	OutdoorWaterUseRate	6,695,284.33	4,847,565.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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	0.3805	3.2232	2.7616	5.7600e-003	0.4616	0.1671	0.6288	0.1568	0.1568	0.3136	0.0000	517.4368	517.4368	0.0828	0.0000	519.5061
2020	1.2681	0.3508	0.3726	7.2000e-004	0.0179	0.0182	0.0361	4.8000e-003	0.0171	0.0219	0.0000	64.1051	64.1051	0.0119	0.0000	64.4031
Maximum	**1.2681**	**3.2232**	**2.7616**	**5.7600e-003**	**0.4616**	**0.1671**	**0.6288**	**0.1568**	**0.1568**	**0.3136**	**0.0000**	**517.4368**	**517.4368**	**0.0828**	**0.0000**	**519.5061**

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	0.1554	2.1485	2.8427	5.7600e-003	0.4616	0.0371	0.4987	0.1001	0.0368	0.1370	0.0000	517.4365	517.4365	0.0828	0.0000	519.5057
2020	1.2493	0.3642	0.4031	7.2000e-004	0.0179	9.7200e-003	0.0276	4.8000e-003	9.7000e-003	0.0145	0.0000	64.1050	64.1050	0.0119	0.0000	64.4031
Maximum	**1.2493**	**2.1485**	**2.8427**	**5.7600e-003**	**0.4616**	**0.0371**	**0.4987**	**0.1001**	**0.0368**	**0.1370**	**0.0000**	**517.4365**	**517.4365**	**0.0828**	**0.0000**	**519.5057**

	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	**14.80**	**29.69**	**-3.56**	**0.00**	**0.00**	**74.77**	**20.85**	**35.09**	**73.23**	**54.86**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	1.1519	0.5748
2	**4-1-2019**	**6-30-2019**	0.8080	0.5692
3	**7-1-2019**	**9-30-2019**	0.8169	0.5754
4	**10-1-2019**	**12-31-2019**	0.8230	0.5815
5	**1-1-2020**	**3-31-2020**	1.6233	1.6172
		Highest	1.6233	1.6172

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Energy	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	226.1706	226.1706	0.0148	4.4500e-003	227.8686
Mobile	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620
Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	3.2620	9.0107	12.2727	0.0121	7.2800e-003	14.7455
Total	**1.4930**	**3.7366**	**6.5599**	**0.0154**	**0.9753**	**0.0317**	**1.0070**	**0.2622**	**0.0307**	**0.2928**	**25.1830**	**1,607.1804**	**1,632.3634**	**1.4100**	**0.0119**	**1,671.1443**

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Energy	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	201.4544	201.4544	0.0138	3.9800e-003	202.9867
Mobile	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620
Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	2.6096	7.5489	10.1585	9.7400e-003	5.8300e-003	12.1396
Total	**1.4912**	**3.7211**	**6.5526**	**0.0153**	**0.9753**	**0.0304**	**1.0057**	**0.2622**	**0.0294**	**0.2916**	**24.5306**	**1,581.0023**	**1,605.5329**	**1.4065**	**9.9300e-003**	**1,643.6566**

	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	**0.12**	**0.41**	**0.11**	**0.65**	**0.00**	**3.94**	**0.12**	**0.00**	**4.08**	**0.43**	**2.59**	**1.63**	**1.64**	**0.24**	**16.20**	**1.64**

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	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/11/2019	5	20	
4	Building Construction	Building Construction	3/12/2019	1/27/2020	5	230	
5	Paving	Paving	1/28/2020	2/24/2020	5	20	
6	Architectural Coating	Architectural Coating	2/25/2020	3/23/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 330,075; Residential Outdoor: 110,025; Non-Residential Indoor: 17,250; Non-Residential Outdoor: 5,750; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	32.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	160.00	34.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	114.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

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					
Fugitive Dust					0.0123	0.0000	0.0123	1.8600e-003	0.0000	1.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**0.0123**	**0.0180**	**0.0303**	**1.8600e-003**	**0.0167**	**0.0186**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

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	5.2000e-004	0.0177	3.0200e-003	5.0000e-005	9.7000e-004	6.0000e-005	1.0300e-003	2.7000e-004	6.0000e-005	3.3000e-004	0.0000	4.4108	4.4108	2.3000e-004	0.0000	4.4165
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	5.7000e-004	4.3000e-004	4.3700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0879	1.0879	3.0000e-005	0.0000	1.0887
Total	**1.0900e-003**	**0.0181**	**7.3900e-003**	**6.0000e-005**	**2.1600e-003**	**7.0000e-005**	**2.2200e-003**	**5.9000e-004**	**7.0000e-005**	**6.5000e-004**	**0.0000**	**5.4987**	**5.4987**	**2.6000e-004**	**0.0000**	**5.5052**

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					0.0123	0.0000	0.0123	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1400e-003	0.1769	0.2467	3.9000e-004		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**9.1400e-003**	**0.1769**	**0.2467**	**3.9000e-004**	**0.0123**	**1.0800e-003**	**0.0134**	**9.3000e-004**	**1.0800e-003**	**2.0100e-003**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

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	5.2000e-004	0.0177	3.0200e-003	5.0000e-005	9.7000e-004	6.0000e-005	1.0300e-003	2.7000e-004	6.0000e-005	3.3000e-004	0.0000	4.4108	4.4108	2.3000e-004	0.0000	4.4165
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	5.7000e-004	4.3000e-004	4.3700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0879	1.0879	3.0000e-005	0.0000	1.0887
Total	**1.0900e-003**	**0.0181**	**7.3900e-003**	**6.0000e-005**	**2.1600e-003**	**7.0000e-005**	**2.2200e-003**	**5.9000e-004**	**7.0000e-005**	**6.5000e-004**	**0.0000**	**5.4987**	**5.4987**	**2.6000e-004**	**0.0000**	**5.5052**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	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	**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**

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					0.0903	0.0000	0.0903	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0953	0.1148	1.9000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**4.6600e-003**	**0.0953**	**0.1148**	**1.9000e-004**	**0.0903**	**7.1000e-004**	**0.0910**	**0.0248**	**7.1000e-004**	**0.0255**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	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	**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**

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					0.1979	0.0000	0.1979	0.0619	0.0000	0.0619	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6423	26.6423	8.4300e-003	0.0000	26.8530

Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.1979**	**0.0140**	**0.2119**	**0.0619**	**0.0129**	**0.0748**	**0.0000**	**26.6423**	**26.6423**	**8.4300e-003**	**0.0000**	**26.8530**

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	5.7000e-004	4.3000e-004	4.3700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0879	1.0879	3.0000e-005	0.0000	1.0887
Total	**5.7000e-004**	**4.3000e-004**	**4.3700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0879**	**1.0879**	**3.0000e-005**	**0.0000**	**1.0887**

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					0.1979	0.0000	0.1979	0.0310	0.0000	0.0310	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7200e-003	0.1345	0.1899	3.0000e-004		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	26.6422	26.6422	8.4300e-003	0.0000	26.8530
Total	**6.7200e-003**	**0.1345**	**0.1899**	**3.0000e-004**	**0.1979**	**1.0600e-003**	**0.1990**	**0.0310**	**1.0600e-003**	**0.0320**	**0.0000**	**26.6422**	**26.6422**	**8.4300e-003**	**0.0000**	**26.8530**

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	5.7000e-004	4.3000e-004	4.3700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0879	1.0879	3.0000e-005	0.0000	1.0887
Total	**5.7000e-004**	**4.3000e-004**	**4.3700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0879**	**1.0879**	**3.0000e-005**	**0.0000**	**1.0887**

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	0.2159	1.8277	1.6596	2.4600e-003		0.1193	0.1193		0.1125	0.1125	0.0000	213.8665	213.8665	0.0496	0.0000	215.1069
Total	**0.2159**	**1.8277**	**1.6596**	**2.4600e-003**		**0.1193**	**0.1193**		**0.1125**	**0.1125**	**0.0000**	**213.8665**	**213.8665**	**0.0496**	**0.0000**	**215.1069**

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	0.0162	0.4587	0.1015	1.0000e-003	0.0236	2.9300e-003	0.0265	6.8100e-003	2.8000e-003	9.6200e-003	0.0000	95.5487	95.5487	5.8900e-003	0.0000	95.6959
Worker	0.0639	0.0487	0.4923	1.3600e-003	0.1335	9.5000e-004	0.1344	0.0355	8.8000e-004	0.0364	0.0000	122.4293	122.4293	3.4900e-003	0.0000	122.5166
Total	**0.0801**	**0.5075**	**0.5938**	**2.3600e-003**	**0.1570**	**3.8800e-003**	**0.1609**	**0.0423**	**3.6800e-003**	**0.0460**	**0.0000**	**217.9780**	**217.9780**	**9.3800e-003**	**0.0000**	**218.2124**

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	0.0528	1.2155	1.6831	2.4600e-003		0.0302	0.0302		0.0302	0.0302	0.0000	213.8663	213.8663	0.0496	0.0000	215.1066
Total	**0.0528**	**1.2155**	**1.6831**	**2.4600e-003**		**0.0302**	**0.0302**		**0.0302**	**0.0302**	**0.0000**	**213.8663**	**213.8663**	**0.0496**	**0.0000**	**215.1066**

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	0.0162	0.4587	0.1015	1.0000e-003	0.0236	2.9300e-003	0.0265	6.8100e-003	2.8000e-003	9.6200e-003	0.0000	95.5487	95.5487	5.8900e-003	0.0000	95.6959
Worker	0.0639	0.0487	0.4923	1.3600e-003	0.1335	9.5000e-004	0.1344	0.0355	8.8000e-004	0.0364	0.0000	122.4293	122.4293	3.4900e-003	0.0000	122.5166

Total	**0.0801**	**0.5075**	**0.5938**	**2.3600e-003**	**0.1570**	**3.8800e-003**	**0.1609**	**0.0423**	**3.6800e-003**	**0.0460**	**0.0000**	**217.9780**	**217.9780**	**9.3800e-003**	**0.0000**	**218.2124**

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	0.0175	0.1503	0.1475	2.2000e-004		9.2900e-003	9.2900e-003		8.7600e-003	8.7600e-003	0.0000	18.9931	18.9931	4.3900e-003	0.0000	19.1029
Total	**0.0175**	**0.1503**	**0.1475**	**2.2000e-004**		**9.2900e-003**	**9.2900e-003**		**8.7600e-003**	**8.7600e-003**	**0.0000**	**18.9931**	**18.9931**	**4.3900e-003**	**0.0000**	**19.1029**

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	1.2100e-003	0.0380	8.1800e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.5437	8.5437	4.9000e-004	0.0000	8.5560
Worker	5.2600e-003	3.8800e-003	0.0398	1.2000e-004	0.0120	8.0000e-005	0.0121	3.2000e-003	8.0000e-005	3.2700e-003	0.0000	10.6834	10.6834	2.8000e-004	0.0000	10.6903
Total	**6.4700e-003**	**0.0419**	**0.0480**	**2.1000e-004**	**0.0141**	**2.6000e-004**	**0.0144**	**3.8100e-003**	**2.5000e-004**	**4.0500e-003**	**0.0000**	**19.2271**	**19.2271**	**7.7000e-004**	**0.0000**	**19.2463**

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	4.7500e-003	0.1095	0.1516	2.2000e-004		2.7200e-003	2.7200e-003		2.7200e-003	2.7200e-003	0.0000	18.9931	18.9931	4.3900e-003	0.0000	19.1029
Total	**4.7500e-003**	**0.1095**	**0.1516**	**2.2000e-004**		**2.7200e-003**	**2.7200e-003**		**2.7200e-003**	**2.7200e-003**	**0.0000**	**18.9931**	**18.9931**	**4.3900e-003**	**0.0000**	**19.1029**

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	1.2100e-003	0.0380	8.1800e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.5437	8.5437	4.9000e-004	0.0000	8.5560
Worker	5.2600e-003	3.8800e-003	0.0398	1.2000e-004	0.0120	8.0000e-005	0.0121	3.2000e-003	8.0000e-005	3.2700e-003	0.0000	10.6834	10.6834	2.8000e-004	0.0000	10.6903
Total	**6.4700e-003**	**0.0419**	**0.0480**	**2.1000e-004**	**0.0141**	**2.6000e-004**	**0.0144**	**3.8100e-003**	**2.5000e-004**	**4.0500e-003**	**0.0000**	**19.2271**	**19.2271**	**7.7000e-004**	**0.0000**	**19.2463**

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

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	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0543	1.0543	3.0000e-005	0.0000	1.0550
Total	**5.2000e-004**	**3.8000e-004**	**3.9200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0543**	**1.0543**	**3.0000e-005**	**0.0000**	**1.0550**

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	9.3100e-003	0.2012	0.1730	2.3000e-004		6.6700e-003	6.6700e-003		6.6700e-003	6.6700e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.3100e-003**	**0.2012**	**0.1730**	**2.3000e-004**		**6.6700e-003**	**6.6700e-003**		**6.6700e-003**	**6.6700e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

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	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0543	1.0543	3.0000e-005	0.0000	1.0550
Total	**5.2000e-004**	**3.8000e-004**	**3.9200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0543**	**1.0543**	**3.0000e-005**	**0.0000**	**1.0550**

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	1.2266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2290**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

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	1.1100e-003	8.2000e-004	8.3700e-003	2.0000e-005	2.5300e-003	2.0000e-005	2.5500e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.2491	2.2491	6.0000e-005	0.0000	2.2506
Total	**1.1100e-003**	**8.2000e-004**	**8.3700e-003**	**2.0000e-005**	**2.5300e-003**	**2.0000e-005**	**2.5500e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2491**	**2.2491**	**6.0000e-005**	**0.0000**	**2.2506**

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	1.2266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4000e-004	0.0106	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2271**	**0.0106**	**0.0183**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

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	1.1100e-003	8.2000e-004	8.3700e-003	2.0000e-005	2.5300e-003	2.0000e-005	2.5500e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.2491	2.2491	6.0000e-005	0.0000	2.2506
Total	**1.1100e-003**	**8.2000e-004**	**8.3700e-003**	**2.0000e-005**	**2.5300e-003**	**2.0000e-005**	**2.5500e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2491**	**2.2491**	**6.0000e-005**	**0.0000**	**2.2506**

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	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620
Unmitigated	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	749.80	720.46	660.15	1,692,484	1,692,484
Fast Food Restaurant w/o Drive Thru	1,580.00	1,535.86	1103.36	507,078	507,078
Strip Mall	300.01	284.62	138.32	407,937	407,937
Enclosed Parking with Elevator	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	2,629.81	2,540.94	1,901.83	2,607,499	2,607,499

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 Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Fast Food Restaurant w/o Drive Thru	9.50	2.00	7.30	1.50	79.50	19.00	19	37	44
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	43	40	17
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid 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
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
Strip Mall	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
Parking Lot	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

Exceed Title 24

	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	123.0896	123.0896	0.0123	2.5500e-003	124.1562
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	129.9770	129.9770	0.0130	2.6900e-003	131.1033

NaturalGas Mitigated	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	78.3648	78.3648	1.5000e-003	1.4400e-003	78.8305
NaturalGas Unmitigated	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	96.1936	96.1936	1.8400e-003	1.7600e-003	96.7652

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 Mid Rise	1.42306e+006	7.6700e-003	0.0656	0.0279	4.2000e-004		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003	0.0000	75.9399	75.9399	1.4600e-003	1.3900e-003	76.3912
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 Drive Thru	335840	1.8100e-003	0.0165	0.0138	1.0000e-004		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	17.9217	17.9217	3.4000e-004	3.3000e-004	18.0282
Parking Lot	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
Strip Mall	43700	2.4000e-004	2.1400e-003	1.8000e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3320	2.3320	4.0000e-005	4.0000e-005	2.3459
Total		**9.7200e-003**	**0.0842**	**0.0435**	**5.3000e-004**		**6.7100e-003**	**6.7100e-003**		**6.7100e-003**	**6.7100e-003**	**0.0000**	**96.1936**	**96.1936**	**1.8400e-003**	**1.7600e-003**	**96.7652**

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 Mid Rise	1.12402e+006	6.0600e-003	0.0518	0.0220	3.3000e-004		4.1900e-003	4.1900e-003		4.1900e-003	4.1900e-003	0.0000	59.9818	59.9818	1.1500e-003	1.1000e-003	60.3382
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 Drive Thru	311900	1.6800e-003	0.0153	0.0128	9.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	16.6442	16.6442	3.2000e-004	3.1000e-004	16.7431

Parking Lot	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
Strip Mall	32585	1.8000e-004	1.6000e-003	1.3400e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7389	1.7389	3.0000e-005	3.0000e-005	1.7492
Total		**7.9200e-003**	**0.0687**	**0.0362**	**4.3000e-004**		**5.4700e-003**	**5.4700e-003**		**5.4700e-003**	**5.4700e-003**	**0.0000**	**78.3648**	**78.3648**	**1.5000e-003**	**1.4400e-003**	**78.8305**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	688184	90.5250	9.0500e-003	1.8700e-003	91.3095
Enclosed Parking with Elevator	117200	15.4167	1.5400e-003	3.2000e-004	15.5503
Fast Food Restaurant w/o Drive Thru	57960	7.6242	7.6000e-004	1.6000e-004	7.6902
Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	99560	13.0963	1.3100e-003	2.7000e-004	13.2098
Total		**129.9770**	**0.0130**	**2.6900e-003**	**131.1033**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	667331	87.7819	8.7800e-003	1.8200e-003	88.5426
Enclosed Parking with Elevator	93680	12.3228	1.2300e-003	2.5000e-004	12.4296

Fast Food Restaurant w/o Drive Thru	56358	7.4134	7.4000e-004	1.5000e-004	7.4777
Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	93176	12.2565	1.2300e-003	2.5000e-004	12.3628
Total		**123.0896**	**0.0123**	**2.5400e-003**	**124.1562**

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Unmitigated	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0372	0.0141	1.2166	6.0000e-005		6.6900e-003	6.6900e-003		6.6900e-003	6.6900e-003	0.0000	1.9813	1.9813	1.9400e-003	0.0000	2.0298
Total	**0.8480**	**0.0197**	**1.2189**	**1.0000e-004**		**7.1400e-003**	**7.1400e-003**		**7.1400e-003**	**7.1400e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0600e-003**	**1.2000e-004**	**8.5600**

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0372	0.0141	1.2166	6.0000e-005		6.6900e-003	6.6900e-003		6.6900e-003	6.6900e-003	0.0000	1.9813	1.9813	1.9400e-003	0.0000	2.0298
Total	**0.8480**	**0.0197**	**1.2189**	**1.0000e-004**		**7.1400e-003**	**7.1400e-003**		**7.1400e-003**	**7.1400e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0600e-003**	**1.2000e-004**	**8.5600**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.1585	9.7400e-003	5.8300e-003	12.1396
Unmitigated	12.2727	0.0121	7.2800e-003	14.7455

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	7.90918 / 4.84757	10.6596	0.0104	6.2500e-003	12.7820
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.607067 / 0.038749	0.6647	7.8000e-004	4.8000e-004	0.8263
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.703689 / 0.431293	0.9484	9.3000e-004	5.6000e-004	1.1372
Total		**12.2727**	**0.0121**	**7.2900e-003**	**14.7455**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.32735 / 4.55186	8.8379	8.3700e-003	5.0000e-003	10.5385
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.485654 / 0.0363853	0.5343	6.3000e-004	3.8000e-004	0.6635
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.562951 / 0.404984	0.7863	7.4000e-004	4.5000e-004	0.9376
Total		**10.1585**	**9.7400e-003**	**5.8300e-003**	**12.1396**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.9210	1.2955	0.0000	54.3083
Unmitigated	21.9210	1.2955	0.0000	54.3083

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

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

Village Green Existing

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Strip Mall	5.00	1000sqft	0.11	5,000.00	0
Parking Lot	68.00	1000sqft	1.56	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2021
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 - CO2 Intensity = 290

Land Use - Retail=5,000sf Parking lot=68,000 sf

Construction Phase - Existing Conditions

Off-road Equipment - Existing Conditions

Grading -

Trips and VMT -

Table Name	Column Name	Default Value	New Value

tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	PhaseEndDate	1/30/2019	1/29/2019
tblGrading	AcresOfGrading	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	0.00	8.00

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	0.0280	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003
Energy	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	11.2509	11.2509	1.0300e-003	2.3000e-004	11.3450
Mobile	0.0518	0.3225	0.4909	1.6300e-003	0.1169	1.6200e-003	0.1185	0.0314	1.5200e-003	0.0329	0.0000	149.9377	149.9377	7.7300e-003	0.0000	150.1308
Waste						0.0000	0.0000		0.0000	0.0000	1.0657	0.0000	1.0657	0.0630	0.0000	2.6402
Water						0.0000	0.0000		0.0000	0.0000	0.1175	0.3681	0.4856	0.0121	2.9000e-004	0.8754
Total	**0.0799**	**0.3236**	**0.4925**	**1.6400e-003**	**0.1169**	**1.7100e-003**	**0.1186**	**0.0314**	**1.6100e-003**	**0.0330**	**1.1832**	**161.5580**	**162.7412**	**0.0839**	**5.2000e-004**	**164.9929**

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	0.0280	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003
Energy	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	11.2509	11.2509	1.0300e-003	2.3000e-004	11.3450
Mobile	0.0518	0.3225	0.4909	1.6300e-003	0.1169	1.6200e-003	0.1185	0.0314	1.5200e-003	0.0329	0.0000	149.9377	149.9377	7.7300e-003	0.0000	150.1308
Waste						0.0000	0.0000		0.0000	0.0000	1.0657	0.0000	1.0657	0.0630	0.0000	2.6402
Water						0.0000	0.0000		0.0000	0.0000	0.1175	0.3681	0.4856	0.0121	2.9000e-004	0.8754
Total	**0.0799**	**0.3236**	**0.4925**	**1.6400e-003**	**0.1169**	**1.7100e-003**	**0.1186**	**0.0314**	**1.6100e-003**	**0.0330**	**1.1832**	**161.5580**	**162.7412**	**0.0839**	**5.2000e-004**	**164.9929**

	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	0.0518	0.3225	0.4909	1.6300e-003	0.1169	1.6200e-003	0.1185	0.0314	1.5200e-003	0.0329	0.0000	149.9377	149.9377	7.7300e-003	0.0000	150.1308
Unmitigated	0.0518	0.3225	0.4909	1.6300e-003	0.1169	1.6200e-003	0.1185	0.0314	1.5200e-003	0.0329	0.0000	149.9377	149.9377	7.7300e-003	0.0000	150.1308

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Strip Mall	221.60	210.20	102.15	312,484	312,484
Total	221.60	210.20	102.15	312,484	312,484

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
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Strip Mall	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739

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	10.0235	10.0235	1.0000e-003	2.1000e-004	10.1103

Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	10.0235	10.0235	1.0000e-003	2.1000e-004	10.1103
NaturalGas Mitigated	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2274	1.2274	2.0000e-005	2.0000e-005	1.2347
NaturalGas Unmitigated	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2274	1.2274	2.0000e-005	2.0000e-005	1.2347

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					
Parking Lot	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
Strip Mall	23000	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2274	1.2274	2.0000e-005	2.0000e-005	1.2347
Total		**1.2000e-004**	**1.1300e-003**	**9.5000e-004**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.2274**	**1.2274**	**2.0000e-005**	**2.0000e-005**	**1.2347**

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					
Parking Lot	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
Strip Mall	23000	1.2000e-004	1.1300e-003	9.5000e-004	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.2274	1.2274	2.0000e-005	2.0000e-005	1.2347
Total		**1.2000e-004**	**1.1300e-003**	**9.5000e-004**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.2274**	**1.2274**	**2.0000e-005**	**2.0000e-005**	**1.2347**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	23800	3.1307	3.1000e-004	6.0000e-005	3.1578
Strip Mall	52400	6.8928	6.9000e-004	1.4000e-004	6.9525
Total		**10.0235**	**1.0000e-003**	**2.0000e-004**	**10.1103**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	23800	3.1307	3.1000e-004	6.0000e-005	3.1578
Strip Mall	52400	6.8928	6.9000e-004	1.4000e-004	6.9525
Total		**10.0235**	**1.0000e-003**	**2.0000e-004**	**10.1103**

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	0.0280	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003
Unmitigated	0.0280	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003

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	4.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0239					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003
Total	**0.0280**	**1.0000e-005**	**6.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.3000e-003**	**1.3000e-003**	**0.0000**	**0.0000**	**1.3900e-003**

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	4.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.0239					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	6.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3000e-003	1.3000e-003	0.0000	0.0000	1.3900e-003
Total	**0.0280**	**1.0000e-005**	**6.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.3000e-003**	**1.3000e-003**	**0.0000**	**0.0000**	**1.3900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4856	0.0121	2.9000e-004	0.8754
Unmitigated	0.4856	0.0121	2.9000e-004	0.8754

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.370363 / 0.226996	0.4856	0.0121	2.9000e-004	0.8754

Total		**0.4856**	**0.0121**	**2.9000e-004**	**0.8754**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.370363 / 0.226996	0.4856	0.0121	2.9000e-004	0.8754
Total		**0.4856**	**0.0121**	**2.9000e-004**	**0.8754**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.0657	0.0630	0.0000	2.6402
Unmitigated	1.0657	0.0630	0.0000	2.6402

8.2 Waste by Land Use

Unmitigated

Land Use	Waste Disposed tons	Total CO2	CH4	N2O	CO2e
		MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.25	1.0657	0.0630	0.0000	2.6402
Total		**1.0657**	**0.0630**	**0.0000**	**2.6402**

Mitigated

Land Use	Waste Disposed tons	Total CO2	CH4	N2O	CO2e
		MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.25	1.0657	0.0630	0.0000	2.6402
Total		**1.0657**	**0.0630**	**0.0000**	**2.6402**

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

Village Green - San Lorenzo

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	50.00	Space	0.00	20,000.00	0
Parking Lot	180.00	Space	0.00	72,000.00	0
Fast Food Restaurant w/o Drive Thru	2.00	1000sqft	0.00	2,000.00	0
Apartments Mid Rise	163.00	Dwelling Unit	5.12	163,000.00	466
Strip Mall	9.50	1000sqft	0.00	9,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2030
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 - Population = 9st*1+80 1br*1.5+64 2br*2.5+10 3br*3.5 = 324, 3*9.5ksf, 3*2ksf Site =5.12acres

Construction Phase - Using default conditions

Off-road Equipment -

Off-road Equipment - Assume crane is used a quarter of the time

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - on and near site travel

Demolition - use 25,000sf

Grading - Assume some marginal import/export

Vehicle Trips - Apts = 750/163=4.60Coffee=1580/2ksf=790(2miCust trip)Shop=300/9.5ksf=31.58
apts4.60,4.424.05coffee790.00,767.93,551.68shop31.58,29.96,14.56
passby =44%

Woodstoves - no wood 52 nat gas

Energy Use -

Water And Wastewater - WTP treatment Use 75gal/day/apt *365 days 466 people 12,756,750 (7909185ind and4847565outdoor)

Construction Off-road Equipment Mitigation - Tier 2/DPF 3 and BMPs

Energy Mitigation - Meet 2019 building standards with solar

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
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	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	24.45	52.00
tblFireplaces	NumberWood	27.71	0.00
tblGrading	MaterialSiltContent	6.90	4.30
tblGrading	MeanVehicleSpeed	7.10	40.00
tblLandUse	LotAcreage	0.45	0.00

tblLandUse	LotAcreage	1.62	0.00
tblLandUse	LotAcreage	0.05	0.00
tblLandUse	LotAcreage	4.29	5.12
tblLandUse	LotAcreage	0.22	0.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblVehicleTrips	CC_TL	7.30	2.00
tblVehicleTrips	PB_TP	12.00	44.00
tblVehicleTrips	PB_TP	15.00	17.00
tblVehicleTrips	PR_TP	51.00	19.00
tblVehicleTrips	PR_TP	45.00	43.00
tblVehicleTrips	ST_TR	6.39	4.42

tblVehicleTrips	ST_TR	696.00	767.93
tblVehicleTrips	ST_TR	42.04	29.96
tblVehicleTrips	SU_TR	5.86	4.05
tblVehicleTrips	SU_TR	500.00	551.68
tblVehicleTrips	SU_TR	20.43	14.56
tblVehicleTrips	WD_TR	6.65	4.60
tblVehicleTrips	WD_TR	716.00	790.00
tblVehicleTrips	WD_TR	44.32	31.58
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	10,620,106.18	7,909,185.00
tblWater	OutdoorWaterUseRate	6,695,284.33	4,847,565.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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	0.8471	0.0195	1.2117	1.0000e-004		7.1700e-003	7.1700e-003		7.1700e-003	7.1700e-003	0.0000	8.4730	8.4730	2.0200e-003	1.2000e-004	8.5589
Energy	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	226.1706	226.1706	0.0148	4.4500e-003	227.8686
Mobile	0.3352	2.6584	2.7024	0.0120	0.9745	7.6400e-003	0.9822	0.2617	7.1200e-003	0.2689	0.0000	1,114.0886	1,114.0886	0.0550	0.0000	1,115.4634
Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	3.2620	9.0107	12.2727	0.0121	7.2800e-003	14.7455
Total	**1.1920**	**2.7621**	**3.9577**	**0.0126**	**0.9745**	**0.0215**	**0.9960**	**0.2617**	**0.0210**	**0.2828**	**25.1830**	**1,357.7429**	**1,382.9259**	**1.3795**	**0.0119**	**1,420.9447**

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	0.8471	0.0195	1.2117	1.0000e-004		7.1700e-003	7.1700e-003		7.1700e-003	7.1700e-003	0.0000	8.4730	8.4730	2.0200e-003	1.2000e-004	8.5589
Energy	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	201.4544	201.4544	0.0138	3.9800e-003	202.9867
Mobile	0.3352	2.6584	2.7024	0.0120	0.9745	7.6400e-003	0.9822	0.2617	7.1200e-003	0.2689	0.0000	1,114.0886	1,114.0886	0.0550	0.0000	1,115.4634
Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	2.6096	7.5489	10.1585	9.7400e-003	5.8300e-003	12.1396
Total	**1.1902**	**2.7466**	**3.9504**	**0.0125**	**0.9745**	**0.0203**	**0.9948**	**0.2617**	**0.0198**	**0.2815**	**24.5306**	**1,331.5648**	**1,356.0954**	**1.3761**	**9.9300e-003**	**1,393.4569**

	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	**0.15**	**0.56**	**0.18**	**0.79**	**0.00**	**5.81**	**0.13**	**0.00**	**5.95**	**0.44**	**2.59**	**1.93**	**1.94**	**0.25**	**16.20**	**1.93**

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	0.3352	2.6584	2.7024	0.0120	0.9745	7.6400e-003	0.9822	0.2617	7.1200e-003	0.2689	0.0000	1,114.0886	1,114.0886	0.0550	0.0000	1,115.4634
Unmitigated	0.3352	2.6584	2.7024	0.0120	0.9745	7.6400e-003	0.9822	0.2617	7.1200e-003	0.2689	0.0000	1,114.0886	1,114.0886	0.0550	0.0000	1,115.4634

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	749.80	720.46	660.15	1,692,484	1,692,484
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	1,580.00	1,535.86	1103.36	507,078	507,078
Parking Lot	0.00	0.00	0.00		
Strip Mall	300.01	284.62	138.32	407,937	407,937
Total	2,629.81	2,540.94	1,901.83	2,607,499	2,607,499

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 Mid Rise	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
Fast Food Restaurant w/o Drive Thru	9.50	2.00	7.30	1.50	79.50	19.00	19	37	44
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	43	40	17

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644
Enclosed Parking with Elevator	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644
Fast Food Restaurant w/o Drive Thru	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644
Parking Lot	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644
Strip Mall	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	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	123.0896	123.0896	0.0123	2.5500e-003	124.1562
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	129.9770	129.9770	0.0130	2.6900e-003	131.1033
NaturalGas Mitigated	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	78.3648	78.3648	1.5000e-003	1.4400e-003	78.8305

NaturalGas Unmitigated	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	96.1936	96.1936	1.8400e-003	1.7600e-003	96.7652

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 Mid Rise	1.42306e+006	7.6700e-003	0.0656	0.0279	4.2000e-004		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003	0.0000	75.9399	75.9399	1.4600e-003	1.3900e-003	76.3912
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 Drive Thru	335840	1.8100e-003	0.0165	0.0138	1.0000e-004		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	17.9217	17.9217	3.4000e-004	3.3000e-004	18.0282
Parking Lot	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
Strip Mall	43700	2.4000e-004	2.1400e-003	1.8000e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3320	2.3320	4.0000e-005	4.0000e-005	2.3459
Total		**9.7200e-003**	**0.0842**	**0.0435**	**5.3000e-004**		**6.7100e-003**	**6.7100e-003**		**6.7100e-003**	**6.7100e-003**	**0.0000**	**96.1936**	**96.1936**	**1.8400e-003**	**1.7600e-003**	**96.7652**

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 Mid Rise	1.12402e+006	6.0600e-003	0.0518	0.0220	3.3000e-004		4.1900e-003	4.1900e-003		4.1900e-003	4.1900e-003	0.0000	59.9818	59.9818	1.1500e-003	1.1000e-003	60.3382
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 Drive Thru	311900	1.6800e-003	0.0153	0.0128	9.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	16.6442	16.6442	3.2000e-004	3.1000e-004	16.7431
Parking Lot	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

Strip Mall	32585	1.8000e-004	1.6000e-003	1.3400e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7389	1.7389	3.0000e-005	3.0000e-005	1.7492
Total		**7.9200e-003**	**0.0687**	**0.0362**	**4.3000e-004**		**5.4700e-003**	**5.4700e-003**		**5.4700e-003**	**5.4700e-003**	**0.0000**	**78.3648**	**78.3648**	**1.5000e-003**	**1.4400e-003**	**78.8305**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	688184	90.5250	9.0500e-003	1.8700e-003	91.3095
Enclosed Parking with Elevator	117200	15.4167	1.5400e-003	3.2000e-004	15.5503
Fast Food Restaurant w/o Drive Thru	57960	7.6242	7.6000e-004	1.6000e-004	7.6902
Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	99560	13.0963	1.3100e-003	2.7000e-004	13.2098
Total		**129.9770**	**0.0130**	**2.6900e-003**	**131.1033**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	667331	87.7819	8.7800e-003	1.8200e-003	88.5426
Enclosed Parking with Elevator	93680	12.3228	1.2300e-003	2.5000e-004	12.4296
Fast Food Restaurant w/o Drive Thru	56358	7.4134	7.4000e-004	1.5000e-004	7.4777

Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	93176	12.2565	1.2300e-003	2.5000e-004	12.3628
Total		**123.0896**	**0.0123**	**2.5400e-003**	**124.1562**

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	0.8471	0.0195	1.2117	1.0000e-004		7.1700e-003	7.1700e-003		7.1700e-003	7.1700e-003	0.0000	8.4730	8.4730	2.0200e-003	1.2000e-004	8.5589
Unmitigated	0.8471	0.0195	1.2117	1.0000e-004		7.1700e-003	7.1700e-003		7.1700e-003	7.1700e-003	0.0000	8.4730	8.4730	2.0200e-003	1.2000e-004	8.5589

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0363	0.0139	1.2093	6.0000e-005		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	1.9813	1.9813	1.8900e-003	0.0000	2.0287
Total	**0.8471**	**0.0196**	**1.2117**	**1.0000e-004**		**7.1700e-003**	**7.1700e-003**		**7.1700e-003**	**7.1700e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0100e-003**	**1.2000e-004**	**8.5589**

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0363	0.0139	1.2093	6.0000e-005		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	1.9813	1.9813	1.8900e-003	0.0000	2.0287
Total	**0.8471**	**0.0196**	**1.2117**	**1.0000e-004**		**7.1700e-003**	**7.1700e-003**		**7.1700e-003**	**7.1700e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0100e-003**	**1.2000e-004**	**8.5589**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.1585	9.7400e-003	5.8300e-003	12.1396
Unmitigated	12.2727	0.0121	7.2800e-003	14.7455

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	7.90918 / 4.84757	10.6596	0.0104	6.2500e-003	12.7820
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.607067 / 0.038749	0.6647	7.8000e-004	4.8000e-004	0.8263
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.703689 / 0.431293	0.9484	9.3000e-004	5.6000e-004	1.1372
Total		**12.2727**	**0.0121**	**7.2900e-003**	**14.7455**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.32735 / 4.55186	8.8379	8.3700e-003	5.0000e-003	10.5385
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.485654 / 0.0363853	0.5343	6.3000e-004	3.8000e-004	0.6635
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.562951 / 0.404984	0.7863	7.4000e-004	4.5000e-004	0.9376
Total		**10.1585**	**9.7400e-003**	**5.8300e-003**	**12.1396**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.9210	1.2955	0.0000	54.3083
Unmitigated	21.9210	1.2955	0.0000	54.3083

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

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

Attachment 3: Operational Community Risk

Hesperian Boulevard Traffic TAC Emissions and Health Risk Calculations

Village Green, San Lorenzo, CA
Hesperian Blvd
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)	Average Vehicles per Hour
NB-Hesperian	Northbound Hesperian Blvd	N	3	809	36	11.0	3.4	317	variable	13
SB-Hesperian	Southbound Hesperian Blvd	S	3	808	36	11.0	3.4	317	variable	13

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	9	0.0230	9	6.84%	22	0.0263	17	6.13%	19	0.0260
2	1.90%	6	0.0214	10	4.78%	15	0.0237	18	4.97%	16	0.0244
3	2.37%	8	0.0210	11	6.91%	22	0.0204	19	4.52%	14	0.0181
4	2.51%	8	0.0244	12	7.20%	23	0.0205	20	3.47%	11	0.0169
5	1.68%	5	0.0231	13	6.81%	22	0.0204	21	2.12%	7	0.0233
6	2.28%	7	0.0248	14	6.84%	22	0.0203	22	2.54%	8	0.0239
7	3.84%	12	0.0246	15	6.15%	19	0.0200	23	1.67%	5	0.0227
8	5.84%	19	0.0258	16	5.13%	16	0.0190	24	0.81%	3	0.0226
								Total		317	

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	9	0.0230	9	6.84%	22	0.0263	17	6.13%	19	0.0260
2	1.90%	6	0.0214	10	4.78%	15	0.0237	18	4.97%	16	0.0244
3	2.37%	8	0.0210	11	6.91%	22	0.0204	19	4.52%	14	0.0181
4	2.51%	8	0.0244	12	7.20%	23	0.0205	20	3.47%	11	0.0169
5	1.68%	5	0.0231	13	6.81%	22	0.0204	21	2.12%	7	0.0233
6	2.28%	7	0.0248	14	6.84%	22	0.0203	22	2.54%	8	0.0239
7	3.84%	12	0.0246	15	6.15%	19	0.0200	23	1.67%	5	0.0227
8	5.84%	19	0.0258	16	5.13%	16	0.0190	24	0.81%	3	0.0226
								Total		317	

Village Green, San Lorenzo, CA
Hesperian Blvd
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-Hesperian	Northbound Hesperian Blvd	N	3	809	36	11.0	1.3	13,500	variable
SB-Hesperian	Southbound Hesperian Blvd	S	3	808	36	11.0	1.3	13,500	variable

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	148	0.0220	9	7.07%	954	0.0214	17	7.39%	997	0.0212
2	0.37%	50	0.0231	10	4.27%	577	0.0211	18	8.27%	1117	0.0209
3	0.32%	43	0.0245	11	4.61%	622	0.0207	19	5.79%	782	0.0199
4	0.20%	28	0.0351	12	5.84%	789	0.0206	20	4.36%	588	0.0198
5	0.46%	62	0.0233	13	6.17%	833	0.0203	21	3.29%	444	0.0202
6	0.83%	112	0.0236	14	6.03%	815	0.0204	22	3.31%	446	0.0204
7	3.77%	509	0.0209	15	7.07%	955	0.0202	23	2.47%	334	0.0202
8	7.90%	1066	0.0210	16	7.21%	974	0.0200	24	1.90%	256	0.0199
								Total		13,500	

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	148	0.0220	9	7.07%	954	0.0214	17	7.39%	997	0.0212
2	0.37%	50	0.0231	10	4.27%	577	0.0211	18	8.27%	1117	0.0209
3	0.32%	43	0.0245	11	4.61%	622	0.0207	19	5.79%	782	0.0199
4	0.20%	28	0.0351	12	5.84%	789	0.0206	20	4.36%	588	0.0198
5	0.46%	62	0.0233	13	6.17%	833	0.0203	21	3.29%	444	0.0202
6	0.83%	112	0.0236	14	6.03%	815	0.0204	22	3.31%	446	0.0204
7	3.77%	509	0.0209	15	7.07%	955	0.0202	23	2.47%	334	0.0202
8	7.90%	1066	0.0210	16	7.21%	974	0.0200	24	1.90%	256	0.0199
								Total		13,500	

Village Green, San Lorenzo, CA
Hesperian Blvd
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-Hesperian	Northbound Hesperian Blvd	N	3	809	36	11.0	1.3	13,500	variable
SB-Hesperian	Southbound Hesperian Blvd	S	3	808	36	11.0	1.3	13,500	variable

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	148	0.0153	9	7.07%	954	0.0153	17	7.39%	997	0.0153
2	0.37%	50	0.0153	10	4.27%	577	0.0153	18	8.27%	1117	0.0153
3	0.32%	43	0.0153	11	4.61%	622	0.0153	19	5.79%	782	0.0153
4	0.20%	28	0.0153	12	5.84%	789	0.0153	20	4.36%	588	0.0153
5	0.46%	62	0.0153	13	6.17%	833	0.0153	21	3.29%	444	0.0153
6	0.83%	112	0.0153	14	6.03%	815	0.0153	22	3.31%	446	0.0153
7	3.77%	509	0.0153	15	7.07%	955	0.0153	23	2.47%	334	0.0153
8	7.90%	1066	0.0153	16	7.21%	974	0.0153	24	1.90%	256	0.0153
								Total		13,500	

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-Hesperian

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	148	0.0153	9	7.07%	954	0.0153	17	7.39%	997	0.0153
2	0.37%	50	0.0153	10	4.27%	577	0.0153	18	8.27%	1117	0.0153
3	0.32%	43	0.0153	11	4.61%	622	0.0153	19	5.79%	782	0.0153
4	0.20%	28	0.0153	12	5.84%	789	0.0153	20	4.36%	588	0.0153
5	0.46%	62	0.0153	13	6.17%	833	0.0153	21	3.29%	444	0.0153
6	0.83%	112	0.0153	14	6.03%	815	0.0153	22	3.31%	446	0.0153
7	3.77%	509	0.0153	15	7.07%	955	0.0153	23	2.47%	334	0.0153
8	7.90%	1066	0.0153	16	7.21%	974	0.0153	24	1.90%	256	0.0153
								Total		13,500	

Village Green, San Lorenzo, CA
SR-92 Traffic Data and PM2.5 & TOG Emission Factors - 55 mph

Analysis Year = ***2020***

						Emission Factors				
						Diesel	All Vehicles		Gas Vehicles	
Vehicle Type	**2020 Caltrans Number Vehicles (veh/day)**	**2020 Number Vehicles (veh/day)**	**2020 Percent Diesel**	**Number Diesel Vehicles (veh/day)**	**Vehicle Speed (mph)**	**Vehicles DPM (g/VMT)**	**Total PM2.5 (g/VMT)**	**Exhaust PM2.5 (g/VMT)**	**Exhaust TOG (g/VMT)**	**Running TOG (g/VMT)**
LDA	18,157	18,157	1.11%	201	35	0.0151	0.0194	0.0017	0.0191	0.046
LDT	7,739	7,739	0.16%	13	35	0.0165	0.0194	0.0016	0.0258	0.091
MDT	736	736	10.18%	75	35	0.0182	0.0239	0.0030	0.0530	0.179
HDT	368	368	93.74%	345	35	0.0248	0.0788	0.0234	0.1771	0.102
Total	27,000	27,000	-	634	35	-	-		-	-
Mix Avg Emission Factor						**0.02077**	**0.02035**	**0.00200**	**0.02203**	**0.06244**

Increase From 2020	1.00	
Vehicles/Direction	13,500	317
Avg Vehicles/Hour/Direction	**563**	**13**

Traffic Data Year = ***2020***

Project Traffic Report		Total	Truck by Axle			
	Total	Truck	2	3	4	5
Hesperian Blvd	27,000	1,104	736	123	123	123
			66.67%	11.11%	11.11%	11.11%
	Percent of Total Vehicles	4.09%	2.73%	0.45%	0.45%	0.45%

* Truck percentage based on BAAQMD for trucks in Alameda Co. on non-state highways

Traffic Increase per Year (%) = ***1.00%***

Village Green, San Lorenzo, CA
Hesperian Blvd Traffic Data and PM2.5 & TOG Emission Factors - 25 mph

Analysis Year = ***2020***

						Emission Factors				
						Diesel	All Vehicles		Gas Vehicles	
Vehicle Type	**2020 Caltrans Number Vehicles (veh/day)**	**2020 Number Vehicles (veh/day)**	**2020 Percent Diesel**	**Number Diesel Vehicles (veh/day)**	**Vehicle Speed (mph)**	**Vehicles DPM (g/VMT)**	**Total PM2.5 (g/VMT)**	**Exhaust PM2.5 (g/VMT)**	**Exhaust TOG (g/VMT)**	**Running TOG (g/VMT)**
LDA	18,157	18,157	1.11%	201	25	0.0203	0.0203	0.0026	0.0293	0.046
LDT	7,739	7,739	0.16%	13	25	0.0222	0.0203	0.0025	0.0394	0.091
MDT	736	736	10.18%	75	25	0.0272	0.0281	0.0071	0.0835	0.179
HDT	368	368	93.74%	345	25	0.0312	0.0841	0.0288	0.2317	0.102
Total	27,000	27,000	-	634	25	-	-		-	-
Mix Avg Emission Factor						**0.02707**	**0.02140**	**0.00305**	**0.03383**	**0.06244**

Increase From 2020	1.00	
Vehicles/Direction	13,500	317
Avg Vehicles/Hour/Direction	**563**	**13**

Traffic Data Year = ***2020***

Project Traffic Report		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
Hesperian Blvd	27,000	1,104	736	123	123	123
			66.67%	11.11%	11.11%	11.11%
	Percent of Total Vehicles	4.09%	2.73%	0.45%	0.45%	0.45%

* Truck percentage based on BAAQMD for trucks in Alameda Co. on non-state highways

Traffic Increase per Year (%) = ***1.00%***

Village Green, San Lorenzo, CA
Hesperian Blvd Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5}$ = [k(sL)^$^{0.91}$ x (W)^$^{1.02}$ x (1-P/4N) x 453.59

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5}$ = k_{PM10} x (0.0686/0.4572) = 1.0 x 0.15 = 0.15 g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Alameda	61	0.01531

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

Village Green, Santa Clara, CA - Hesperian Blvd Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 1st Floor Residential Receptors (1.5 meter receptor heights)

Emissions Year	2020
Receptor Information	
Number of Receptors	47
Receptor Height =	1.5 meters above ground level
Receptor distances =	8 meter spacing in project residential areas

Meteorological Conditions

CARB Oakland Airport Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2009-2013	0.00270	0.1400	0.3639

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2009-2013	0.2077	0.0880	0.1197

Village Green, Santa Clara, CA - Hesperian Blvd Traffic -Maximum Cancer Risks
On-Site 1st Floor Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

	Infant/Child			**Adult**
Age -->	**3rd Trimester**	**0 - <2**	**2 - <16**	**16 - 30**
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				**Cancer Risk (per million)**			
					Annual TAC Conc (ug/m3)						
Exposure Year	**Year**	**Exposure Duration (years)**	**Age**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Total**
0	2019	0.25	-0.25 - 0*	10	0.0027	0.1400	0.3639	0.037	0.011	0.002	0.05
1	2019	1	1	10	0.0027	0.1400	0.3639	0.44	0.131	0.020	0.59
2	2020	1	2	10	0.0027	0.1400	0.3639	0.44	0.131	0.020	0.59
3	2021	1	3	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
4	2022	1	4	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
5	2023	1	5	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
6	2024	1	6	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
7	2025	1	7	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
8	2026	1	8	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
9	2027	1	9	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
10	2028	1	10	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
11	2029	1	11	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
12	2030	1	12	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
13	2031	1	13	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
14	2032	1	14	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
15	2033	1	15	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
16	2034	1	16	3	0.0027	0.1400	0.3639	0.07	0.021	0.003	0.09
17	2035	1	17	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
18	2036	1	18	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
19	2037	1	19	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
20	2038	1	20	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
21	2039	1	21	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
22	2040	1	22	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
23	2041	1	23	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
24	2042	1	24	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
25	2043	1	25	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
26	2044	1	26	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
27	2045	1	27	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
28	2046	1	28	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
29	2047	1	29	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
30	2048	1	30	1	0.0027	0.1400	0.3639	0.01	0.002	0.000	0.010
Total Increased Cancer Risk			**Total**					2.01	0.595	0.091	**2.7**

* Third trimester of pregnancy

Village Green, Santa Clara, CA - Hesperian Blvd Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 2nd Floor Residential Receptors (5.2 meter receptor heights)

Emissions Year	2020
Receptor Information	
Number of Receptors	145
Receptor Height =	5.2 meters above ground level
Receptor distances =	8 meter spacing in project residential areas
Meteorological Conditions	
CARB Oakland Airport Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2009-2013	0.00170	0.0874	0.2270

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2009-2013	0.1295	0.0549	0.0747

Village Green, Santa Clara, CA - Hesperian Blvd Traffic -Maximum Cancer Risks
On-Site 2nd Floor Residential Receptors (5.2 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

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

Cancer Potency Factors (mg/kg-day)$^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - <2**	**2 - <16**	**16 - 30**
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
					Annual TAC Conc (ug/m3)						
Exposure Year	**Year**	**Exposure Duration (years)**	**Age**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Total**
0	2019	0.25	-0.25 - 0*	10	0.0017	0.0874	0.2270	0.023	0.007	0.001	0.03
1	2019	1	1	10	0.0017	0.0874	0.2270	0.28	0.082	0.013	0.37
2	2020	1	2	10	0.0017	0.0874	0.2270	0.28	0.082	0.013	0.37
3	2021	1	3	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
4	2022	1	4	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
5	2023	1	5	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
6	2024	1	6	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
7	2025	1	7	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
8	2026	1	8	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
9	2027	1	9	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
10	2028	1	10	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
11	2029	1	11	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
12	2030	1	12	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
13	2031	1	13	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
14	2032	1	14	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
15	2033	1	15	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
16	2034	1	16	3	0.0017	0.0874	0.2270	0.04	0.013	0.002	0.06
17	2035	1	17	1	0.0017	0.0874	0.2270	0.00	0.0014	0.000	0.007
18	2036	1	18	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
19	2037	1	19	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
20	2038	1	20	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
21	2039	1	21	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
22	2040	1	22	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
23	2041	1	23	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
24	2042	1	24	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
25	2043	1	25	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
26	2044	1	26	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
27	2045	1	27	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
28	2046	1	28	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
29	2047	1	29	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
30	2048	1	30	1	0.0017	0.0874	0.2270	0.00	0.001	0.000	0.007
Total Increased Cancer Risk			**Total**					1.27	0.371	0.057	**1.7**

* Third trimester of pregnancy

Village Green, Santa Clara, CA - Hesperian Blvd Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
At location of Construction Maximally Exposed individual (MEI)

Emissions Year	2020
Receptor Information	
Number of Receptors	1
Receptor Height =	1.5 meters above ground level
Receptor distances =	Construction MEI receptor
Meteorological Conditions	
CARB Oakland Airport Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration ($\mu g/m^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2009-2013	0.00225	0.1138	0.2958

Meteorological Data Years	PM2.5 Concentrations ($\mu g/m^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2009-2013	0.1688	0.0715	0.0973

Village Green, Santa Clara, CA - Hesperian Blvd Traffic -Maximum Cancer Risks
At location of Construction Maximally Exposed individual (MEI)
30-Year Residential Exposure

Cancer Risk Calculation Method

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - <2**	**2 - <16**	**16 - 30**
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information							
				Age	Annual TAC Conc (ug/m3)			Cancer Risk (per million)			
Exposure Year	**Year**	**Exposure Duration (years)**	**Age**	**Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Total**
0	2019	0.25	-0.25 - 0*	10	0.0023	0.1138	0.2958	0.031	0.009	0.001	0.04
1	2019	1	1	10	0.0023	0.1138	0.2958	0.37	0.107	0.016	0.49
2	2020	1	2	10	0.0023	0.1138	0.2958	0.37	0.107	0.016	0.49
3	2021	1	3	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
4	2022	1	4	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
5	2023	1	5	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
6	2024	1	6	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
7	2025	1	7	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
8	2026	1	8	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
9	2027	1	9	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
10	2028	1	10	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
11	2029	1	11	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
12	2030	1	12	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
13	2031	1	13	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
14	2032	1	14	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
15	2033	1	15	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
16	2034	1	16	3	0.0023	0.1138	0.2958	0.06	0.017	0.003	0.08
17	2035	1	17	1	0.0023	0.1138	0.2958	0.01	0.0019	0.000	0.009
18	2036	1	18	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
19	2037	1	19	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
20	2038	1	20	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
21	2039	1	21	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
22	2040	1	22	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
23	2041	1	23	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
24	2042	1	24	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
25	2043	1	25	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
26	2044	1	26	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
27	2045	1	27	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
28	2046	1	28	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
29	2047	1	29	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
30	2048	1	30	1	0.0023	0.1138	0.2958	0.01	0.002	0.000	0.009
Total Increased Cancer Risk			**Total**					1.67	0.484	0.074	**2.2**

* Third trimester of pregnancy

BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**5/17/2018**
Contact Name	James E. Reyff
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x24
Email	jreyff@illingworthrodkin.com
Project Name	Village Green
Address	southwest corner of Paseo Grande and Hesperian Boulevard intersection
City	San Lorenzo
County	Alameda
Type (residential, commercial, mixed use, industrial, etc.)	Residential, commercial
Project Size (# of units or building square feet)	163 DU, 12,000sf retail
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A** cmplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in **Table B** section only.

6. Note that a small percentage of the stationary Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

												PROJECTSITE				Const MEI				
Distance from Receptor (feet) or MEI[1]	Facility Name	Address	Plant No.	Cancer Risk[2]	Hazard Risk[2]	PM$_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	OEHHA Factor	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5	Distance from Receptor (feet) or MEI[1]	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
750	Chevron Service Station	15900 Hesperian Blvd	G8416	54.76575	0.0822	na		gas station		operational; use gas station distance multiplier	1.37	0.02	1.26	0.00	#VALUE!	1200	0.01	0.82	0.00	#VALUE!
				0	0															

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

VILLAGE GREEN APARTMENTS PROJECT

AUTOMOBILE TRIP GENERATION ESTIMATE

Land Use	Size[1]		Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Apartments[2]	163	DU	890	15	41	56	43	28	71
Coffee Shop without Drive-Through[3]	2.0	KSF	1,870	104	99	203	37	36	73
Shopping Center[4]	9.5	KSF	360	6	3	9	18	19	37
Subtotal Net Raw Project Trips			***3,120***	***125***	***143***	***268***	***98***	***83***	***181***
Walk/Bike/Transit Reduction (13%) – Apartments[5]			*-120*	*-4*	*-3*	*-7*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Coffee Shop[5]			*-240*	*-13*	*-13*	*-26*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Shopping Center[5]			*-50*	*-1*	*0*	*-1*	*-3*	*-2*	*-5*
Net New Trips After Mode Split Adjustment – Apartments			*770*	*11*	*38*	*49*	*38*	*24*	*62*
Net New Trips After Mode Split Adjustment - Coffee Shop			*1,630*	*91*	*86*	*177*	*32*	*32*	*64*
Net New Trips After Mode Split Adjustment - Shopping Center			*310*	*5*	*3*	*8*	*15*	*17*	*32*
Subtotal After Mode Split Adjustments			***2,710***	***107***	***127***	***234***	***85***	***73***	***158***
Internalization Reduction (3%) – Apartments[6]			*-20*	*-1*	*0*	*-1*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Coffee Shop[6]			*-50*	*-3*	*-2*	*-5*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Shopping Center[6]			*-10*	*0*	*0*	*0*	*-1*	*0*	*-1*
Net External Vehicle Trips – Apartments			*750*	*10*	*38*	*48*	*37*	*23*	*60*
Net External Vehicle Trips - Coffee Shop			*1,580*	*88*	*84*	*172*	*31*	*31*	*62*
Net External Vehicle Trips - Shopping Center			*300*	*5*	*3*	*8*	*14*	*17*	*31*
Net External Trips (Total Driveway Volumes)			***2,630***	***103***	***125***	***228***	***82***	***71***	***153***
Pass-by Adjustment (44% Daily/55% AM/21% PM) - Coffee Shop[7]			*-690*	*-47*	*-47*	*-94*	*-7*	*-6*	*-13*
Pass-by Adjustment (17% Daily/0% AM/34% PM) - Shopping Center[8]			*-50*	*0*	*0*	*0*	*-6*	*-5*	*-11*
Net-New External Vehicle Trips – Apartments			*750*	*10*	*38*	*48*	*37*	*23*	*60*
Net-New External Vehicle Trips - Coffee Shop			*890*	*41*	*37*	*78*	*24*	*25*	*49*
Net-New External Vehicle Trips - Shopping Center			*250*	*5*	*3*	*8*	*8*	*12*	*20*
Total Net-New External Vehicle Trips			***1,890***	***56***	***78***	***134***	***69***	***60***	***129***

1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE Trip Generation (Tenth Edition) land use category 221 (Multi-Family Mid-Rise - Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 5.45*X-1.75
   AM Peak Hour: Ln(T)=0.98Ln(X)-0.98 (26% in, 74% out)
   PM Peak Hour: Ln(T) = 0.96Ln(X)-0.63 (61% in, 39% out)
3. ITE Trip Generation (Tenth Edition) land use category 936 (Coffee/Donut Shop without Drive-Through Window- Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 9.22*(AM Peak Hour Trip Generation)
   No daily rate is provided. The ratio between daily trips and AM peak hour trips for land use 937 – Coffee/Donut Shop with Drive-Through Window was applied.
   AM Peak Hour: T = 101.14*(X) (51% in, 49% out)
   PM Peak Hour: T = 36.31*(X) (50% in, 50% out)
4. ITE Trip Generation (Tenth Edition) land use category 820 (Shopping Center- Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 37.8*(X)
   AM Peak Hour: T = 0.94*(X) (62% in, 38% out)
   PM Peak Hour: T = 3.81*(X) (48% in, 52% out)
5. The 13-percent adjustment is based on census data for the surrounding areas that show 13% of residents walk, bike, or take transit to work.
6. Fehr & Peers' in-house tool, MainStreet, was employed to determine the percent internalization for the site.
7. Coffee shop pass-by rates are based on data collected at two Starbucks locations without drive-throughs in Fountain Valley, California. The pass-by rates applied are the average of two sites' observed rates. (www.scribd.com/document/34431881/Trip-Generation-Analysis, accessed in April, 2018).
8. The shopping center peak hour pass-by rates are based on ITE *Trip Generation Handbook* (Third Edition) data. The AM peak hour pass-by rate is assumed to be zero and the daily rate is assumed to be half of the PM rate.

Source: Fehr & Peers, 2018.

Attachment 4: Construction Health Risk Calculations and Emissions

Village Green, San Lorenzo, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model 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)**		
2019	Construction	0.1639	DPM	327.8	0.09979	1.26E-02	18,186	**6.91E-07**
2020	Construction	0.0180	DPM	36.0	0.01096	1.38E-03	18,186	**7.59E-08**
Total		***0.1819***		***363.8***	***0.1107***	***0.0140***		

Operation Hours
hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

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)**		
2019	Construction	FUG	0.1178	235.6	0.07172	9.04E-03	18,186	**4.97E-07**
2020	Construction	FUG	0.00048	1.0	0.00029	3.68E-05	18,186	**2.02E-09**
Total			***0.1183***	***236.6***	***0.0720***	***0.0091***		

Operation Hours
hr/day = 9 (7am - 4pm)
days/yr = 365
hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model 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)**		
2019	Construction	0.0173	DPM	34.6	0.01053	1.33E-03	18,186	**7.30E-08**
2020	Construction	0.0081	DPM	16.1	0.00491	6.18E-04	18,186	**3.40E-08**
Total		***0.0254***		***50.7***	***0.0154***	***0.0019***		

Operation Hours
hr/day = 9 (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 (ton/year)**	**(lb/yr)**	**(lb/hr)**	**(g/s)**	**Modeled Area (m^2)**	**PM2.5 Emission Rate g/s/m^2**
2019	Construction	FUG	0.0611	122.2	0.03720	4.69E-03	18,186	**2.58E-07**
2020	Construction	FUG	0.00048	1.0	0.00029	3.68E-05	18,186	**2.02E-09**
Total			***0.0616***	***123.2***	***0.0375***	***0.0047***		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Village Green, San Lorenzo, CA
Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Unmitigated

Emissions Year	**Maximum Concentrations Exhaust PM10/DPM ($\mu g/m^3$)**	**Fugitive PM2.5 ($\mu g/m^3$)**	**Cancer Risk (per million) Child**	**Adult**	**Hazard Index (-)**	**Maximum Annual PM2.5 Concentration ($\mu g/m^3$)**
2019	0.2597	0.2272	42.7	0.7	0.052	0.49
2020	0.0285	0.0009	4.7	0.1	0.006	0.03
Total	-	-	**47.3**	**0.8**		
Maximum	0.2597	0.2272	-	-	**0.052**	**0.49**

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	**Maximum Concentrations Exhaust PM10/DPM ($\mu g/m^3$)**	**Fugitive PM2.5 ($\mu g/m^3$)**	**Cancer Risk (per million) Child**	**Adult**	**Hazard Index (-)**	**Maximum Annual PM2.5 Concentration ($\mu g/m^3$)**
2019	0.0274	0.1179	4.5	0.1	0.005	0.15
2020	0.0128	0.0009	2.1	0.0	0.003	0.01
Total	-	-	**6.6**	**0.1**		
Maximum	0.0274	0.1179	-	-	**0.005**	**0.15**

Village Green, San Lorenzo, CA - Without Mitigation
Maximum DPM Cancer Risk Calculations From Construction Impacts at Off-Site Receptors-1.5 meter

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
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2019	0.2597	10	42.65	2019	0.2597	1	0.75	0.2272	0.487
2	1	1 - 2	2020	0.0285	10	4.68	2020	0.0285	1	0.08	0.0009	0.029
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**47.34**				**0.83**		

* Third trimester of pregnancy

Village Green, San Lorenzo, CA - With Mitigation
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors- 1.5 meter

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

Exposure Year	**Exposure Duration (years)**	**Age**	**Infant/Child - Exposure Information**			**Infant/Child Cancer Risk (per million)**	**Adult - Exposure Information**			**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
			DPM Conc (ug/m3)		**Age Sensitivity Factor**		**Modeled DPM Conc (ug/m3)**		**Age Sensitivity Factor**			
			Year	**Annual**			**Year**	**Annual**				
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2019	0.0274	10	4.51	2019	0.0274	1	0.08	0.1179	0.145
2	1	1 - 2	2020-2021	0.0128	10	2.10	2020	0.0128	1	0.04	0.0009	0.014
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**6.60**				**0.12**		

* Third trimester of pregnancy

Village Green - San Lorenzo

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	50.00	Space	0.00	20,000.00	0
Parking Lot	180.00	Space	0.00	72,000.00	0
Fast Food Restaurant w/o Drive Thru	2.00	1000sqft	0.00	2,000.00	0
Apartments Mid Rise	163.00	Dwelling Unit	5.12	163,000.00	466
Strip Mall	9.50	1000sqft	0.00	9,500.00	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 rate

Land Use - Population = 9st*1+80 1br*1.5+64 2br*2.5+10 3br*3.5 = 324, 3*9.5ksf, 3*2ksf Site =5.12acres

Construction Phase - Using default conditions. Site mostly demolished

Off-road Equipment -

Off-road Equipment - Assume crane is used a quarter of the time

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - on and near site travel

Demolition - use 25,000sf

Grading - Assume some marginal import/export

Vehicle Trips - Apts = 750/163=4.60Coffee=1580/2ksf=790(2miCust trip)Shop=300/9.5ksf=31.58
apts4.60,4.424.05coffee790.00,767.93,551.68shop31.58,29.96,14.56
passby =44%

Woodstoves - no wood 52 nat gas

Energy Use -

Water And Wastewater - WTP treatment Use 75gal/day/apt *365 days 466 people 12,756,750 (7909185ind and4847565outdoor)

Construction Off-road Equipment Mitigation - Tier 2/DPF 3 and BMPs

Energy Mitigation - Meet 2019 building standards with solar

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
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	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	24.45	52.00
tblFireplaces	NumberWood	27.71	0.00
tblGrading	MaterialSiltContent	6.90	4.30
tblGrading	MeanVehicleSpeed	7.10	40.00
tblLandUse	LotAcreage	0.45	0.00

tblLandUse	LotAcreage	1.62	0.00
tblLandUse	LotAcreage	0.05	0.00
tblLandUse	LotAcreage	4.29	5.12
tblLandUse	LotAcreage	0.22	0.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblVehicleTrips	CC_TL	7.30	2.00
tblVehicleTrips	PB_TP	12.00	44.00
tblVehicleTrips	PB_TP	15.00	17.00
tblVehicleTrips	PR_TP	51.00	19.00
tblVehicleTrips	PR_TP	45.00	43.00
tblVehicleTrips	ST_TR	6.39	4.42

tblVehicleTrips	ST_TR	696.00	767.93
tblVehicleTrips	ST_TR	42.04	29.96
tblVehicleTrips	SU_TR	5.86	4.05
tblVehicleTrips	SU_TR	500.00	551.68
tblVehicleTrips	SU_TR	20.43	14.56
tblVehicleTrips	WD_TR	6.65	4.60
tblVehicleTrips	WD_TR	716.00	790.00
tblVehicleTrips	WD_TR	44.32	31.58
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	10,620,106.18	7,909,185.00
tblWater	OutdoorWaterUseRate	6,695,284.33	4,847,565.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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	0.3290	2.9807	2.3540	3.8300e-003	0.3167	0.1639	0.4806	0.1178	0.1538	0.2716	0.0000	338.3042	338.3042	0.0786	0.0000	340.2696
2020	1.2630	0.3319	0.3316	5.3000e-004	1.7700e-003	0.0180	0.0198	4.8000e-004	0.0169	0.0173	0.0000	45.9709	45.9709	0.0115	0.0000	46.2592
Maximum	**1.2630**	**2.9807**	**2.3540**	**3.8300e-003**	**0.3167**	**0.1639**	**0.4806**	**0.1178**	**0.1538**	**0.2716**	**0.0000**	**338.3042**	**338.3042**	**0.0786**	**0.0000**	**340.2696**

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	0.1639	3.2035	2.4352	3.8300e-003	0.3167	0.0173	0.3340	0.0611	0.0172	0.0783	0.0000	338.3039	338.3039	0.0786	0.0000	340.2692
2020	1.2494	0.4435	0.3621	5.3000e-004	1.7700e-003	8.0600e-003	9.8400e-003	4.8000e-004	8.0600e-003	8.5400e-003	0.0000	45.9709	45.9709	0.0115	0.0000	46.2592
Maximum	**1.2494**	**3.2035**	**2.4352**	**3.8300e-003**	**0.3167**	**0.0173**	**0.3340**	**0.0611**	**0.0172**	**0.0783**	**0.0000**	**338.3039**	**338.3039**	**0.0786**	**0.0000**	**340.2692**

	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	**11.22**	**-10.09**	**-4.16**	**0.00**	**0.00**	**86.08**	**31.29**	**47.94**	**85.18**	**69.93**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**1-1-2019**	**3-31-2019**	1.1179	0.9680
2	**4-1-2019**	**6-30-2019**	0.7258	0.7944
3	**7-1-2019**	**9-30-2019**	0.7338	0.8031

4	**10-1-2019**	**12-31-2019**	0.7313	0.8007
5	**1-1-2020**	**3-31-2020**	1.5976	1.6961
		Highest	1.5976	1.6961

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Energy	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	226.1706	226.1706	0.0148	4.4500e-003	227.8686
Mobile	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620
Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	3.2620	9.0107	12.2727	0.0121	7.2800e-003	14.7455
Total	**1.4930**	**3.7366**	**6.5599**	**0.0154**	**0.9753**	**0.0317**	**1.0070**	**0.2622**	**0.0307**	**0.2928**	**25.1830**	**1,607.1804**	**1,632.3634**	**1.4100**	**0.0119**	**1,671.1443**

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Energy	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	201.4544	201.4544	0.0138	3.9800e-003	202.9867
Mobile	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620

Waste						0.0000	0.0000		0.0000	0.0000	21.9210	0.0000	21.9210	1.2955	0.0000	54.3083
Water						0.0000	0.0000		0.0000	0.0000	2.6096	7.5489	10.1585	9.7400e-003	5.8300e-003	12.1396
Total	**1.4912**	**3.7211**	**6.5526**	**0.0153**	**0.9753**	**0.0304**	**1.0057**	**0.2622**	**0.0294**	**0.2916**	**24.5306**	**1,581.0023**	**1,605.5329**	**1.4065**	**9.9300e-003**	**1,643.6566**

	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	**0.12**	**0.41**	**0.11**	**0.65**	**0.00**	**3.94**	**0.12**	**0.00**	**4.08**	**0.43**	**2.59**	**1.63**	**1.64**	**0.24**	**16.20**	**1.64**

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	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/11/2019	5	20	
4	Building Construction	Building Construction	3/12/2019	1/27/2020	5	230	
5	Paving	Paving	1/28/2020	2/24/2020	5	20	
6	Architectural Coating	Architectural Coating	2/25/2020	3/23/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 330,075; Residential Outdoor: 110,025; Non-Residential Indoor: 17,250; Non-Residential Outdoor: 5,750; 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	2.00	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	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

<u>Trips and VMT</u>

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	114.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	160.00	34.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	32.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

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					
Fugitive Dust					0.0123	0.0000	0.0123	1.8600e-003	0.0000	1.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**0.0123**	**0.0180**	**0.0303**	**1.8600e-003**	**0.0167**	**0.0186**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

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	1.4000e-004	6.3200e-003	8.2000e-004	1.0000e-005	5.0000e-005	1.0000e-005	6.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.7887	0.7887	1.4000e-004	0.0000	0.7921
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	1.0000e-004	1.2200e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1295	0.1295	1.0000e-005	0.0000	0.1297
Total	**3.4000e-004**	**6.4200e-003**	**2.0400e-003**	**1.0000e-005**	**1.6000e-004**	**1.0000e-005**	**1.7000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**0.9182**	**0.9182**	**1.5000e-004**	**0.0000**	**0.9218**

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					0.0123	0.0000	0.0123	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0126	0.3266	0.2467	3.9000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0126**	**0.3266**	**0.2467**	**3.9000e-004**	**0.0123**	**1.3700e-003**	**0.0137**	**9.3000e-004**	**1.3700e-003**	**2.3000e-003**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

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	1.4000e-004	6.3200e-003	8.2000e-004	1.0000e-005	5.0000e-005	1.0000e-005	6.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.7887	0.7887	1.4000e-004	0.0000	0.7921
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	1.0000e-004	1.2200e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1295	0.1295	1.0000e-005	0.0000	0.1297
Total	**3.4000e-004**	**6.4200e-003**	**2.0400e-003**	**1.0000e-005**	**1.6000e-004**	**1.0000e-005**	**1.7000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**0.9182**	**0.9182**	**1.5000e-004**	**0.0000**	**0.9218**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	1.2000e-004	6.0000e-005	7.3000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0777	0.0777	0.0000	0.0000	0.0778
Total	**1.2000e-004**	**6.0000e-005**	**7.3000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0777**	**0.0777**	**0.0000**	**0.0000**	**0.0778**

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					0.0903	0.0000	0.0903	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0500e-003	0.1686	0.1148	1.9000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195

Total	**6.0500e-003**	**0.1686**	**0.1148**	**1.9000e-004**	**0.0903**	**7.1000e-004**	**0.0910**	**0.0248**	**7.1000e-004**	**0.0255**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	1.2000e-004	6.0000e-005	7.3000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0777	0.0777	0.0000	0.0000	0.0778
Total	**1.2000e-004**	**6.0000e-005**	**7.3000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0777**	**0.0777**	**0.0000**	**0.0000**	**0.0778**

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					0.1979	0.0000	0.1979	0.0619	0.0000	0.0619	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6423	26.6423	8.4300e-003	0.0000	26.8530
Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.1979**	**0.0140**	**0.2119**	**0.0619**	**0.0129**	**0.0748**	**0.0000**	**26.6423**	**26.6423**	**8.4300e-003**	**0.0000**	**26.8530**

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	2.0000e-004	1.0000e-004	1.2200e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1295	0.1295	1.0000e-005	0.0000	0.1297
Total	**2.0000e-004**	**1.0000e-004**	**1.2200e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1295**	**0.1295**	**1.0000e-005**	**0.0000**	**0.1297**

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					0.1979	0.0000	0.1979	0.0310	0.0000	0.0310	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.2628	0.1899	3.0000e-004		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	26.6422	26.6422	8.4300e-003	0.0000	26.8530
Total	**0.0101**	**0.2628**	**0.1899**	**3.0000e-004**	**0.1979**	**1.1600e-003**	**0.1991**	**0.0310**	**1.1600e-003**	**0.0321**	**0.0000**	**26.6422**	**26.6422**	**8.4300e-003**	**0.0000**	**26.8530**

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	2.0000e-004	1.0000e-004	1.2200e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1295	0.1295	1.0000e-005	0.0000	0.1297
Total	**2.0000e-004**	**1.0000e-004**	**1.2200e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1295**	**0.1295**	**1.0000e-005**	**0.0000**	**0.1297**

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	0.2159	1.8277	1.6596	2.4600e-003		0.1193	0.1193		0.1125	0.1125	0.0000	213.8665	213.8665	0.0496	0.0000	215.1069
Total	**0.2159**	**1.8277**	**1.6596**	**2.4600e-003**		**0.1193**	**0.1193**		**0.1125**	**0.1125**	**0.0000**	**213.8665**	**213.8665**	**0.0496**	**0.0000**	**215.1069**

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	7.1600e-003	0.2664	0.0592	3.2000e-004	3.3100e-003	5.6000e-004	3.8700e-003	9.7000e-004	5.3000e-004	1.5000e-003	0.0000	30.3847	30.3847	4.6200e-003	0.0000	30.5002
Worker	0.0227	0.0108	0.1374	1.6000e-004	0.0125	1.9000e-004	0.0127	3.3500e-003	1.7000e-004	3.5200e-003	0.0000	14.5746	14.5746	7.6000e-004	0.0000	14.5936

Total	**0.0298**	**0.2772**	**0.1966**	**4.8000e-004**	**0.0158**	**7.5000e-004**	**0.0166**	**4.3200e-003**	**7.0000e-004**	**5.0200e-003**	**0.0000**	**44.9593**	**44.9593**	**5.3800e-003**	**0.0000**	**45.0938**

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	0.1047	2.1617	1.6831	2.4600e-003		0.0133	0.0133		0.0133	0.0133	0.0000	213.8663	213.8663	0.0496	0.0000	215.1066
Total	**0.1047**	**2.1617**	**1.6831**	**2.4600e-003**		**0.0133**	**0.0133**		**0.0133**	**0.0133**	**0.0000**	**213.8663**	**213.8663**	**0.0496**	**0.0000**	**215.1066**

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	7.1600e-003	0.2664	0.0592	3.2000e-004	3.3100e-003	5.6000e-004	3.8700e-003	9.7000e-004	5.3000e-004	1.5000e-003	0.0000	30.3847	30.3847	4.6200e-003	0.0000	30.5002
Worker	0.0227	0.0108	0.1374	1.6000e-004	0.0125	1.9000e-004	0.0127	3.3500e-003	1.7000e-004	3.5200e-003	0.0000	14.5746	14.5746	7.6000e-004	0.0000	14.5936
Total	**0.0298**	**0.2772**	**0.1966**	**4.8000e-004**	**0.0158**	**7.5000e-004**	**0.0166**	**4.3200e-003**	**7.0000e-004**	**5.0200e-003**	**0.0000**	**44.9593**	**44.9593**	**5.3800e-003**	**0.0000**	**45.0938**

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	0.0175	0.1503	0.1475	2.2000e-004		9.2900e-003	9.2900e-003		8.7600e-003	8.7600e-003	0.0000	18.9931	18.9931	4.3900e-003	0.0000	19.1029
Total	**0.0175**	**0.1503**	**0.1475**	**2.2000e-004**		**9.2900e-003**	**9.2900e-003**		**8.7600e-003**	**8.7600e-003**	**0.0000**	**18.9931**	**18.9931**	**4.3900e-003**	**0.0000**	**19.1029**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-004	0.0230	4.8400e-003	3.0000e-005	3.0000e-004	3.0000e-005	3.3000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	2.7299	2.7299	3.8000e-004	0.0000	2.7395
Worker	1.8500e-003	8.5000e-004	0.0110	1.0000e-005	1.1300e-003	2.0000e-005	1.1400e-003	3.0000e-004	2.0000e-005	3.2000e-004	0.0000	1.2729	1.2729	6.0000e-005	0.0000	1.2744
Total	**2.4200e-003**	**0.0239**	**0.0159**	**4.0000e-005**	**1.4300e-003**	**5.0000e-005**	**1.4700e-003**	**3.9000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**4.0028**	**4.0028**	**4.4000e-004**	**0.0000**	**4.0139**

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	9.4300e-003	0.1947	0.1516	2.2000e-004		1.1900e-003	1.1900e-003		1.1900e-003	1.1900e-003	0.0000	18.9931	18.9931	4.3900e-003	0.0000	19.1029
Total	**9.4300e-003**	**0.1947**	**0.1516**	**2.2000e-004**		**1.1900e-003**	**1.1900e-003**		**1.1900e-003**	**1.1900e-003**	**0.0000**	**18.9931**	**18.9931**	**4.3900e-003**	**0.0000**	**19.1029**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-004	0.0230	4.8400e-003	3.0000e-005	3.0000e-004	3.0000e-005	3.3000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	2.7299	2.7299	3.8000e-004	0.0000	2.7395
Worker	1.8500e-003	8.5000e-004	0.0110	1.0000e-005	1.1300e-003	2.0000e-005	1.1400e-003	3.0000e-004	2.0000e-005	3.2000e-004	0.0000	1.2729	1.2729	6.0000e-005	0.0000	1.2744
Total	**2.4200e-003**	**0.0239**	**0.0159**	**4.0000e-005**	**1.4300e-003**	**5.0000e-005**	**1.4700e-003**	**3.9000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**4.0028**	**4.0028**	**4.4000e-004**	**0.0000**	**4.0139**

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

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	1.8000e-004	8.0000e-005	1.0900e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1256	0.1256	1.0000e-005	0.0000	0.1258
Total	**1.8000e-004**	**8.0000e-005**	**1.0900e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1256**	**0.1256**	**1.0000e-005**	**0.0000**	**0.1258**

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	9.3100e-003	0.2012	0.1730	2.3000e-004		6.6700e-003	6.6700e-003		6.6700e-003	6.6700e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.3100e-003**	**0.2012**	**0.1730**	**2.3000e-004**		**6.6700e-003**	**6.6700e-003**		**6.6700e-003**	**6.6700e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

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	1.8000e-004	8.0000e-005	1.0900e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1256	0.1256	1.0000e-005	0.0000	0.1258
Total	**1.8000e-004**	**8.0000e-005**	**1.0900e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1256**	**0.1256**	**1.0000e-005**	**0.0000**	**0.1258**

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	1.2266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2290**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

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	3.9000e-004	1.8000e-004	2.3200e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2680	0.2680	1.0000e-005	0.0000	0.2683
Total	**3.9000e-004**	**1.8000e-004**	**2.3200e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2680**	**0.2680**	**1.0000e-005**	**0.0000**	**0.2683**

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	1.2266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1400e-003	0.0235	0.0183	3.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.2277**	**0.0235**	**0.0183**	**3.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

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	3.9000e-004	1.8000e-004	2.3200e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2680	0.2680	1.0000e-005	0.0000	0.2683
Total	**3.9000e-004**	**1.8000e-004**	**2.3200e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2680**	**0.2680**	**1.0000e-005**	**0.0000**	**0.2683**

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	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620
Unmitigated	0.6354	3.6327	5.2974	0.0148	0.9753	0.0178	0.9931	0.2622	0.0168	0.2790	0.0000	1,363.5261	1,363.5261	0.0854	0.0000	1,365.6620

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	749.80	720.46	660.15	1,692,484	1,692,484
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	1,580.00	1,535.86	1103.36	507,078	507,078
Parking Lot	0.00	0.00	0.00		
Strip Mall	300.01	284.62	138.32	407,937	407,937
Total	2,629.81	2,540.94	1,901.83	2,607,499	2,607,499

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 Mid Rise	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
Fast Food Restaurant w/o Drive Thru	9.50	2.00	7.30	1.50	79.50	19.00	19	37	44

Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	43	40	17

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid 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
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
Parking Lot	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
Strip Mall	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

Exceed Title 24

	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	123.0896	123.0896	0.0123	2.5500e-003	124.1562
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	129.9770	129.9770	0.0130	2.6900e-003	131.1033
NaturalGas Mitigated	7.9200e-003	0.0687	0.0362	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	78.3648	78.3648	1.5000e-003	1.4400e-003	78.8305
NaturalGas Unmitigated	9.7200e-003	0.0842	0.0435	5.3000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	96.1936	96.1936	1.8400e-003	1.7600e-003	96.7652

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 Mid Rise	1.42306e+006	7.6700e-003	0.0656	0.0279	4.2000e-004		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003	0.0000	75.9399	75.9399	1.4600e-003	1.3900e-003	76.3912
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 Drive Thru	335840	1.8100e-003	0.0165	0.0138	1.0000e-004		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	17.9217	17.9217	3.4000e-004	3.3000e-004	18.0282
Parking Lot	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
Strip Mall	43700	2.4000e-004	2.1400e-003	1.8000e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3320	2.3320	4.0000e-005	4.0000e-005	2.3459
Total		**9.7200e-003**	**0.0842**	**0.0435**	**5.3000e-004**		**6.7100e-003**	**6.7100e-003**		**6.7100e-003**	**6.7100e-003**	**0.0000**	**96.1936**	**96.1936**	**1.8400e-003**	**1.7600e-003**	**96.7652**

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 Mid Rise	1.12402e+006	6.0600e-003	0.0518	0.0220	3.3000e-004		4.1900e-003	4.1900e-003		4.1900e-003	4.1900e-003	0.0000	59.9818	59.9818	1.1500e-003	1.1000e-003	60.3382
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 Drive Thru	311900	1.6800e-003	0.0153	0.0128	9.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	16.6442	16.6442	3.2000e-004	3.1000e-004	16.7431
Parking Lot	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
Strip Mall	32585	1.8000e-004	1.6000e-003	1.3400e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7389	1.7389	3.0000e-005	3.0000e-005	1.7492
Total		**7.9200e-003**	**0.0687**	**0.0362**	**4.3000e-004**		**5.4700e-003**	**5.4700e-003**		**5.4700e-003**	**5.4700e-003**	**0.0000**	**78.3648**	**78.3648**	**1.5000e-003**	**1.4400e-003**	**78.8305**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	688184	90.5250	9.0500e-003	1.8700e-003	91.3095
Enclosed Parking with Elevator	117200	15.4167	1.5400e-003	3.2000e-004	15.5503
Fast Food Restaurant w/o Drive Thru	57960	7.6242	7.6000e-004	1.6000e-004	7.6902
Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	99560	13.0963	1.3100e-003	2.7000e-004	13.2098
Total		**129.9770**	**0.0130**	**2.6900e-003**	**131.1033**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	667331	87.7819	8.7800e-003	1.8200e-003	88.5426
Enclosed Parking with Elevator	93680	12.3228	1.2300e-003	2.5000e-004	12.4296
Fast Food Restaurant w/o Drive Thru	56358	7.4134	7.4000e-004	1.5000e-004	7.4777
Parking Lot	25200	3.3149	3.3000e-004	7.0000e-005	3.3436
Strip Mall	93176	12.2565	1.2300e-003	2.5000e-004	12.3628

Total		**123.0896**	**0.0123**	**2.5400e-003**	**124.1562**

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	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600
Unmitigated	0.8480	0.0197	1.2189	1.0000e-004		7.1400e-003	7.1400e-003		7.1400e-003	7.1400e-003	0.0000	8.4730	8.4730	2.0600e-003	1.2000e-004	8.5600

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0372	0.0141	1.2166	6.0000e-005		6.6900e-003	6.6900e-003		6.6900e-003	6.6900e-003	0.0000	1.9813	1.9813	1.9400e-003	0.0000	2.0298

Total	**0.8480**	**0.0197**	**1.2189**	**1.0000e-004**		**7.1400e-003**	**7.1400e-003**		**7.1400e-003**	**7.1400e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0600e-003**	**1.2000e-004**	**8.5600**

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	0.1227					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6875					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.6000e-004	5.6100e-003	2.3900e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.4916	6.4916	1.2000e-004	1.2000e-004	6.5302
Landscaping	0.0372	0.0141	1.2166	6.0000e-005		6.6900e-003	6.6900e-003		6.6900e-003	6.6900e-003	0.0000	1.9813	1.9813	1.9400e-003	0.0000	2.0298
Total	**0.8480**	**0.0197**	**1.2189**	**1.0000e-004**		**7.1400e-003**	**7.1400e-003**		**7.1400e-003**	**7.1400e-003**	**0.0000**	**8.4730**	**8.4730**	**2.0600e-003**	**1.2000e-004**	**8.5600**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e

Category	MT/yr			
Mitigated	10.1585	9.7400e-003	5.8300e-003	12.1396
Unmitigated	12.2727	0.0121	7.2800e-003	14.7455

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	7.90918 / 4.84757	10.6596	0.0104	6.2500e-003	12.7820
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.607067 / 0.038749	0.6647	7.8000e-004	4.8000e-004	0.8263
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.703689 / 0.431293	0.9484	9.3000e-004	5.6000e-004	1.1372
Total		**12.2727**	**0.0121**	**7.2900e-003**	**14.7455**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.32735 / 4.55186	8.8379	8.3700e-003	5.0000e-003	10.5385

Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.485654 / 0.0363853	0.5343	6.3000e-004	3.8000e-004	0.6635
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.562951 / 0.404984	0.7863	7.4000e-004	4.5000e-004	0.9376
Total		**10.1585**	**9.7400e-003**	**5.8300e-003**	**12.1396**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.9210	1.2955	0.0000	54.3083
Unmitigated	21.9210	1.2955	0.0000	54.3083

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	74.98	15.2203	0.8995	0.0000	37.7076
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	23.04	4.6769	0.2764	0.0000	11.5869
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	9.97	2.0238	0.1196	0.0000	5.0139
Total		**21.9210**	**1.2955**	**0.0000**	**54.3083**

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

Attachment B

Native American Heritage Commission Letter

STATE OF CALIFORNIA Edmund G. Brown, Jr., *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

April 17, 2018

Bruce Kaplan
Lamphier Gregory

Email to: bkaplan@lamphier-gregory.com

RE: Village Green Apartments, Alameda County

Dear Mr. Kaplan,

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area. Other sources for cultural resources should also be contacted for information regarding known and/or recorded sites.

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at 916-573-1033 or frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
4/17/2018

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona , CA 91766
rumsen@aol.com
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(909) 629-6081
Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
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amahmutsuntribal@gmail.com
(650) 851-7489 Cell
(650) 851-7747 Office
(650) 332-1526 Fax
Ohlone/Costanoan

North Valley Yokuts Tribe
Katherine Erolinda Perez, Chairperson
P.O. Box 717
Linden , CA 95236
canutes@verizon.net
(209) 887-3415
Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791
Milpitas , CA 95036
muwekma@muwekma.org
(408) 314-1898
(510) 581-5194
Ohlone / Costanoan

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont , CA 94539
chochenyo@AOL.com
(510) 882-0527 Cell
(510) 687-9393 Fax
Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister , CA 95024
ams@indiancanyon.org
(831) 637-4238
Ohlone/Costanoan

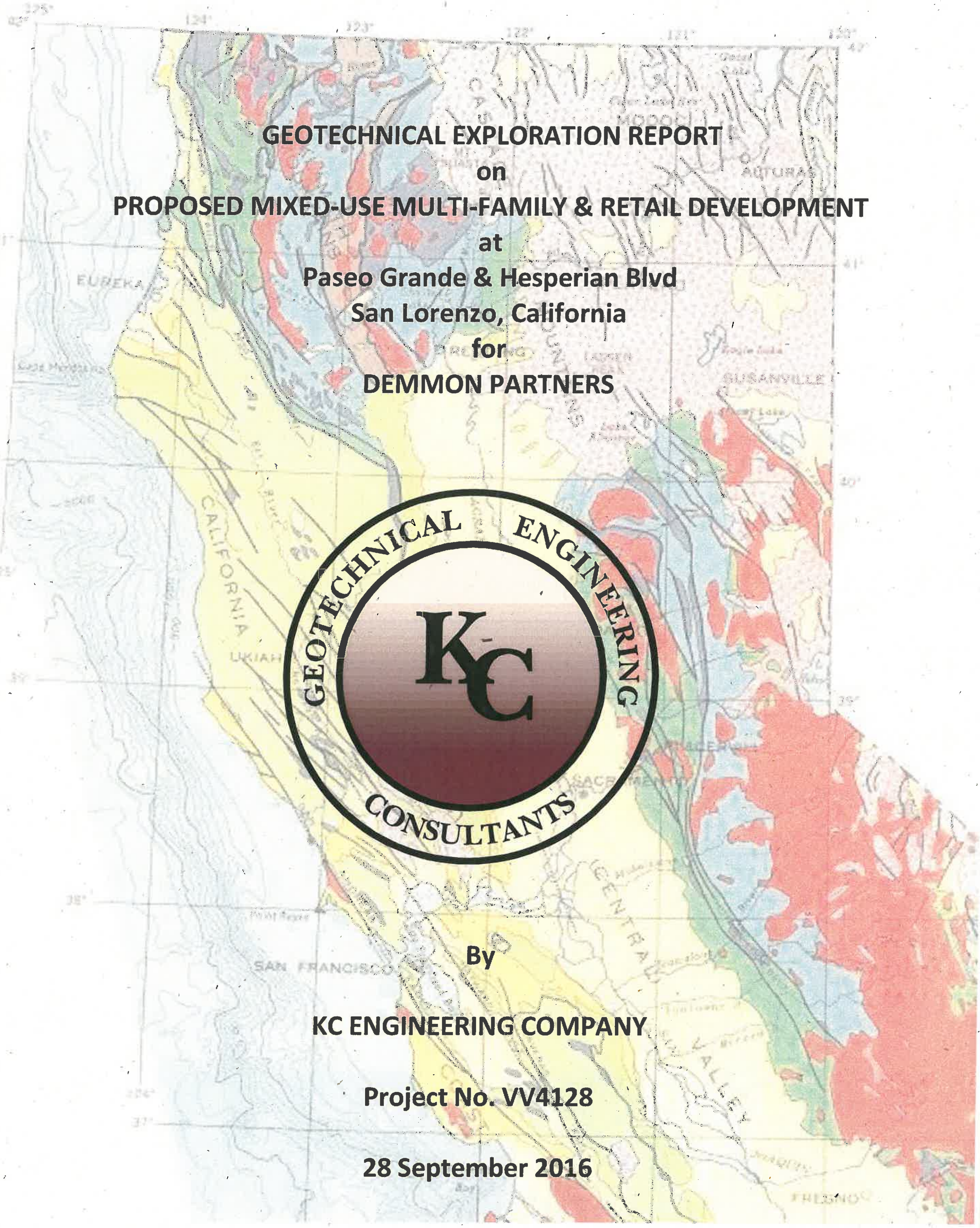
This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed
Village Green Apartments, Alameda County

Attachment C

Geotechnical Exploration



GEOTECHNICAL EXPLORATION REPORT
on
PROPOSED MIXED-USE MULTI-FAMILY & RETAIL DEVELOPMENT
at
Paseo Grande & Hesperian Blvd
San Lorenzo, California
for
DEMMON PARTNERS

GEOTECHNICAL ENGINEERING CONSULTANTS
KC

By

KC ENGINEERING COMPANY

Project No. VV4128

28 September 2016

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

GEOTECHNICAL ENGINEERING CONSULTANTS
KC

KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

8798 Airport Road
Redding, California 96002
(530) 222-0832, fax 222-1611

Project No. VV4128
28 September 2016

Mr. Terry Demmon
Demmon Partners
702 Marshall Street, Suite 306
Redwood City, CA 94063

Subject: Proposed Mixed-Use Multi-Family & Retail Development
Village Green Apartments
Paseo Grande & Hesperian Boulevard
San Lorenzo, California
GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Demmon:

In accordance with your authorization, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils at the subject site of the proposed mixed-use multi-family and retail development to be constructed at the subject site.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed mixed-use multi-family and retail development is geotechnically feasible for construction on the subject site provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should you require additional information, please contact our office at your convenience.

Reviewed By;

David V. Cymanski, G.E.
Principal Engineer

DAVID V. CYMANSKI
GE 2585
EXP. 6-30-18

Respectfully Submitted,
KC ENGINEERING CO.

Eric S. Smith, P.E.
Project Engineer

ERIC S. SMITH
NO. C82116
EXP. 03-31-18

Copies: 3 mail, 1 email to Client

TABLE OF CONTENTS

GEOTECHNICAL EXPLORATION REPORT

Purpose and Scope

The purpose of the geotechnical exploration for the proposed mixed-use multi-family and retail development to be constructed on the southwestern corner of Paseo Grande & Hesperia Boulevard in San Lorenzo, California, was to determine the surface and subsurface soil conditions at the subject site. Based on the results of the exploration, geotechnical criteria were established for the grading of the site, the design of foundations, slabs-on-grade, pavement sections, retaining walls and the construction of other related facilities on the property.

In accordance with your authorization, our exploration services included the following tasks:

a. A review of available geotechnical and geologic literature concerning the site and vicinity;
b. Site reconnaissance by the Geotechnical Engineer to observe and map surface conditions;
c. Drilling of a total of 6 exploratory borings and sampling of the subsurface soils;
d. Laboratory testing of the samples obtained to determine their classification and engineering characteristics;
e. Analysis of the data and formulation of conclusions and recommendations; and
f. Preparation of this written report.

Site Location and Description

The subject site is located on the southwestern corner of Paseo Grande and Hesperian Boulevard in the City of San Lorenzo, California as shown on Figure 1 "Aerial Vicinity Map" included in the Appendix. The site is located in a densely populated urban district, comprised of commercial and residential property. The site is bounded by residential neighborhoods on the west and south, Paseo Grande on the northwest and Hesperian Boulevard to the north east. The subject site currently contains two streets, Via Arriba and Via Mercado running through the property and divides the site into three individual sections. The total area planned for development is approximately 5.12 acres and consist of a vacant lot on the southwest side of Via Arriba, an existing parking lot on the northeast, and Kavanagh Liquors south of Via Mercado. Two concrete slabs from former buildings are located west of the liquor store. The north portion of the property located directly adjacent to the southwest corner of Paseo Grande and Hesperian Boulevard consists of an active automobile parking lot, and contains painted parking spaces, light poles and landscaped bushes and mature trees surrounding the perimeter of the lot. We understand that a Mervyns department store was formerly located on the rectangular parcel west of Via Arriba. The topography of the site is generally flat.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of the "Conceptual Site Plan" prepared by Architectural Design Collaborative, dated 3/2/15 and a review of a Google Earth image dated 10/25/14. The Google Earth image was used as the basis for our "Aerial Vicinity Map" included as Figure 1, and the Conceptual Site Plan was used as our "Site Plan" included as Figure 2, in the Appendix.

Proposed Development

We understand that the proposed development is planned to consist of a mixed-use, multi-family apartment and retail development as shown on Figure 2, "Site Plan". Based on our review of the Conceptual Site Plan by Architectural Design Collaborative dated 3/2/16, we understand the 5.12 acre property is planned to be developed to include 182 apartment units with the potential for one or more buildings ranging 3 to 4 stories tall. The apartment structures are expected to be of wood frame construction with slab on grade floors. A leasing office/clubhouse, fitness center and swimming pool are also planned. An approximate 10,000 square feet retail/commercial building with overhead apartments is planned on the northeast corner. Additional site improvements will consist of new roads/driveways and paved parking lots, underground utilities, lighting, garbage enclosures and landscaping. Demolition operations will consist of removing the existing convenience/liquor store, old foundations, parking lot, paved streets, curb and gutters and underground utilities and drainage. Earthwork grading is anticipated to consist of relatively minor cuts and fills of 3 vertical feet or less. We also anticipate construction of a storm water retention basin and/or bio-filtration swales.

Field Exploration

The field exploration was performed on August 18th of 2016 and included a reconnaissance of the site and the drilling of six exploratory test borings at the approximate locations shown on Figure 2, "Site Plan" included in the Appendix. Bulk samples were taken for an R-value and corrosivity test and are included in the appendix.

The borings were drilled to a maximum depth of 45.5 feet below the existing ground surface. The drilling was performed with a CME-55 drill rig using power-driven, six-inch diameter, hollow-stem augers. Visual classifications were made from auger cuttings and the samples in the field. As the drilling proceeded, relatively disturbed tube samples were obtained by driving a 3-inch O.D., California split-tube sampler, containing thin brass liners, into the boring bottom in accordance with ASTM D3550. The samplers were driven into the in-situ soils at various depths under the impact of a 140-pound hammer having a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil, after seating the sampler 6 inches, were adjusted to the standard penetration resistance (N-Value). The raw blow counts obtained using the California sampler were corrected to equivalent N-Values using Burmister's (1948) energy and diameter correction formula. When the sampler was withdrawn from the boring bottom, the samples were removed, examined for identification purposes, labeled and sealed to preserve the in-situ moisture content, and transported to our laboratory for testing.

Classifications made in the field were verified in the laboratory after further examination and testing. The stratification of the soils, descriptions, location of disturbed soil samples and standard penetration resistance are shown on the respective "Log of Test Boring" contained within the Appendix.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the determination of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated. The laboratory test results are presented on the respective Boring Logs and data sheets in the Appendix.

Moisture content and dry density tests (ASTM D2937) were performed on representative relatively disturbed soil samples in order to determine the consistency of the soil and the moisture variation throughout the explored soil profile as well as estimate the compressibility of the underlying soils.

The strength parameters of the foundation soils were determined from a direct shear test (ASTM D3080) and unconfined compression tests (ATSTM D2166) performed on selected relatively disturbed soil samples. Standard field penetration resistance (N-Values) and pocket penetrometer readings also assisted in the determination of strength and bearing capacity. The standard penetration resistances and pocket penetrometer readings are recorded on the respective "Log of Test Boring".

In order to assist in the identification and classification of the subsurface soils, sieve analysis tests (ASTM D6913) and Atterberg Limits tests (ASTM D4318) were performed on selected soil samples. The Atterberg Limits test results were used to estimate the expansion potential of the near surface soils. The results also aided in our liquefaction analysis.

A laboratory consolidation test (ASTM D2435) was performed on a sample of the underlying soil deposits to determine their compressibility characteristics. The results were used to estimate the potential settlement due to the anticipated structure loads.

An R-Value test (Cal Test 301) was performed on a composite bulk sample representative of the proposed subgrade to assist in pavement section design. The bulk sample was obtained from the upper 2 feet across the site pavement areas.

A composite bulk sample of the near surface soils was obtained from the upper 5 feet of the pad soils to evaluate the presence and concentration of water soluble sulfates in accordance with California Test Method 417. These test results were used to identify the corrosion potential of the soils to at or below grade concrete. Additional soil corrosion potential tests (pH, Resistivity & Chlorides) were also performed. A discussion is presented in the "Soil Corrosivity" section of this report.

Subsurface Soil Conditions

Based on our field exploration and laboratory testing, the surface and subsurface soil conditions consist of assorted layers of alluvial deposits of variable thickness and depths across the site. In Borings 1 and 2, surficial fill material of soft to firm sandy gravelly clay was found in the upper 1.5 feet, underlain by native highly expensive firm to stiff, silty clay extending 7 to 8 feet below the surface, further underlain by assorted layers of stiff, silty clay and clayey silt until boring termination at 45.5 feet below the surface. A medium dense, sand layer with few gravels was identified 22 to 27 feet in Boring 1. The sand is underlain by stiff sandy clay extending 45 feet below the surface. In Borings 3 through 6, the surface consisted of 2.5 to 3.5 inches of asphalt pavement with a 4 to 6 inches of aggregate base, underlain by firm to stiff assorted layers comprised of cohesive sandy and silty clays with some gravels. In Boring 5, a potentially compressible layer of firm to stiff silty clay was identified 10 to 22.5 feet below the surface. A consolidation test performed on this material indicates over-consolidated conditions.

Groundwater was encountered in the borings at the time of drilling ranging from 11 to 18 feet below the surface. Fluctuations in the groundwater conditions can occur with variations in seasonal rainfall, site irrigation and variations in subsurface stratigraphy.

A more thorough description and stratification of the soils encountered along with the results of the laboratory tests are presented on the respective "Log of Test Boring" in the Appendix. The approximate locations of the borings are shown on Figure 2, "Site Plan," in the Appendix.

Soil Corrosivity

Representative samples of the near surface pad soil (upper 5 feet) were collected and transported to Sunland Analytical in Rancho Cordova for testing of water soluble sulfates, pH, minimum resistivity and chlorides per California Test Methods.

The testing indicates sulfate contents of 54.8 ppm (mg/kg), a chloride content of 23.6 ppm, minimum resistivity of 0.75 ohm-cm (x1,000) and a soil pH of 7.68 for the sample collected. It is noted that the sulfate test results indicate "not-applicable" or "S0" sulfate exposure to concrete as identified in Section 1904 of the 2013 California Building Code and Tables 4.2.1 and 4.3.1 of ACI 318-11 Building Code Requirements for Structural Concrete. No cement type restriction is required, however, we do recommend that a Type I/II cement be utilized in concrete mixes for additional sulfate and corrosion resistance.

The Caltrans Corrosion Guidelines[1] defines a corrosive site as one where the soil and/or water has a sulfate concentration of 2,000 ppm or more, a chloride concentration of 500 ppm or more, a pH of 5.5 or less, and a minimum resistivity less than 1,000 ohm-cm. According to the Electrical Design Cathodic Protection Manual[2], soil corrosion is not likely if the minimum resistivity is above 30,000 ohm-cm. If the resistivity is between 10,000 and 30,000 ohm-cm the corrosivity is mild, between 2,000 and 10,000 the corrosivity is moderate to severe, and lower than 2,000 it is severe. Based on these criteria, the soils at the site are considered to have a moderate to severe corrosion potential to buried metal.

KC Engineering Company is not a corrosion engineering firm. Therefore, to further define the soil corrosion potential and interpret the above test results, or to design cathodic protection or grounding systems, a licensed Corrosion Engineer should be consulted.

Site Geology

According to the Geological Map of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties[3], the geologic deposits underlying the site are mapped as Holocene-aged alluvial fan and fluvial deposits composed of gravels, sands, silts and clays. The mapped geology of the site and surrounding area is shown on Figure 3, "Geologic Map". It is noted that the soils encountered during our investigation generally agree with the geologic mapping.

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[1] California Department of Transportation Corrosion Technology Branch, Materials Engineering and Testing Services, *Corrosion Guidelines*, Version 2.0, November 2012.

[2] Technical Manual TM 5-811-7, *Electrical Design, Cathodic Protection*, prepared by Headquarters, Department of the Army, dated 22 April 1985 also known as UFC 3-570-02A, *Cathodic Protection*, by Department of Defense.

[3] Graymer, R. W., 2000, *Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California,* United States Geological Survey, MF-2342, Ver. 1.0.

Geo-Hazards

The subject site is located in a Seismic Hazard Zone for liquefaction potential as shown on the map "San Leandro Quadrangle" map by the CGS[4]. However, the site is not shown on the CGS map to be located within an Alquist-Priolo Earthquake Fault Zone or landslide hazard area. As noted in Seismic Hazard Zone Report 078 by the CGS, dated 2003, evaluation and mitigation of seismic hazards are to be conducted under the "Guidelines for Evaluating and Mitigating Seismic Hazards in California", Special Publication 117A, dated 2008. The following comments and subsections address these issues.

The project site is located in a seismically-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The project will be submitted to the City for design review per the 2013 California Building Code. Therefore, appropriate 2013 CBC Earthquake Loads per Section 1613 must be applied by the project Structural Engineer for the proposed structure.

Seismicity & Ground Motion Analysis

The site is not located within an Alquist-Priolo Special Studies Zone[5]. There are no known active or inactive faults crossing the site as mapped and/or recognized by the State of California. However, San Lorenzo is located in a seismically-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The California Geological Survey has defined an active fault as one that has had surface displacement in the last 11,000 years, or has experienced earthquakes in recorded history.

Based on our review of the Fault Activity Map of California[6] and the USGS National Seismic Hazard Maps-Source Parameters[7], the nearest notable active faults are the Hayward Fault, the Calaveras Fault and the San Andreas Fault, located approximately 1.6 miles east, 10.6 miles east and 15.5 miles west of the site, respectively.

The 2013 CBC specifies that the potential for liquefaction and soil strength loss should be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G)

---

[4] Davis, J.F., 2/14/03, *Seismic Hazard Zones, San Leandro Quadrangle,* California Geological Survey.

[5] Hart, E.W. and Bryant, W.A., 1997, *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*, California Department of Conservation, Division of Mines and Geology, Special Publication 42, Interim Revision 2007.

[6] Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6, scale 1:750,000.

[7] U.S. Geological Survey, 2008 National Seismic Hazards Maps – Source Parameters, accessed 9/19/16, from USGS web site: http://geohazards.usgs.gov/cfusion/hazfaults_search/hf_search_main.cfm

peak ground acceleration with an adjustment for site class effects in accordance with American Society of Civil Engineer (ASCE 7-10)[8]. The MCE_G is peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. The MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated to be 0.792g using the United States Geological Survey web-based seismic design tool with a site coefficient (F_{PGA}) of 1.0 for Site Class D.

Structures at the site should be designed to withstand the anticipated ground accelerations. Based on the USGS Seismic Design Maps[9] website and ASCE 7-10, the 2013 CBC earthquake design values are as follows.

Site Class: F*	
Mapped Acceleration Parameters:	$S_S = 2.059g$; $S_1 = 0.842g$
Design Spectral Response Accelerations:	$S_{DS} = 1.372g$; $S_{D1} = 0.842g$

* The provided values are based on a stiff soil profile or Site Class D. The USGS seismic criteria are presented in the Appendix herein. A Site Class F is noted because liquefiable layers are present (ASCE 7-10, Section 20.3.1). However, due to the predominantly stiff subsurface silts and clays, an average shear wave velocity greater than 600 ft/s is present within the upper 100 feet which would indicate a Site Class D. We anticipate that a site-specific response analysis will not be required since the proposed structures are anticipated to have a fundamental period of vibration equal to or less than 0.5 seconds. This must be evaluated by the Structural Engineer.

The summary and detailed USGS design maps reports are included in Appendix.

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active or inactive faults cross or project toward the subject site. In addition, no evidence of active faulting was visible on the site during our site reconnaissance. Therefore, it is our opinion that there is no potential for fault-related surface rupture at the subject site.

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[8] American Society of Civil Engineer (ASCE), 2010, Minimum Design Loads for Buildings and Other Structures, Standard 7-10.

[9] http://earthquake.usgs.gov/designmaps/us/application.php, accessed 9/19/16

Landsliding

The subject site and immediate vicinity is generally flat and therefore, not subject to seismically-induced landslide hazards.

Liquefaction

Soil liquefaction is a phenomenon in which loose and saturated cohesionless soils are subject to a temporary, but essentially total loss of shear strength, due to pore pressure build-up under the reversing cyclic shear stresses associated with earthquakes. Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand having a uniform particle range and less than 35% fines passing the No. 200 sieve, and a corrected standard penetration blow count $(N_1)_{60}$ less than 30. According to Special Publication 117A by the California Geological Society, the assessment of hazards associated with potential liquefaction of soil deposits at a site must consider translational site instability (i.e. lateral spreading, etc.) and more localized hazards such as bearing failure and settlement. The acceptable factor of safety against liquefaction is recommended in SP117 to be 1.3 or greater.

Based on our site exploration and laboratory test data, the soil material encountered beneath the site was found to be predominately cohesive with a fines content ranging from 57 to 95 percent passing a No. 200 sieve. However, a potential liquefiable layer was identified in Boring 1 between 22 to 27 feet, and was evaluated for potential liquefaction.

A liquefaction analysis was performed using the data from our field and lab exploration per the recommended analysis methods of the NCEER report[10]. The groundwater modeled in the analysis was 11 feet below the ground surface, based on our geotechnical exploration. A geometric mean peak ground acceleration of 0.792g was used based on the latest data from the USGS Design Maps website. A maximum magnitude of 7.0 was also used from the nearby Hayward Fault. Based on our analysis, the noted layers were found to be susceptible to liquefaction with factors of safety less than 1.3.

The potential liquefaction induced total settlement was calculated utilizing the volumetric strain relationship developed by Tokimatsu and Seed[11], the results indicate that a total settlement of 1.0 inches with up to 0.5 inches of differential settlement. According to Ishihara[12], the potential for

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[10] Youd, T. Leslie and Idriss, Izzat M., 1997, "Summary Report from the Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils," Technical Report NCEER 97-0022, December 31, 1997

[11] Tokimatsu, K. and Seed, H.B., 1987, *Evaluation of Settlements in Sands Due to Earthquake Shaking*, Journal of the Geotechnical Engineering Division, ASCE, Volume 113, No. 8, August 1987.

[12] Ishihara, K., 1985, *Stability of Natural Deposits During Earthquakes,* Proceedings of the Eleventh International Conference on Soil Mechanics and Foundation Engineering, San Francisco, CA, Volume 1, p. 321-376, August.

surface manifestation (i.e. sand boils, ground fissures, etc...) is very low due to the thickness of the non-liquefiable clay soils overlying the potentially liquefiable soils. Since the site is relatively flat and there are no open face slopes adjacent to the site which bisects the sand, the potential for lateral spreading at the site is considered unlikely.

Settlement Considerations

Our investigation of the site also included an evaluation of consolidation settlement of the subsurface firm to stiff, silty clay layer in Boring 5, encountered from 10 to 22 feet below the surface. In order to determine the compressibility and potential settlement of these soils, a laboratory consolidation tests (ASTM D2435) was performed on a relatively undisturbed soil sample. The results are presented in the Appendix. The sample was found to be over-consolidated but may still have the potential for settlement due to proposed structure loads. Therefore, we performed a settlement analysis.

Considering a 4-story structure with wall loads of 3,500 plf and column loads of 40 kips was used in the analysis. Should differing loading conditions be applied, our office should be notified to provide revised analysis. Our analysis revealed a total settlement of less than .125 inches. It is our opinion this amount of settlement would not cause a significant amount of damage.

Therefore, considering the potential for consolidation and liquefaction settlement, we estimate total building settlements of 1 inch and a differential settlement of 0.5 inches across the structures foot prints.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed mixed-use multi-family and retail development and associated improvements are considered to be feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading and foundation plans for the development must be reviewed by the Soil Engineer prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are properly incorporated and utilized in design.

KC ENGINEERING CO. should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

Field observation and testing during the grading and/or foundation operations must be provided by representatives of ***KC ENGINEERING CO.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements.

Geotechnical Considerations

The primary geotechnical considerations for the project are the presence of highly expansive near surface clay material and the potential for total and differential settlements due to seismically induced liquefaction. The near surface soils are prone to excessive heave and shrink movements with changes in moisture content and, consequently, must be carefully considered in the design of grading, foundations, drainage, and landscaping. As discussed in the Settlement Considerations section above, total settlements are expected 1.0 inch, with differential settlements across structure footprint of 0.5 inches. Additionally, the upper 1.5 feet of materials on the pad area west of Via Arriba was found to be relatively soft, likely due to previous structure demolition operations. These materials will need to be over-excavated down to the native soils as discussed in the “Grading” section below.

Due to the potential for seismically induced liquefaction settlement to occur and the presence of near surface highly expansive soils, we recommend that the building pads and adjacent concrete flatwork areas be lime treated to reduce the shrink/swell potential and to aid in dampening the effects of differential settlement.

Considering that the building pads will be lime treated, it is the opinion of **KC ENGINEERING COMPANY** that the proposed multi-family residential and retail structures may be supported on a properly designed and constructed well-reinforced, deepened and interconnected spread footing foundation system. Specific grading, drainage and foundation recommendations are provided herein.

Demolition

Prior to building pad grading, demolition of the existing convenience/liquor store, adjacent slabs and foundations, and the northern parking lot, and streets and underground improvements must be completed. Demolition should include the complete removal of all surface and subsurface structures. Where any of the following are encountered: concrete, septic, gas and/or oil tanks, grease traps, storm drain systems, foundations, asphalt, aggregate base, buried pipelines, debris and trash; these should also be removed, with the exception of items specified by the owner for salvage. In addition, all underground structures must be located on the grading plans so that proper removal may be carried out. It is vital that ***KC ENGINEERING CO.***, intermittently observe the demolition operations and be notified in ample time to ensure that subsurface structures are not covered. The existing pavements may be grinded and saved for re-use on the project as aggregate sub-base.

Excavations made by the removal of any structure should be left open by the demolition contractor for backfill in accordance with the requirements for engineered fill. The removal of any underground structures or utility pipelines should be done under the observation of the Soil Engineer to assure adequacy of the removal and that subsoils are left in proper condition for placement of engineered fills. Any soil exposed by the demolition operations, which are deemed soft or unsuitable by the Soil Engineer, shall be excavated as uncompacted fill soil and be removed as required by the Soil Engineer during grading. The demolition operation should be approved by the Soil Engineer prior to commencing building pad grading operations. Any resulting excavations should be properly backfilled with engineered fill under the observation of the Soil Engineer. Should the location of any localized excavation be found to underlie any structure, backfill should be compacted to a minimum relative compaction of 95% or the excavation widened to extend 5 feet beyond the footprint of the structure and backfilled to the specifications for engineered fill as recommended in the "Grading" section below.

Grading

We recommend that earthwork operations be performed during the dry season. Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture; and delays may occur or require the use of chemical stabilization or use of geogrids. Grading performed during the dry months will minimize the occurrence of the above problems.

After demolition of the existing structures and pavements, and backfilling of deeper utilities or other removed items as described above, we anticipate that the southern quadrant of the site will be disturbed within the upper 1.5 to 3 feet. We recommend any loose or soft surficial soil be over-excavated to competent native material and where fill is required, the site should be processed and compacted as well compacted structural fill. The western quadrant of the former Mervyns department store will need to be over-excavated 1.5 feet, followed by processing and compacting the lower 1 foot prior to filling to design grades. In addition, due to the site soils highly expansive clay material, we recommend the upper 30 inches of the building pads and adjacent flatwork consist of either select low to non-expansive import or on-site lime treated materials as noted below. Detached patios and pool decking areas should have a minimum of 12 inches of either select import of lime treated materials below the gravel base. When project grading plans become available for our review, supplemental grading recommendations may be required.

Following demolition, the surface of the site should be clear and the surficial soil exposed. We recommend over-excavating any disturbed, loose or soft material to native competent material. The upper 1.5 feet of the western rectangular area west of Via Arriba is relatively soft to firm due to prior demolition operations and will require being over-excavated to expose the underlying native soils. We anticipate over-excavation depths of 1.5 to 3 feet maybe required for the southern quadrant south of Via Mercado.

Following over-excavating and removal of soft and loose materials, we recommend the exposed upper 12 inches be scarified, moisture conditioned and compacted to a minimum degree of relative compaction of 90% at least 3 percent above optimum moisture content as determined by ASTM D1557 Laboratory Test Procedure. After processing the upper 12 inches and compacting the native subgrade, the site may be brought to the desired finished grades by placing engineered fill in lifts of 8 inches in un-compacted thickness and compacting to a relative compaction of 90% to 95% at 3 percent over optimum in accordance with the aforementioned test procedure. All soils encountered during our investigation are suitable for use as engineered fill when placed and compacted at the recommended moisture content.

Prior to compaction, each layer should be spread evenly and should be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. The fill should be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry. Compaction should be performed by footed rollers or other types of approved compaction equipment and methods. Compaction equipment should be of such design that they will be able to compact the fill to the specified density. Rolling of each layer should be continuous over its entire area and the equipment should make sufficient trips to ensure that the required density has been obtained. No ponding or jetting is permitted.

As noted above, it is recommended that the upper 30 inches of the building pads and adjacent flatwork consist of structural fill comprised of either select low to non-expansive import materials or on-site materials treated with high-calcium quicklime. It is noted that the structural fill should extend at least 5 feet beyond the building footprint or 2 feet beyond the edge of surrounding concrete flatwork, whichever is greater. In addition, detached patios and pool decking areas should have a minimum of 12 inches of either select import of lime treated materials below the gravel base.

Should select import material be used as an alternate to lime treating, the import material should be approved by the Soil Engineer before it is brought to the site. If select import soil is used within the upper 30 inches of the pad, it should meet the following requirements:

a. Have an R-Value of not less than 25;
b. Have a Plasticity Index not higher than 12;
c. Not more than 15% passing the No. 200 sieve;
d. No rocks larger than 6 inches in maximum size;

As an alternate to importing select import, the on-site soils may be lime treated. The lime treatment should consist of a mixture of 5% lime by dry weight. Using an on-site soil unit weight of 120 pcf, a spread rate of 9.0 psf should be applied for an 18-inch mixing depth or 6 psf for a 12 inch mixing depth. The lime treated soils should be compacted to at least 95% relative compaction of the maximum wet density at a moisture content at least 3% above optimum. After initial mixing and after the over-night mellowing period, the materials should be re-mixed followed by compaction. The lime treatment must be performed by a qualified soil stabilization contractor. The product specification and quality control test results must be provided to us by the contractor for review and acceptance prior to the treatment operations. The lime should be spread and mixed with equipment capable of providing relatively uniform conditions. The lime treated sections must be mixed at least twice prior to compaction which must be performed within 24 hours after final mixing. After compaction, it is important to moist cure the lime treated soils until placement of the subsequent slab subbase materials (i.e. do not let pad dry out and desiccate).

The standard test used to define maximum densities and optimum moisture content of all compaction work shall be the Laboratory Test procedure ASTM D1557 and field tests shall be expressed as a relative compaction in terms of the maximum dry density and optimum moisture content obtained in the laboratory by the foregoing standard procedure. Field density and moisture tests shall be made in each compacted layer by the Soil Engineer of Record in accordance with Laboratory Test Procedure ASTM D6938. When footed rollers are used for compaction, the density and moisture tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements on any layer of fill, or portion thereof, have not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

With respect to proposed bio-filtration basins and swales, we recommend the top of slope should be placed a minimum of 10 feet or more away from building foundations. We recommend that the interior basin slope inclinations be no steeper than 3H:1V. Slopes should be rounded at the upper extremities. Graded slopes should not be left exposed through a winter season without the completion of erosion control measures. Subdrainage should also be provided below the treatment soils. Additional recommendations can be provided once a design is prepared.

Surface & Subsurface Drainage

A very important factor affecting the performance of structures is the proper design, implementation, and maintenance of surface drainage, as well as maintaining uniform moisture conditions around the structures. Ponded water will cause swelling and/or loss of soil strength and may also seep under structures. Should surface water be allowed to seep under the structures, differential foundation movement resulting in structural damage and/or standing water under the slab will occur. This may cause dampness to the floor which may result in mildew, staining, and/or warping of floor coverings. To minimize the potential for the above problems, dampproofing and waterproofing should be provided as required by Section 1805 of the 2013 CBC. In addition, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Liberal building pad slopes and surface drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to prevent storm and/or irrigation water from ponding adjacent to the structure foundations. The finished pad grade around the structures should be compacted and sloped 5% away from the exterior foundations and as required in Section 1804.3 of the 2013 CBC.

b) Enclosed or trapped planter areas adjacent to the structure foundations should be avoided if possible. Where enclosed planter areas are constructed, these areas must be provided with adequate measures to drain surface water (irrigation and rainfall) away from the foundation. Positive surface gradients and/or controlled drainage area inlets should be provided. Care should be taken to adequately slope surface grades away from the structure foundations and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) Adequate measures for storm water discharge from the roof gutter downspouts must be provided by the project Civil Engineer and maintained by the property owners at all times, such that no water is allowed to pond next to the structure. Closed pipe discharge lines should be connected to downspouts and discharged into a suitable drainage facility. It is important not to allow concentrated discharge on the surface of any slope so as to prevent erosion.

d) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise is necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

e) Over-irrigation of plants is a common source of water migrating beneath a structure. Consequently, the amount of irrigation should not be any more than the amount necessary to support growth of the plants. Foliage requiring little irrigation (drip system) is recommended for the areas immediately adjacent to the structures.

f) Landscape mounds or concrete flatwork should not be constructed to block or obstruct the surface drainage paths. The Landscape Architect or other landscaper should be made aware of these landscaping recommendations and should implement them as designed. The surface drainage facilities should be constructed by the contractor as designed by the Civil Engineer.

With respect to proposed bio-retention swales or basins, we anticipate that the basin or swales will be located relatively close to the proposed structures. We recommend a minimum separation of 10 horizontal feet. In addition, we recommend that a subsurface drain be provided below the select treatment soils. The subdrain should be connected to the nearest storm drain catch basin. A 4 inch SDR35 perforated pipe surrounded by Caltrans Class 2 Permeable Material should be provided to discharge collected water into the nearest catch basin. An impermeable liner may also be required in the bottom of the swales. Additional details can be provided when plans are available.

Foundations

Provided that the upper 30 inches of the pad soils are lime treated or consist of select import materials as recommended in the "Grading" section above to minimize the effects of highly expansive soil and the estimated differential settlements noted above, the proposed structures may be supported by utilizing a deepened, well-reinforced and inter-connected spread footing foundation system with a thickened slab floor.

A continuous spread footing should be placed around the perimeter of the structures. All interior and exterior column footings should be interconnected to the perimeter with reinforced concrete tie-beams. Isolated footings should not be utilized unless connected with reinforced tie-beams. The continuous and pad footings should extend to a minimum depth of 24 inches below the interior slab subgrade soil elevation. The tie beams should extend to a minimum depth of 18 inches below the interior soil pad grade. The recommended design allowable bearing pressure for footings is 2,000 p.s.f. due to dead plus live loads. The allowable bearing pressure may be increased by 1/3 due to all loads which include wind and seismic. A subgrade modulus (k) of 75 psi/in may be utilized for design of the interior slabs. All foundations must be adequately reinforced to provide structural continuity and resist the anticipated loads as determined by the project Structural Engineer. The final footing design and reinforcement should be determined by the project Structural Engineer. However, continuous footings and tie-beams are recommended to be reinforced with a minimum of four No. 5 bars, two at the top and two near the bottom of the footing. Additional reinforcement will be as required by the structural engineer and in accordance with structural building code requirements.

To accommodate lateral building loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of 1 foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f. be used. For design purposes, an allowable friction coefficient of 0.32 can be assumed at the base of the spread footings. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since the mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Slab-on-Grade Construction

Interior and exterior concrete slabs, including sidewalks, driveways, non-structural detached patios and general flatwork will likely experience some cracking due to finishing, curing methods, drying shrinkage, as well as moisture variations and related soil movements within the underlying clay soils. The subgrade soil materials under slab areas should be lime treated or provided with select import as noted in the "Grading" section above. To reduce the potential for cracking of the slabs-on-grade, the following recommendations are made:

a) It is important to moist cure the lime treated soils on the building pad until placement of the subsequent materials. All areas to receive slabs should be thoroughly wetted and soaked to seal any desiccation or shrinkage cracks prior to placing concrete. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of Caltrans Class II Aggregate Base placed and compacted to 92% between the finished subgrade and the slabs to serve as subbase support.

c) Interior slabs should be a minimum of 6 inches thick and reinforced with a minimum of No. 4 rebar spaced 18 inches center to center, each way. Exterior pedestrian and pool deck slabs should be a minimum of 5 inches thick and reinforced with No. 4 rebar spaced at 18 inches on center. The actual slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements and the anticipated loading conditions. The reinforcement shall be placed in the center of the slab unless otherwise designated by the design engineer.

d) A vapor retarder membrane should be installed between the prepared building pad aggregate base and the interior slabs to minimize moisture condensation under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area. Where upward vapor moisture is not a concern, the vapor barrier is not required.

e) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max) and/or the addition of suitable admixtures to limit water transmission. We also recommend the use of Type I/II cement for additional corrosion resistance.

f) Slabs for driveways, and exterior flatwork should be placed structurally independent of the foundations. Driveway slab recommendations are presented in the "Pavement" section of the report. A 30-pound felt strip, expansion joint material, or other positive separator should be provided around the edge of all floating slabs to prevent bonding to the foundation. However, rebar doweling is recommended to minimize vertical movements between exterior slabs and building foundations. Doweling details should be determined by the Structural Engineer.

g) To minimize moisture infiltration under exterior slabs and to add edge rigidity, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to the soil subgrade for a minimum width of 6 inches.

h) Slabs should be provided with crack control saw cut joints or tool joints to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 20 times the slab thickness in each direction. The layout of the joints should be determined by the project Structural Engineer and/or Architect.

i) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete drying-shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

Pavement Areas

The new roads, driveways and parking areas will be paved with either asphalt concrete (AC) or Portland cement concrete (PCC) surfaces. Recommendations for these pavement surfaces are presented below. We emphasize that the performance of the pavement is critically dependent upon adequate and uniform compaction of the subgrade soils, as well as engineered fill and utility trench backfill within the limits of pavements. Pavements will typically have poor performance and shorter life where water is allowed to migrate into the aggregate base and subgrade soils. The main sources of water into pavement materials are landscape planters constructed within or adjacent to pavement areas. Where this is planned, it is suggested to extend the curbs into the soil subgrade at least 2 inches. The construction of all pavements should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California (Caltrans) and/or the City of San Lorenzo.

R-Value: A composite bulk sample was obtained of the near surface soils within the planned parking lot and driveways that is relatively representative of the anticipated subgrade soils. The sample was tested in accordance with the California Test Method 301 to determine the R-Value for the site soils. An R-Value of 12 was determined for the sample as shown in the Appendix. However, due to anticipated differences in the site materials we recommend a maximum R-value of 10 be used for design.

Preparation of Subgrade: After underground utilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 8 inches of the subgrade soil shall be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a moisture content at 3% or more above optimum in accordance with the grading recommendations specified in this report. Prior to placement of aggregate baserock, it is recommended that the subgrade be proof rolled and observed for deflection by the Soils Engineer. Should deflection and/or pumping conditions be encountered, stabilization recommendations will be provided based on field conditions.

Aggregate Base: All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. Aggregate base should meet the minimum requirements of Caltrans Class 2 per Section 26 and be crushed and angular. The recommended aggregate base thicknesses for asphalt concrete pavements are noted in the table below. The minimum aggregate base thickness for Portland cement concrete PCC roadway pavements is 6 compacted inches.

Asphalt Concrete: A bulk sample of the surface soils were obtained from the proposed roadway locations for R-Value testing (California Test Method 301). Based on an R-Value of 10 and a range of traffic indices provided, the recommended pavement sections were calculated in accordance with Topic 608 of the California Department of Transportation Highway Design Manual. The appropriate traffic index (TI) and any minimum pavement sections should be determined by the Civil Engineer in conformance with the City of Lorenzo.

Traffic Condition	**Traffic Index (TI)**	**Asphalt Concrete (inches)**	**Class II Aggregate Base[1] (inches)**
Parking Stalls	4.5	3.0	7.5
Drive Aisles	6.0	3.0	12.5

City Roadways	6.5	3.5	13.5
	7.0	4.0	14.5
	7.5	4.5	15.5
	8.0	4.5	17.0

NOTES:

(1) Minimum R-Value = 78

(2) All layers in compacted thickness to CalTrans Standard Specifications.

Portland Cement Concrete: Where PCC pavement areas are utilized, the concrete should be poured on the compacted aggregate base layer described above of 6 inches. The concrete should be designed by the project Structural Engineer and be a minimum of 6 inches thick and reinforced with a minimum of No. 4 rebar spaced at 18 inches on center, each way. Additional reinforcement may be required by the Structural Engineer.

Retaining Walls

Any retaining walls that are to be incorporated into the project should be designed to resist lateral pressures exerted from a media having an equivalent fluid weight as follows:

Gradient of Back Slope	Equivalent Fluid Weight (p.c.f.)			Coefficient of Friction
	Unrestrained Condition (Active)	Restrained Condition (At Rest)	Passive Resistance	
Horizontal	60	75	250	0.32

It should be noted that the effects of any surcharge or compaction loads behind the walls must be accounted for in the design of the walls. In addition, an earthquake load of $16H^2$ applied at 0.6H where H = wall height, from the bottom of the wall is applicable. Restrained conditions should be used where framing or other structural members rests on top or is connected to the top of walls.

The above criteria are based on fully drained conditions. In order to achieve fully-drained conditions, a drainage filter blanket should be placed behind the wall. The blanket should be a minimum of 12 inches thick and should extend the full height of the wall. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the 12-inch blanket should consist of compacted engineered fill or blanket material. The drainage blanket material may consist of either granular crushed rock or drain pipe fully encapsulated in geotextile filter fabric (Mirafi 140N or equivalent) or Class II permeable material that meets CalTrans Specification, Section 68. A 4-inch diameter SDR35 perforated drain pipe should be installed in the bottom of the drainage blanket and should be underlain by 4 inches of filter type material. Piping with a minimum gradient of 2% shall be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundations.

If mechanically stabilized earth, segmental retaining walls such as Keystone walls are utilized, the design and construction of these proposed flexible modular retaining wall systems should conform to the recommendations of the manufacturer and/or Keystone Retaining Wall Systems or the National Concrete Masonry Association (NCMA). The following soil parameters would be applicable for design using on-site soil materials within the reinforced, retained and bearing zones: φ = 28 degrees, c = 0 p.s.f., γ = 100 p.c.f.. The wall backfill within the reinforced zone may consist of the on-site soil materials provided it has a maximum Liquid Limit of 40 and a maximum Plasticity Index of 20. The wall embedment should conform to the recommendations by Keystone or NCMA.

Swimming Pool

We recommend that the pool shell be supported based on the foundation recommendations provided above. A gravel blanket consisting of an eight (8) inch thick layer of clean gravel, under the pool shell is recommended. A hydrostatic relief valve should be installed in the bottom of the pool shell to prevent damage during future maintenance. The gravel should be placed as high up the pool wall as practical. A perforated pipe should be placed in the lowest section of the gravel and be discharge to daylight or a sump pump.

The pool walls should be designed to resist a lateral soil pressure exerted from a media having an equivalent fluid weight of 80 p.c.f. In addition, the pool shell should be designed to be as rigid and uniform as possible.

It is recommended that the pool deck/flatwork adjacent to the pool areas be reinforced, as designed by the project structural engineer, and cantilevered over the pool bond beam in lieu of the standard coping. This will eliminate construction expansion joints between the pool coping and deck slab, which is a continuing maintenance problem. A watertight seal should be placed beneath the concrete slab at the contact with the pool bond beam. Slab and subgrade soil preparation recommendations are provided in the “Grading” and “Slab-on-Grade” sections above.

The surrounding concrete flatwork (pool decking) should have positive surface drainage and be provided with an adequate number of surface drains and conduit system to remove surface runoff from rainfall and pool splash. In addition, all concrete flatwork should be provided with construction joints at regular intervals to provide for expansion and contraction of the slab components. A minimum of four (4) inches of gravel or clean crushed rock should be placed between the finished subgrade and the slabs to serve as a capillary break. Prior to concrete placement, the slab subgrade areas should be thoroughly wetted.

The Soil Engineer should review the pool plans and calculations prior to construction and observe the pool excavation at the completion of excavating activities.

General Construction Requirements

Utility trenches extending underneath all traffic areas must be backfilled with native or import soil materials and compacted to relative compaction of 90% to within 8 inches of the subgrade. The upper 8 inches should be compacted to 95% relative compaction in accordance with Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these trenches must also meet the requirements set forth by the City of San Lorenzo, Department of Public Works.

Applicable safety standards require that trenches in excess of 5 feet must be properly shored or that the walls of the trench slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type and applicable OSHA Safety Standards. The soils at the site are considered to be Type B, except where groundwater is encountered Type C should be used.

With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter. This impervious seal should extend a minimum of 2 feet away from the building perimeter.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***KC ENGINEERING CO.***, in writing, a minimum of two working days before any clearing, grading, or foundation excavation operations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***KC ENGINEERING CO.***, will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

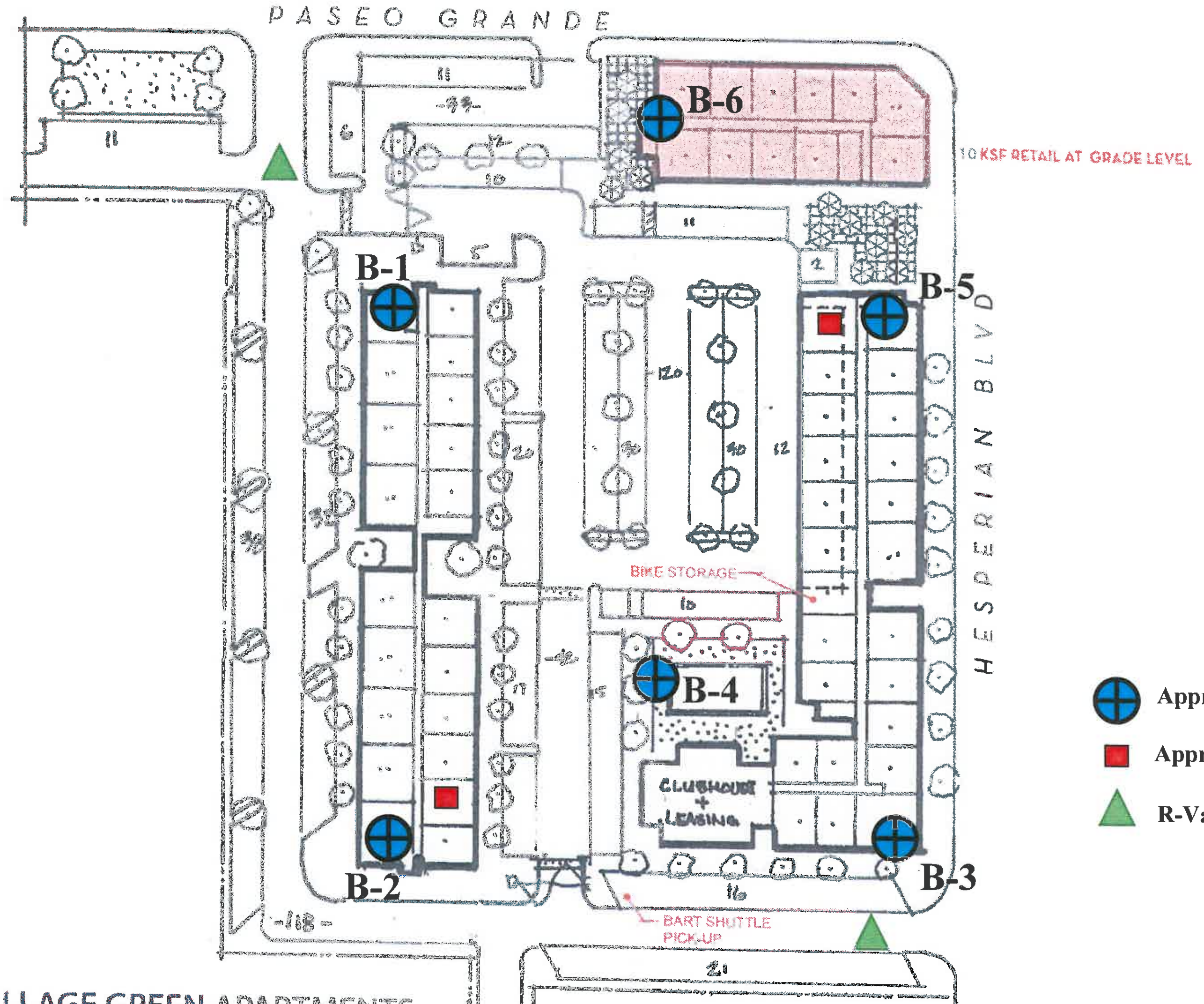
5. Not withstanding, all the foregoing applicable codes must be adhered to at all times.

APPENDIX

SITE
Lat. 37.6783 deg.
Long. -122.1270 deg.

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707.447.4025

Project No. VV4128
Proposed Mixed-Use Multi-Family & Retail Project
Paseo Grande & Hesperian Blvd., San Lorenzo, CA
Figure 1 – AERIAL VICINITY MAP



PROJECT SUMMARY

• TYPE V	3-4 STORIES
• SITE GROSS	5.12 ACRES
• UNITS	182
• DENSITY (NET AREA)	35.546 DU/AC
• NET UNIT AREA	+/- 145,500 S.F.
• AVG UNIT NET RENTABLE:	825 SF
• LEASING / AMENITY AREA	+/- 10,000 S.F.
• RETAIL AREA	+/- 10,000 S.F.

• PARKING REQUIRED
TBD - CURRENTLY 2 / DU

• PARKING PROVIDED

ON STREET ANGLED	75 STALLS
OFF STREET 90 DEGREE	238 STALLS
TOTAL	313 STALLS
RATIO:	1.72 STALLS/UNIT

UNIT SUMMARY

UNIT TYPE	AVG SF	TOTAL	MIX
STUDIO	500	12	6.5%
1 BED	750	132	72.5%
2 BED	1050	38	21.0%
TOTAL		182	100 %

⊕ **Approximate Boring Location**

🟥 **Approximate Corrosivity Sample Location**

▲ **R-Value Sample Location**

0 15 30 60 120

VILLAGE GREEN APARTMENTS

DEMMON PARTNERS

CONCEPTUAL SITE PLAN 03

SAN LORENZO, CA
CONCEPTUAL PACKAGE

03.02.2016

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707-447-4025

Project No. VV4128
Proposed Mixed-Use Multi-Family & Retail Project
Paseo Grande & Hesperian Blvd., San Lorenzo, CA
Figure 2 – SITE PLAN

GEOLOGIC MAP AND MAP DATABASE OF THE OAKLAND METROPOLITAN AREA, ALAMEDA, CONTRA COSTA, AND SAN FRANCISCO COUNTIES, CALIFORNIA

By

R.W. Graymer

2000

Qhaf	Alluvial fan and fluvial deposits (Holocene)	Qhl	Natural levee deposits (Holocene)

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707-447-4025

Project No. VV4128
Proposed Mixed-Use Multi-Family & Retail Project
Paseo Grande & Hesperian Blvd., San Lorenzo, CA
Figure 3 – GEOLOGIC MAP

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ∇ : 22'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : 18' AFTER: 6 hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown Sandy Gravelly CLAY; moist, firm to stiff. (FILL)	CL				
	1-1			Dark Brown Silty CLAY; moist, stiff. (NATIVE)	CH	14	99.6	21.1	LL=53% PI=32 UCC=5,990 psf Qp=4.0 tsf
5	1-2					9	94.2	27.6	Qp=2.0 tsf
				Olive Silty CLAY; moist, stiff.	CL/ CH				
10	1-3					14	103.4	23.3	Qp=3.0 tsf
				Mottled Light Olive Brown Silty CLAY, very moist, stiff.	CL				
15	1-4					11	102.3	21.9	Qp=2.0 tsf
				▼					
20									
				∇					
				Brown Fine to Medium Grained SAND w/ few Gravels; wet, medium dense.	SP				
25	1-5					18	108.2	21.2	<No.200=0.5%
				Olive Sandy CLAY; very moist, stiff.	CL				

This information pertains only to this boring and is not necessarily indicative of the whole site.

LOG OF TEST BORING

BORING NO.: 1

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ▽ : 22'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : 18' AFTER: 6 hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
30			▨						
35	1-6	■	▨			13	104.8	22.9	Qp=1.25 tsf <No.200=57%
40			▥	Greenish Gray Clayey SILT; moist, stiff.	ML/ MH				
45	1-7	■	▥			14	101.1	25.6	Qp=1.25 tsf
				Boring Terminated @ 45½'. Groundwater Encountered @ 22'. Rose to 18'.					
50									
55									

This information pertains only to this boring and is not necessarily indicative of the whole site.

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ▽ : 11'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0			▨	Brown Sandy Gravelly CLAY; dry to moist, soft. (FILL)	CL				
			▨	Dark Brown Silty CLAY; moist, firm.	CH	7	88.1	29.9	UCC=2,064 psf Qp=1.75 tsf
	2-1	■	▨						
5			▨						
			▨	Mottled Olive Silty CLAY; moist, stiff.	CL/ CH	14			Qp=3.0 tsf
	2-2	■	▨						
10			▨		▽				
			▨	Mottled Light Olive Brown Silty CLAY; wet, stiff.	CL	10	103.5	23.2	Qp=1.25 tsf
15	2-3	■	▨						
				Boring Terminated @ 16½'. Groundwater Encountered @ 11'.					
20									
25									

This information pertains only to this boring and is not necessarily indicative of the whole site.

Figure 5

KC ENGINEERING CO.

LOG OF TEST BORING

BORING NO.: 3

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ▽ : 11'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				2½" Asphalt Concrete, 4-5" Aggregate Base.					
				Dark Brown Silty CLAY; moist, stiff.	CH				
	3-1	■		Brown & Olive Sandy CLAY; very moist, firm.	CL/ CH	6	93.6	25.5	c=0 psf Ø=36.8° Qp=1.5 tsf
5									
	3-2	■		As Above.		14	99.5	25.1	Qp=2.75 tsf
10									
				▽ Light Brown & Olive CLAY w/ some Sands & Fine Gravels; very moist, stiff.	CL				
	3-3	■				9	91.9	30.8	Qp=0.75 tsf <No.200=95%
15									
				Light Brown Sandy CLAY; moist, stiff.	CL				
20									
	3-4	■				14	106.3	21.8	
				Boring Terminated @ 21½'. Groundwater Encountered @ 11'.					
25									

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

LOG OF TEST BORING
BORING NO.: 4

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ⩸ :

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ⩸ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				3" Asphalt Concrete, 6" Aggregate Base.					
			▨	Dark Brown Sandy CLAY; moist, stiff.	CH				
	4-1	■	▨			10	88.4	29.8	LL=50% PI=27 UCC=3,269 psf Qp=1.5 tsf
5			▨						
	4-2	■	▨	As Above.		14	96.9	27.7	Qp=2.25 tsf
10			▒	Light Olive Brown Silty CLAY w/ some fine Sands & Gravels; moist, stiff,	CL				
	4-3	■	▒			13	98.7	23.8	Qp=2.0 tsf
15				Boring Terminated @ 15'. Groundwater Encountered @ 11'.					
20									
25									

This information pertains only to this boring and is not necessarily indicative of the whole site.

LOG OF TEST BORING

BORING NO.: 5

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ▽ : 12'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				3½" Asphalt Concrete, 5" Aggregate Base.					
				Dark Brown Sandy CLAY; moist, stiff.	CH				
	5-1	■				10	87.8	13.1	Qp=4.0 tsf
5									
				Dark Brown Sandy CLAY; moist, very stiff.	CL				
	5-2	■				17	98.1	26.4	Qp=2.75 tsf
10				Light Brown & Olive Silty CLAY; very moist, firm to stiff.	CL				
				▽					
15									
	5-3	■				8	95.7	27.7	Pc=2,132 psf Qp=2.25 tsf
20									
				Light Olive Brown CLAY; wet, fine grained sands, very stiff.	CL				
25									

This information pertains only to this boring and is not necessarily indicative of the whole site.

LOG OF TEST BORING

BORING NO.: 5

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ⊻ : 12'

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ⊻ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
	5-4	■	▨			20			<No.200=72%
30				Boring Terminated @ 30'. Groundwater Encountered @ 12'.					
35									
40									
45									
50									
55									

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 8

LOG OF TEST BORING

BORING NO.: 6

PROJECT: Mixed-Use Multi-Family & Retail
CLIENT: Demmon Partner
LOCATION: Paseo Grande & Hersperian Blvd.
DRILLER: Britton Exploration
DRILL RIG: CME 55
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV4128
DATE: 08/18/16
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 6"
FINAL ▼ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0			■	3" Asphalt Concrete, 6" Aggregate Base.					
			▨	Dark Brown Silty CLAY; moist, firm to stiff.	CH				
	6-1	■	▨			8	90.6	27.8	UCC=2,364 psf Qp=2.0 tsf
5			▨						
	6-2	■	▨	As Above.		14	100.3	99.0	Qp=2.75 tsf
10			▨	Light Olive Brown Silty CLAY w/ few Sands; moist, stiff.	CL				
	6-3	■	▨			14	99.0	26.6	
15				Boring Terminated @ 15'. No Groundwater Encountered.					
20									
25									

This information pertains only to this boring and is not necessarily indicative of the whole site.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is retained on the No. 200 Sieve	GRAVEL More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (<5% fines)	GW	●	Well graded gravels, gravel-sand mixtures, little or no fines (Cu>4 & 1<Cc<3)
			GP	•	Poorly graded gravels, gravel-sand mixtures, little or no fines (Cu < 4 and/or 1>Cc>3)
		Gravel with fines (>12% fines)	GM	⁞	Silty gravels and gravel-sand-silt mixtures (PI<4 or below "A" line)
			GC	▨	Clayey gravels and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
	SAND Half or more of the coarse fraction is smaller than No. 4 sieve	Clean sands (<5% fines)	SW	⁘	Well graded sands, gravelly sands, little or no fines (Cu>6 & 1<Cc<3)
			SP	▦	Poorly graded sands, gravelly sands, little or no fines (Cu<6 and/or 1>Cc>3)
		Sand with fines (>12% fines)	SM	⦙	Silty sands and gravel-sand-silt mixtures (PI<4 or below "A" line)
			SC	▨	Clayey sands and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
FINE GRAINED SOILS Half or more of the material passes the No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50%		ML	▥	Inorganic silts with gravel and sand having slight plasticity (PI<4 or below "A" line)
			CL	▨	Inorganic clays of low to med. plasticity with gravel and sand (PI>7 & on or above "A" line)
			OL	≈	Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is 50% or more		MH	▥	Inorganic elastic silts (PI below "A" line)
			CH	▨	Inorganic clays of high plasticity, fat clays (PI on or above "A" line)
			OH	≈	Organic silts and clays of medium to high plasticity
HIGHLY ORGANIC SOILS			Pt	▩	Peat and other highly organic soils

MTI-KC ENGINEERING COMPANY
865 Cotting Lane, Ste A, Vacaville, CA 95688
8798 Airport Road, Redding, CA 96002

SAMPLER AND LAB TESTING LEGEND

▮	Auger
☒	Bulk Sample, taken from auger cuttings
■	California Sampler
◩	Bulk/Grab Sample
▮	Pitcher
◪	Standard Penetration Test
▯	Shelby Tube
⧄	No Recovery

LL=Liquid Limit (%)
PI=Plasticity Index
¦ =Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE

U.S. STANDARD SIEVE OPENINGS

#200 #40 #10 #4 ¾" 3" 12"

CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		

0.002 0.075 0.425 2.00 4.75 19.0 75 300

SOIL GRAIN SIZE IN MILLIMETERS

RELATIVE DENSITY (Coarse-grained soils)

SANDS & GRAVELS	BLOWS/FOOT[1]
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	> 50

CONSISTENCY (Fine-grained soils)

SILTS & CLAYS	STRENGTH[2]	BLOWS/FOOT[1]
Very Soft	< 500	0 – 2
Soft	500 – 1,000	2 – 4
Firm	1,000 – 2,000	4 – 8
Stiff	2,000 – 4,000	8 – 15
Very Stiff	4,000 – 8,000	15 – 30
Hard	> 8,000	>30

1 – Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. split spoon sampler (ASTM D1586)
2 – Unconfined compressive strength in lb/ft^2 as determined by lab testing or approximated by the standard penetration test (ASTM D1586) or pocket penetrometer.

WEATHERING (Bedrock)

Fresh	No visible sign of decomposition or discoloration; rings under hammer impact
Slightly weathered	Slight discoloration inwards from open fractures; little or no effect on normal cementation; otherwise similar to Fresh
Moderately weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock but cores can not be broken by hand or scraped with knife; texture preserved; cementation little to not affected; fractures may contain filling
Highly weathered	Most minerals somewhat decomposed; specimens can be broken by hand with effort or shaved with knife; texture becoming indistinct but fabric preserved; faint fractures
Completely weathered	Minerals decomposed to soil but fabric and structure preserved; specimens can be easily crumbled or penetrated

STRENGTH (Bedrock)

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen will crumble under light hammer blows
Moderately strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments
Very strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

BEDDING (Bedrock)	SPACING (inches)
Very thickly bedded	> 48
Thickly bedded	24 to 48
Thin bedded	2.5 to 24
Very thin bedded	5/8 to 2.5
Laminated	1/8 to 5/8
Thinly laminated	<1/8

FRACTURING (Bedrock)	SPACING (inches)
Very little fractured	> 48
Occasionally fractured	12 to 48
Moderately fractured	6 to 12
Closely fractured	1 to 6
Intensely fractured	5/8 to 1
Crushed	<5/8

MTI

Materials Testing, Inc.

8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client: Demmon Partners
702 Marshall Street, Suite 306
Redwood City, CA 94063

Client No.: VV4128
Report No.: 0300-001
Date: 09/06/16

Project: Village Green Apartments & Retail Development
San Lorenzo, California

Submitted by: KC Engineering

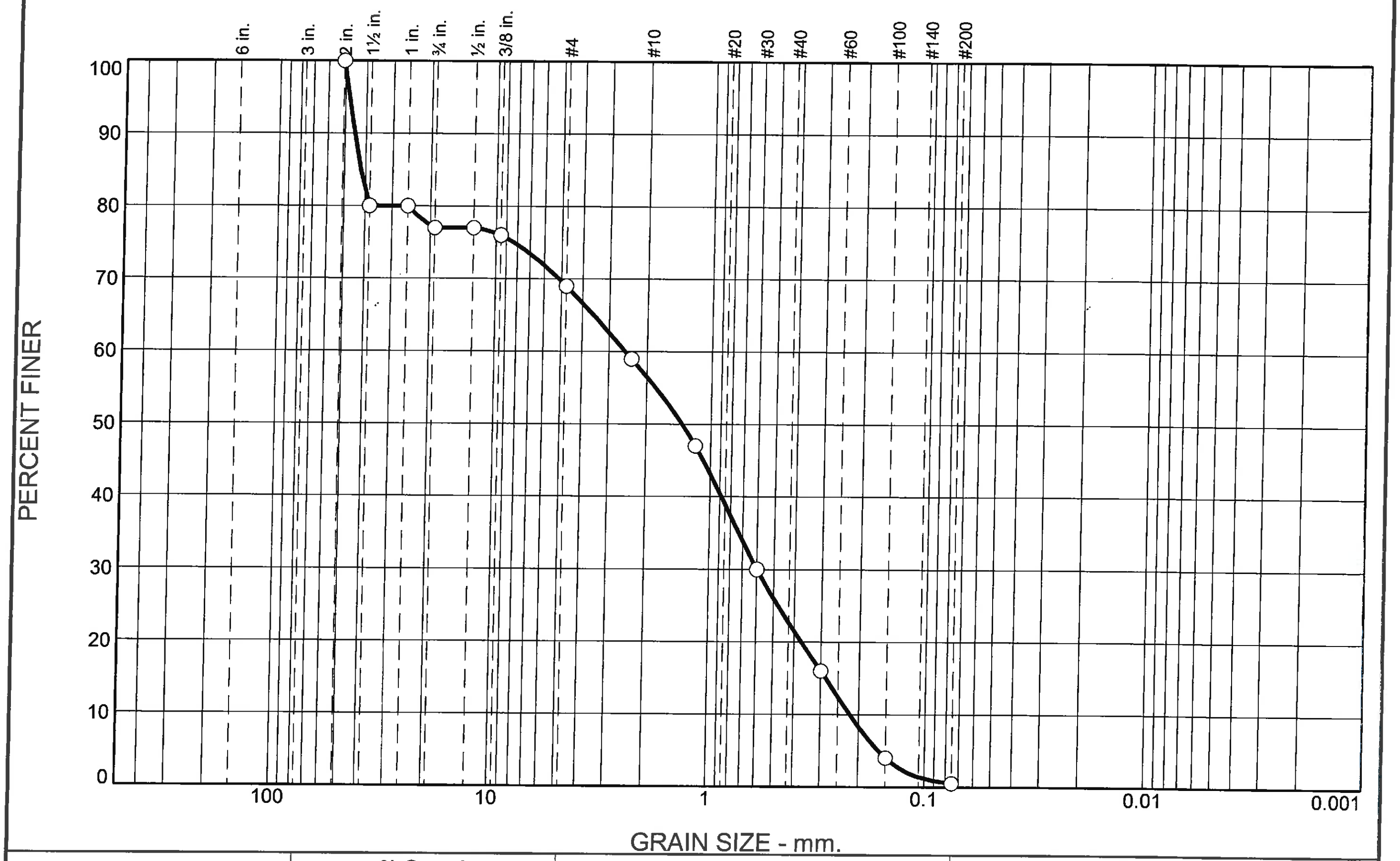
Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
Pad/SG 0-3.0'	Dark Brown Clay (visual)	---	---	53	21	32
1-1 @ 2.0'	Dark Brown Silty Clay (visual	99.6	21.1	---	---	---
1-2 @ 2.0'	Dark Brown Silty Clay (visual)	94.2	27.6	---	---	---
1-3 @ 10.0'	Olive Silty Clay (visual)	103.4	23.3	---	---	---
1-4 @ 15.0'	Mottled Light Olive Silty Clay (visual)	102.3	21.9	---	---	---
1-5 @ 25.0'	Brown Sand with Gravel (visual)	108.2	21.2	---	---	---
1-6 @ 35.0'	Gray Sandy Clay (visual)	104.8	22.9	---	---	---
1-7 @ 45.0'	Greenish Gray Clayey Silt (visual)	101.1	25.6	---	---	---
2-1 @ 4.0'	Dark Brown Silty Clay (visual)	88.1	29.9	---	---	---
2-3 @ 16.0'	Mottled Light Olive Brown Silty Clay (visual)	103.5	23.2	---	---	---
3-1 @ 3.0'	Dark Brown Sandy Clay (visual)	93.6	25.5	---	---	---
3-2 @ 8.0'	Dark Brown Sandy Clay with Gravel (visual)	99.5	25.1	---	---	---

Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
3-3 @ 13.0’	Light Brown Olive Clay (visual)	91.9	30.8	---	---	---
3-4 @ 21.0’	Light Brown Sandy Clay with Gravel (visual)	106.3	21.8	---	---	---
4-1 @ 2.5’	Dark Brown Sandy Clay (visual)	88.4	29.8	50	23	27
4-2 @ 8.0’	Dark Brown Sandy Clay (visual)	96.9	27.7	---	---	---
4-3 @ 14.5’	Light Olive Brown Silty Clay (visual)	98.7	23.8	---	---	---
5-1 @ 4.0’	Dark Brown Sandy Clay (visual)	87.8	13.1	---	---	--
5-2 @ 9.0’	Dark Brown Sandy Clay (visual)	98.1	26.4	---	---	---
5-3 @ 19.0’	Light Brown and Olive Silty Clay (visual)	95.7	27.7	---	---	---
6-1 @ 3.0’	Dark Brown Silty Clay (visual)	90.6	27.8	---	---	---
6-2 @ 8.0’	Dark Brown Silty Clay (visual)	100.3	99.0	---	---	---
6-3 @ 14.5’	Light Olive Brown Sandy Clay (visual)	99.0	26.6	---	---	---

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	23	8	12	34	23	0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100		
1-1/2"	80		
1"	80		
3/4"	77		
1/2"	77		
3/8"	76		
#4	69		
#8	59		
#16	47		
#30	30		
#50	16		
#100	4		
#200	0.5		

* (no specification provided)

Material Description

Brown Sand with Gravel

Atterberg Limits

PL= ---
LL= ---
PI= ---

Coefficients

D_{90}= 45.0577
D_{85}= 42.0123
D_{60}= 2.5235
D_{50}= 1.3631
D_{30}= 0.6000
D_{15}= 0.2850
D_{10}= 0.2201
C_u= 11.46
C_c= 0.65

Classification

USCS= SP
AASHTO= ---

Remarks

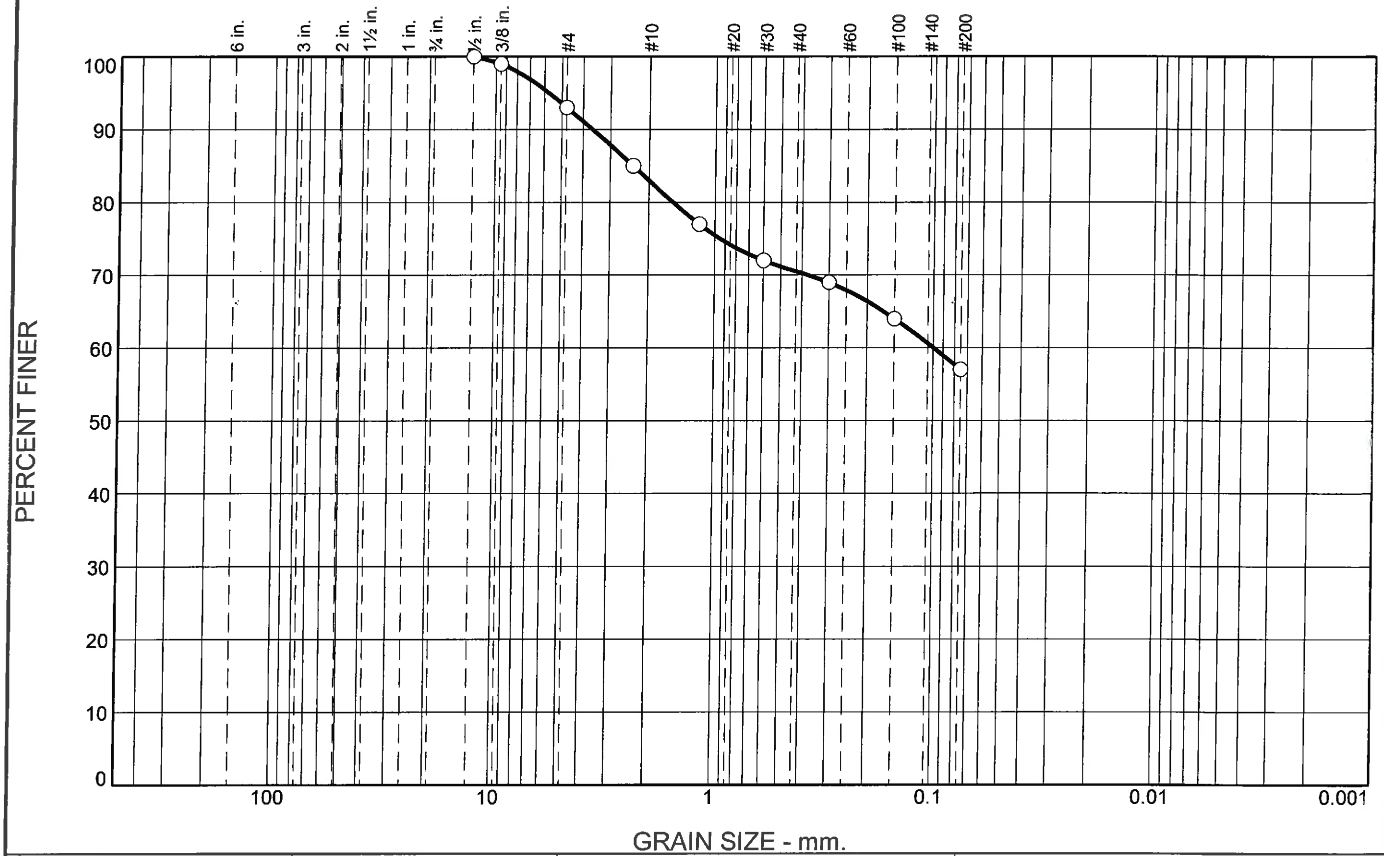
Material tested in accordance with ASTM D6913.

Location: 1-5
Sample Number: 7 **Depth:** 25.0'
Date: 09/06/16

M T I Materials Testing, Inc.

Client: Demmon Partners
Project: Village Green Apartments & Retail Development
San Lorenzo, CA
Project No: VV4128-001 **Figure** 0400-002

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	7	10	12	14	57	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100		
3/8"	99		
#4	93		
#8	85		
#16	77		
#30	72		
#50	69		
#100	64		
#200	57		

* (no specification provided)

Material Description

Grey Sandy Clay

Atterberg Limits

PL= ---
LL= ---
PI= ---

Coefficients

D_{90}= 3.6207
D_{85}= 2.3600
D_{60}= 0.0997
D_{50}=
D_{30}=
D_{15}=
D_{10}=
C_u=
C_c=

Classification

USCS= CL
AASHTO= ---

Remarks

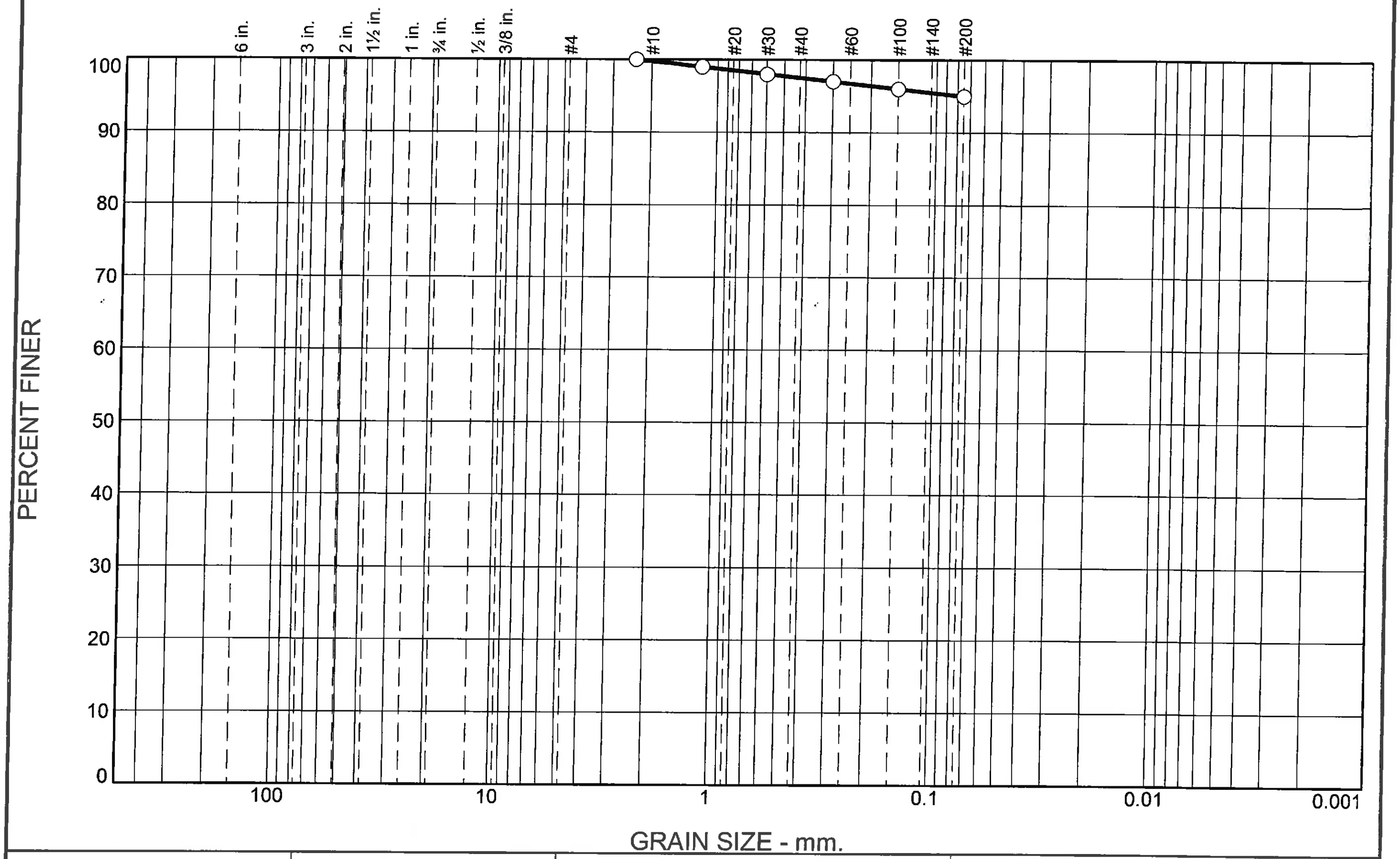
Material tested in accordance with ASTM D6913.

Location: 1-6
Sample Number: 8 **Depth:** 35.0'
Date: 09/06/16

MTI Materials Testing, Inc.

Client: Demmon Partners
Project: Village Green Apartments & Retail Development
San Lorenzo, CA
Project No: VV4128-001 **Figure** 0400-003

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	3	95	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100		
#16	99		
#30	98		
#50	97		
#100	96		
#200	95		

* (no specification provided)

Material Description

Light Brown and Olive Clay (visual)

Atterberg Limits

PL= --- LL= --- PI= ---

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= ---

Remarks

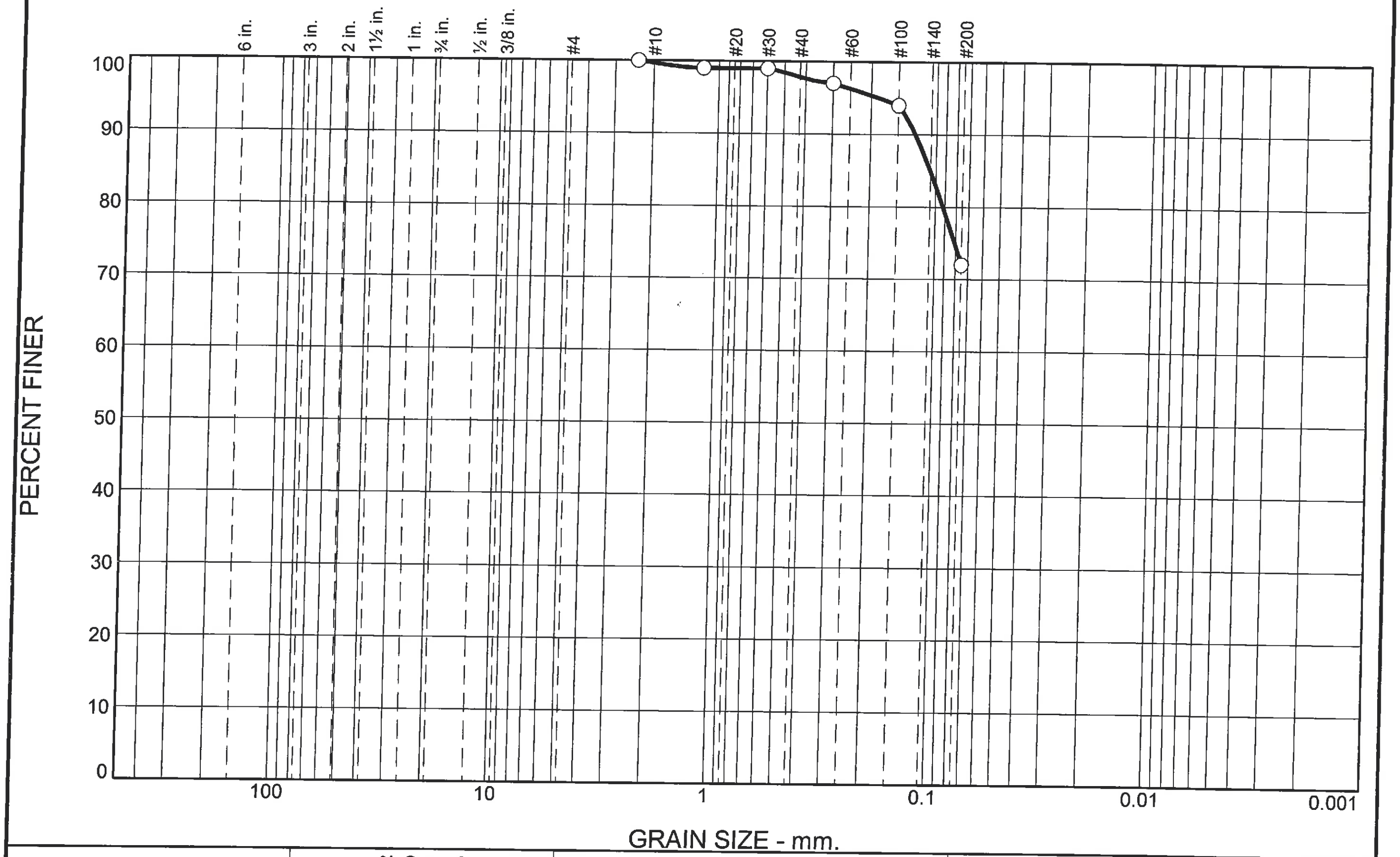
Material tested in accordance with ASTM D6913.

Location: 3-3
Sample Number: 15 **Depth:** 13.0' **Date:** 09/06/16

Materials Testing, Inc.

Client: Demmon Partners
Project: Village Green Apartments & Retail Development
San Lorenzo, CA
Project No: VV4128-001 **Figure** 0400-004

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	26	72	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100		
#16	99		
#30	99		
#50	97		
#100	94		
#200	72		

* (no specification provided)

Material Description

Light Olive Brown Clay with Sand (visual)

Atterberg Limits

PL= ---
LL= ---
PI= ---

Coefficients

D_{90}= 0.1254
D_{85}= 0.1064
D_{60}=
D_{50}=
D_{30}=
D_{15}=
D_{10}=
C_u=
C_c=

Classification

USCS= CL
AASHTO= ---

Remarks

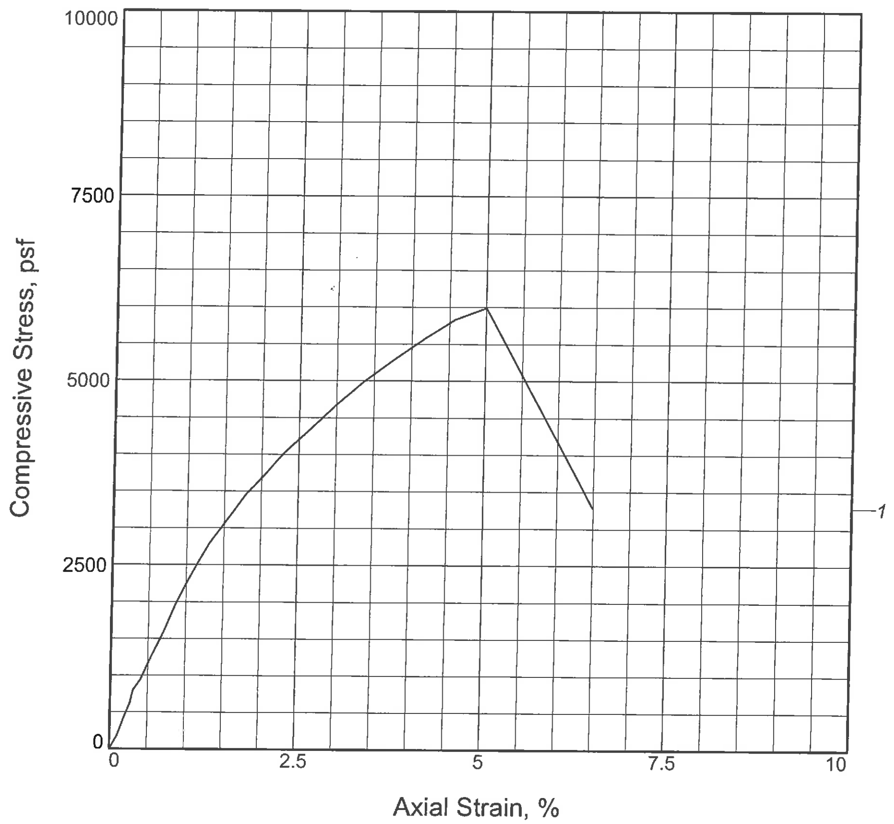
Material tested in accordance with ASTM D6913.

Location: 5-4
Sample Number: 23
Depth: 29.5'
Date: 09/06/16

Materials Testing, Inc.

Client: Demmon Partners
Project: Village Green Apartments & Retail Development
San Lorenzo, CA
Project No: VV4128-001
Figure 0400-005

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	5990			
Undrained shear strength, psf	2995			
Failure strain, %	5.0			
Strain rate, in./min.	N/A			
Water content, %	21.1			
Wet density, pcf	120.5			
Dry density, pcf	99.6			
Saturation, %	86.3			
Void ratio	0.6365			
Specimen diameter, in.	2.41			
Specimen height, in.	4.90			
Height/diameter ratio	2.03			

Description: Dark Brown Silty Clay (visual)

LL = ---	**PL =**	**PI =** ---	**GS=** 2.61	**Type:** Tube

Project No.: VV4128-001

Date Sampled: 08/18/16

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Shear.

Figure 0300-006

Client: Demmon Partners

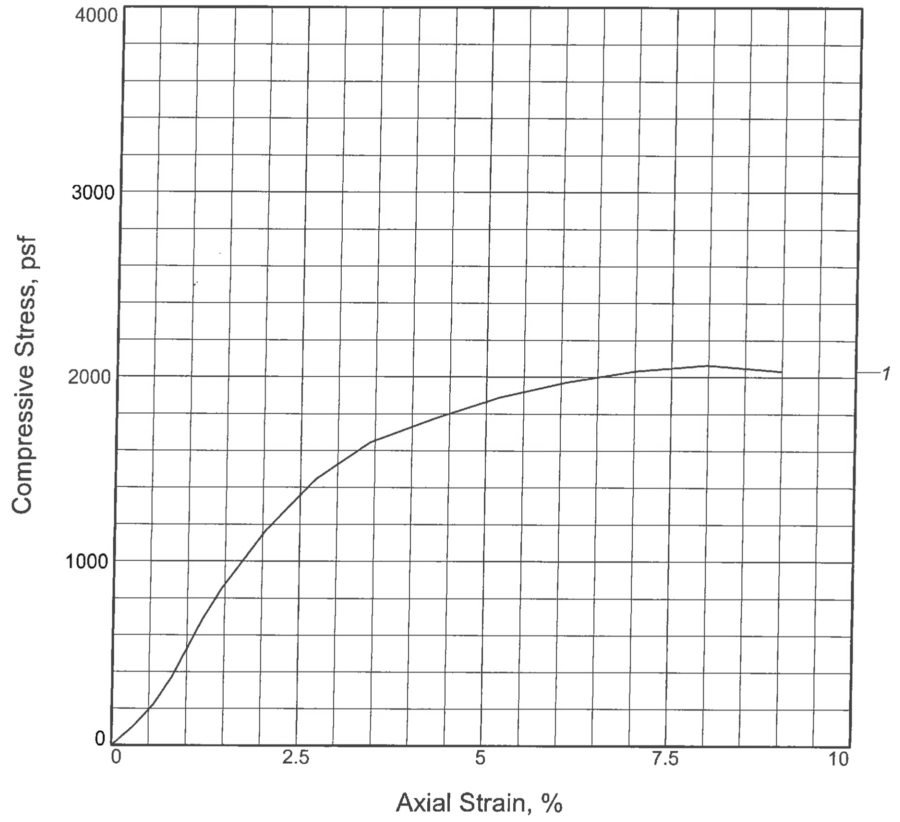
Project: Village Green Apartments & Retail Development
San Lorenzo, CA

Location: 1-1

Sample Number: 3 **Depth:** 2.0'

Materials
Testing, Inc.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2064			
Undrained shear strength, psf	1032			
Failure strain, %	8.0			
Strain rate, in./min.	N/A			
Water content, %	29.9			
Wet density, pcf	114.4			
Dry density, pcf	88.1			
Saturation, %	92.6			
Void ratio	0.8353			
Specimen diameter, in.	2.41			
Specimen height, in.	4.95			
Height/diameter ratio	2.05			

Description: Dark Brown Silty Clay (visual)

LL = ---	**PL =**	**PI =** ---	**GS=** 2.59	**Type:** Tube

Project No.: VV4128-001
Date Sampled: 08/18/16

Remarks:
Material tested in accordance with ASTM D2166.
Types of Failure - Bulge & Columnar.

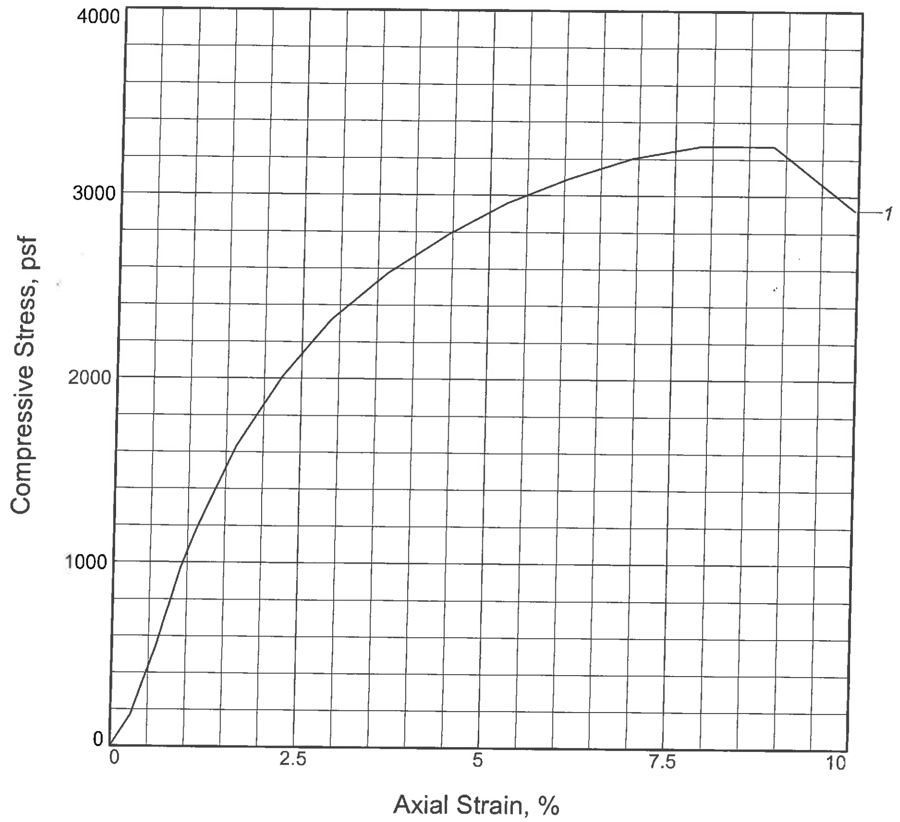
Figure 0300-007

Client: Demmon Partners

Project: Village Green Apartments & Retail Development
San Lorenzo, CA
Location: 2-1
Sample Number: 10 **Depth:** 4.0'

Materials Testing, Inc.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	3269			
Undrained shear strength, psf	1635			
Failure strain, %	7.8			
Strain rate, in./min.	N/A			
Water content, %	29.8			
Wet density, pcf	114.7			
Dry density, pcf	88.4			
Saturation, %	92.6			
Void ratio	0.8370			
Specimen diameter, in.	2.41			
Specimen height, in.	5.00			
Height/diameter ratio	2.07			

Description: Dark Brown Sandy Clay (visual)

LL = 50	**PL =** 23	**PI =** 27	**GS=** 2.60	**Type:** Tube

Project No.: VV4128-001

Date Sampled: 08/18/16

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Shear

Figure 0300-008

Client: Demmon Partners

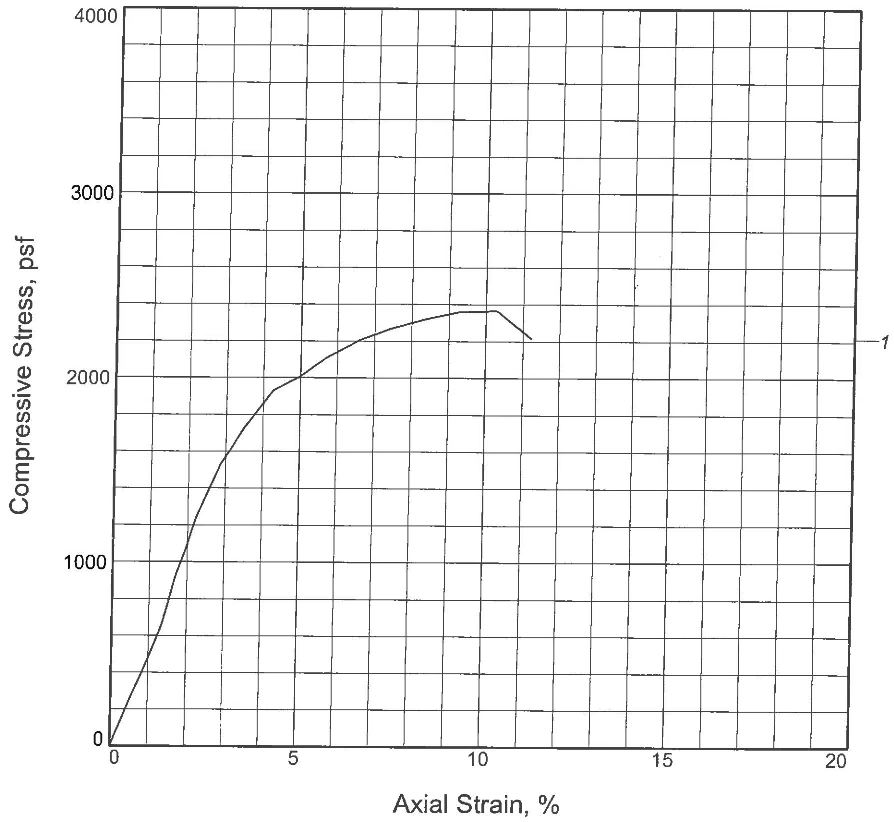
Project: Village Green Apartments & Retail Development
San Lorenzo, CA

Location: 4-1

Sample Number: 17 **Depth:** 2.5'

Materials Testing, Inc.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2364			
Undrained shear strength, psf	1182			
Failure strain, %	10.3			
Strain rate, in./min.	N/A			
Water content, %	27.8			
Wet density, pcf	115.8			
Dry density, pcf	90.6			
Saturation, %	90.6			
Void ratio	0.8051			
Specimen diameter, in.	2.41			
Specimen height, in.	5.00			
Height/diameter ratio	2.07			

Description: Dark Brown Silty Clay (visual)

LL = ---	**PL =**	**PI =** ---	**GS=** 2.62	**Type:** Tube

Project No.: VV4128-001

Date Sampled: 08/18/16

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Shear.

Figure 0300-009

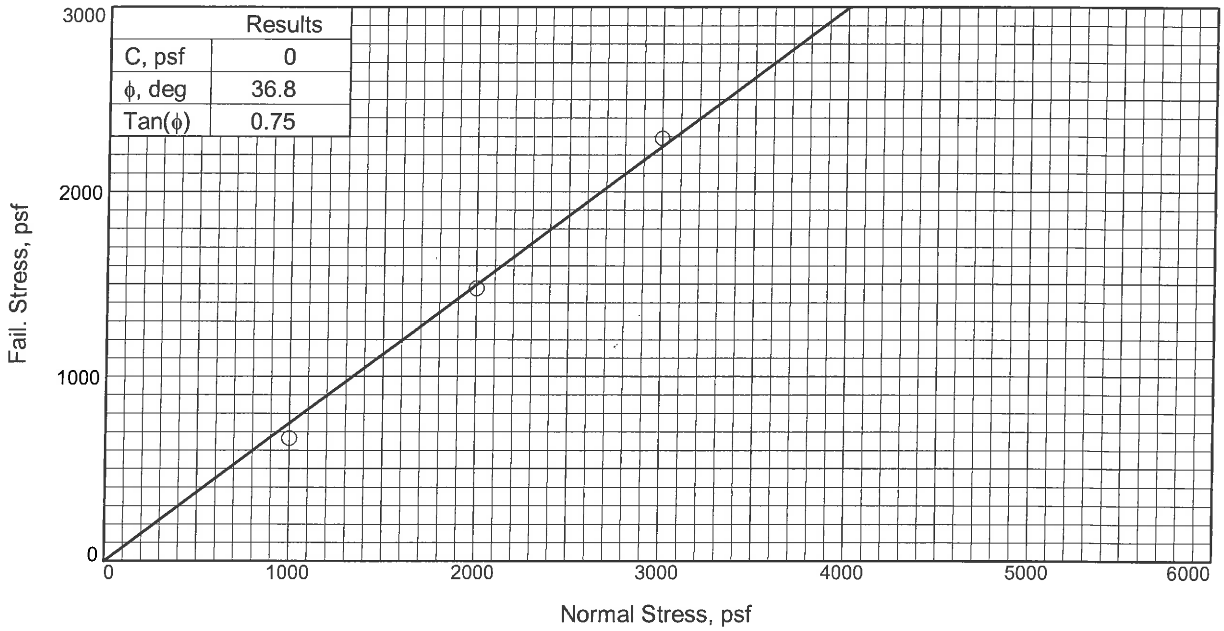
Client: Demmon Partners

Project: Village Green Apartments & Retail Development
San Lorenzo, CA

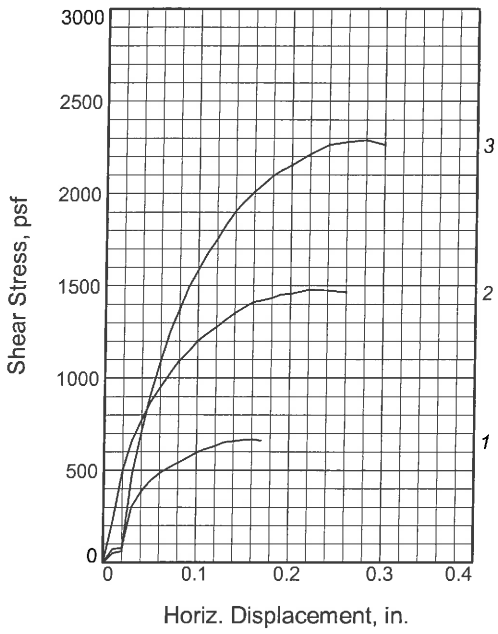
Location: 6-1

Sample Number: 24 **Depth:** 3.0'

Materials
Testing, Inc.



Results	
C, psf	0
ϕ, deg	36.8
Tan(ϕ)	0.75



	Sample No.	1	2	3
Initial	Water Content, %	25.5	25.5	25.5
	Dry Density, pcf	87.2	93.3	100.2
	Saturation, %	74.8	86.5	102.7
	Void Ratio	0.9111	0.7874	0.6636
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	28.7	22.7	21.0
	Dry Density, pcf	90.5	108.4	111.1
	Saturation, %	91.2	112.6	112.0
	Void Ratio	0.8411	0.5379	0.4997
	Diameter, in.	2.41	2.41	2.41
	Height, in.	0.96	0.86	0.90
	Normal Stress, psf	1000	2000	3000
	Fail. Stress, psf	666	1477	2289
	Displacement, in.	0.16	0.22	0.28
	Ult. Stress, psf			
	Displacement, in.			
	Strain rate, in./min.	0.00	0.00	0.00

Sample Type: Tube

Description: Dark Brown Sandy Clay (visual)

Specific Gravity= 2.67

Remarks: DIRECT SHEAR TEST REPORT
Material tested in accordance with ASTM D3080.

Figure 0300-010

Client: Demmon Partners

Project: Village Green Apartments & Retail Development
San Lorenzo, CA

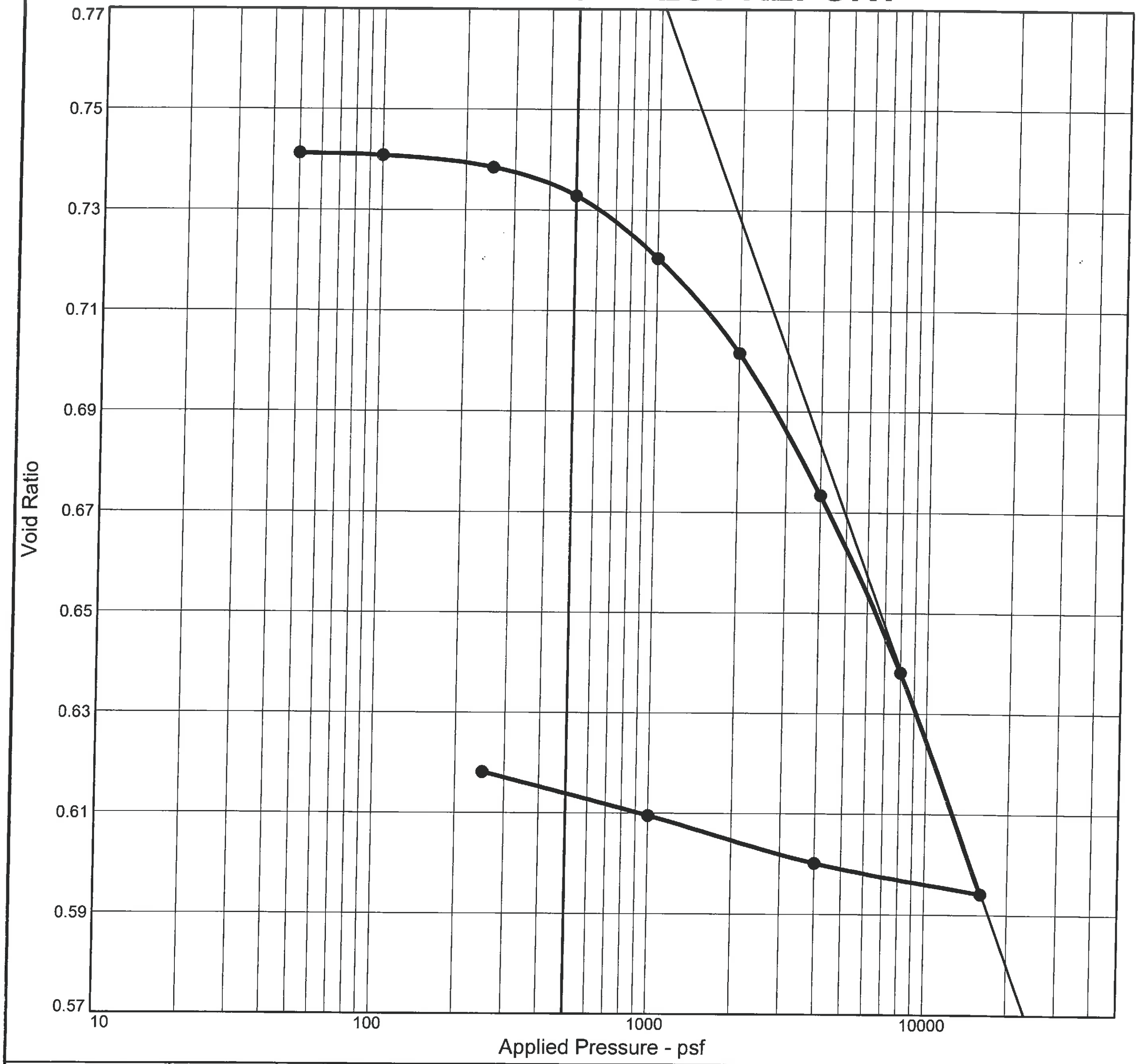
Location: 3-1

Sample Number: 13 **Depth:** 3.0'

Proj. No.: VV4128-001 **Date Sampled:** 08/18/18

MTI Materials Testing, Inc.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Swell %	e_o
Sat.	Moist.											
99.8 %	27.7 %	95.7	---	---	2.67	1776	2132	0.15	0.02			0.741

MATERIAL DESCRIPTION	USCS	AASHTO
Light Brown Silty Clay (visual)	---	---

Project No. VV4128- **Client:** Demmon Partners

Project: Village Green Apartments & Retail Development
San Lorenzo, CA

Location: 5-3 **Depth:** 19.0' **Sample Number:** 22

Materials Testing, Inc.

Remarks:

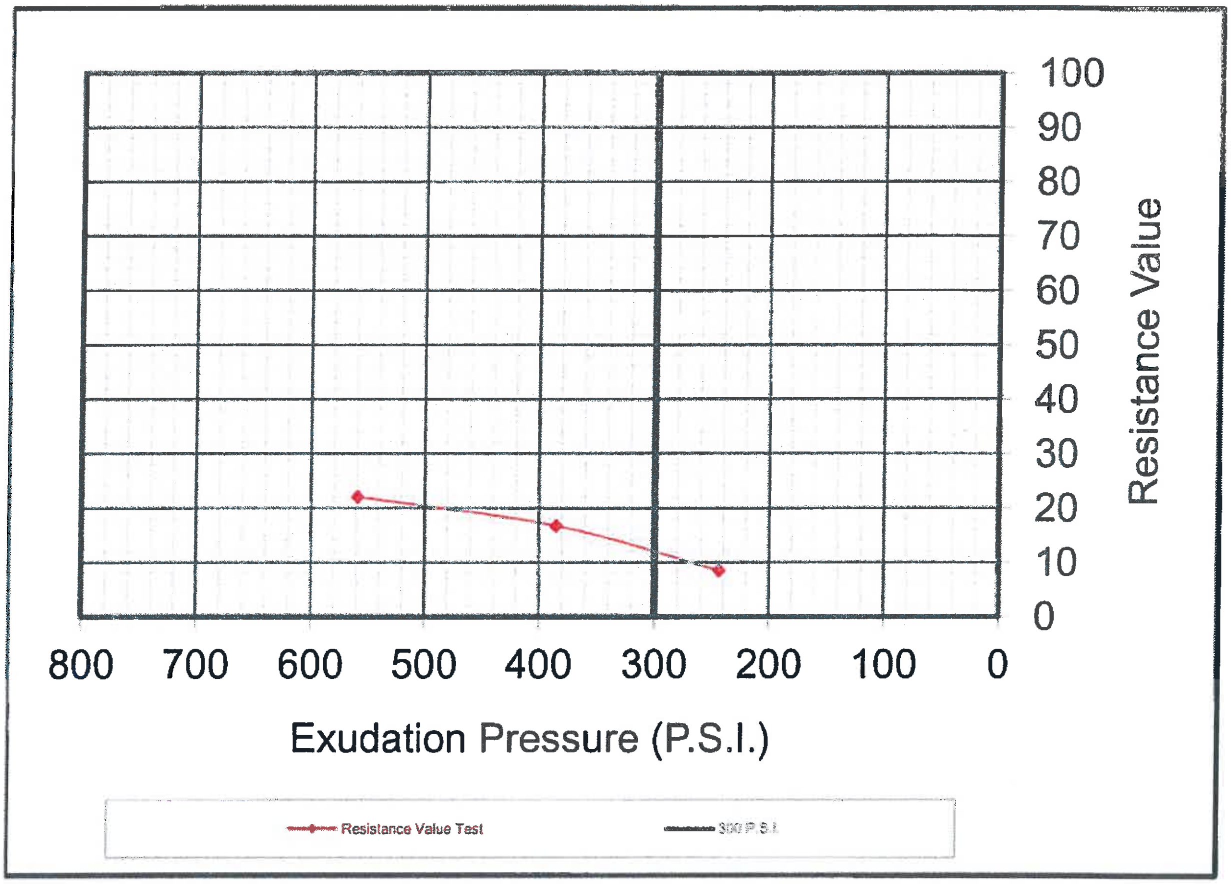
Material tested in accordance with ASTM D2435.

Figure 0300-011

RESISTANCE (R) VALUE TEST

California Test 301

PEI Laboratory No.:	L162116	**MTI Project Name:**	Village Green Apts & Retail
PEI Client:	Materials Testing, Inc.	**MTI Project No.:**	VV 4128
PEI Project Name:	2016 Laboratory Testing	**MTI Office:**	Redding
PEI Project No.:	160224	**MTI Engineer:**	Andrew King
Report Date:	August 26, 2016	**MTI Log No.:**	1800
Sample Description:	Dark Brown Clay	**MTI Location:**	n/a



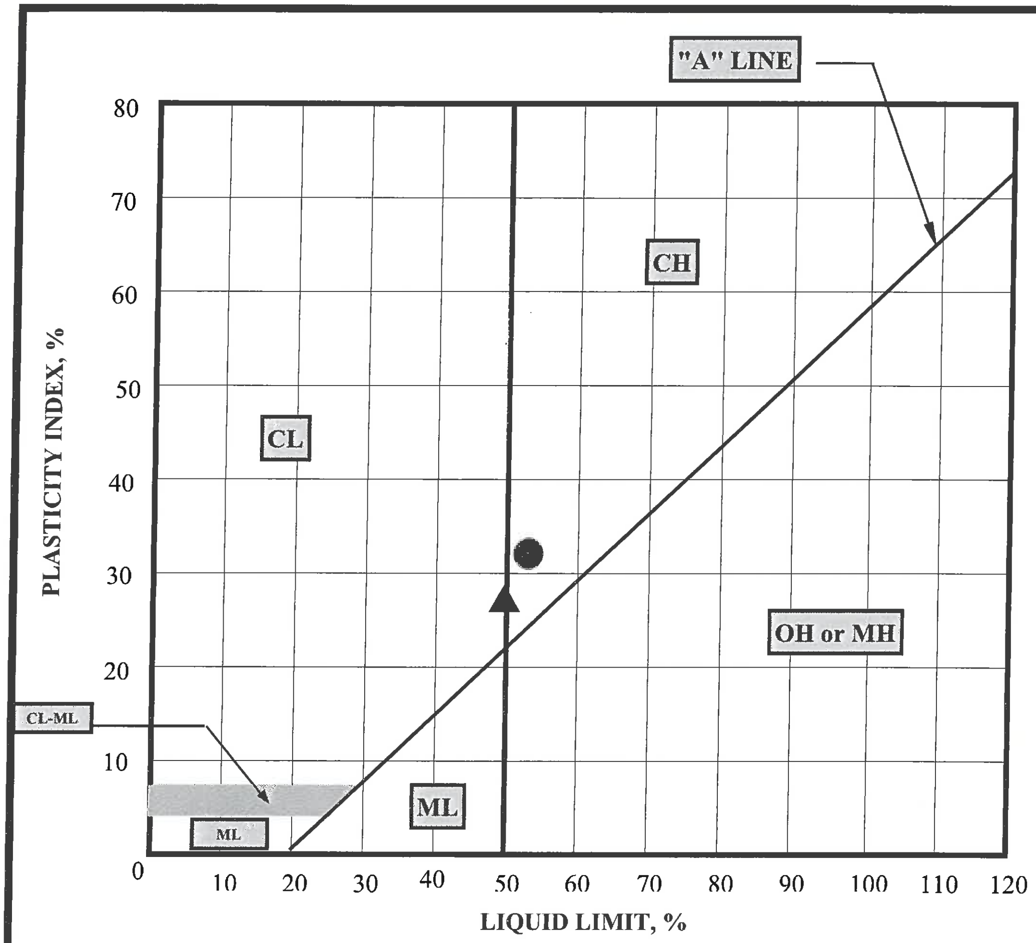
Specimen No.	4	5	6
Moisture Content (%)	17.3	18.6	19.2
Dry Density (PCF)	112.8	111.3	110.0
Resistance Value (R)	22	17	9
Exudation Pressure (PSI)	559	385	244
Expansion Pressure	247	139	56
As Received Moisture Content (%)	12.4		

RESISTANCE VALUE AT 300 P.S.I. 12

AASHTO R18

Reviewed By:

Brandon Rodebaugh
Materials Engineer



KEY SYMBOL	SAMPLE NUMBER	DEPTH	NATURAL MOISTURE CONTENT, %	LIQUID LIMIT, LL, %	PLASTIC LIMIT, PL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	SG	0-3.0'	N/A	53	21	32	N/A	CH
▲	4-1	2.5'	N/A	50	23	27	N/A	CH

MATERIALS TESTING M T I INCORPORATED

Materials Testing, Inc.

PLASTICITY CHART AND DATA

Village Green Apartments & Retail Development
San Lorenzo, CA

Client No:	Date:	Report No:
VV4128	9/6/2016	0300-013

Sunland Analytical
11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 08/31/2016
Date Submitted 08/24/2016

To: David Cymanski
K.C. Engineering
865 Cotting Lane Suite A
Vacaville, CA 95688

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : CORROSIVITY 0-5 Site ID : VV4128.
Thank you for your business.

* For future reference to this analysis please use SUN # 72677-151766.

EVALUATION FOR SOIL CORROSION

Soil pH	7.68		
Minimum Resistivity	0.75 ohm-cm (x1000)		
Chloride	23.6 ppm	00.00236	%
Sulfate	54.8 ppm	00.00548	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

USGS Design Maps Summary Report

User–Specified Input

Report Title Paseo Grande & Hesperian Blvd
Wed August 17, 2016 16:37:08 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 37.6783°N, 122.127°W

Site Soil Classification Site Class D – "Stiff Soil"

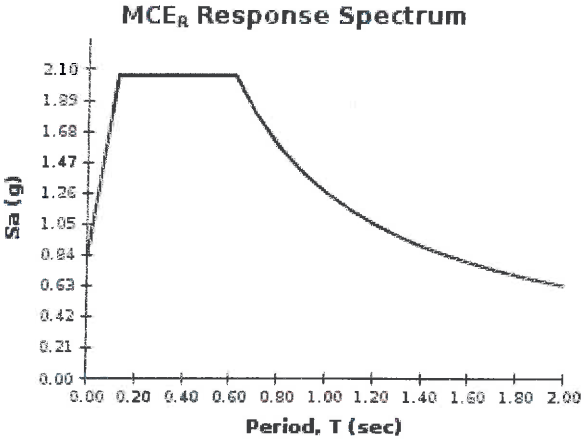
Risk Category I/II/III

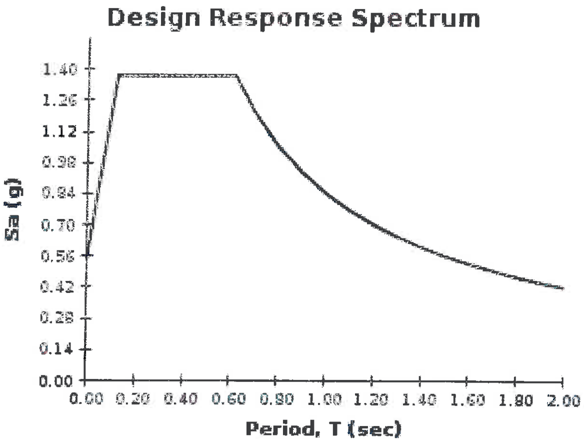
USGS–Provided Output

$S_S =$ 2.059 g $S_{MS} =$ 2.059 g $S_{DS} =$ 1.372 g

$S_1 =$ 0.842 g $S_{M1} =$ 1.263 g $S_{D1} =$ 0.842 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (37.6783°N, 122.127°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] $S_S = 2.059$ g

From Figure 22-2 [2] $S_1 = 0.842$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.059 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.842 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_aS_S = 1.000 \times 2.059 = 2.059$ g

Equation (11.4–2): $S_{M1} = F_vS_1 = 1.500 \times 0.842 = 1.263$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

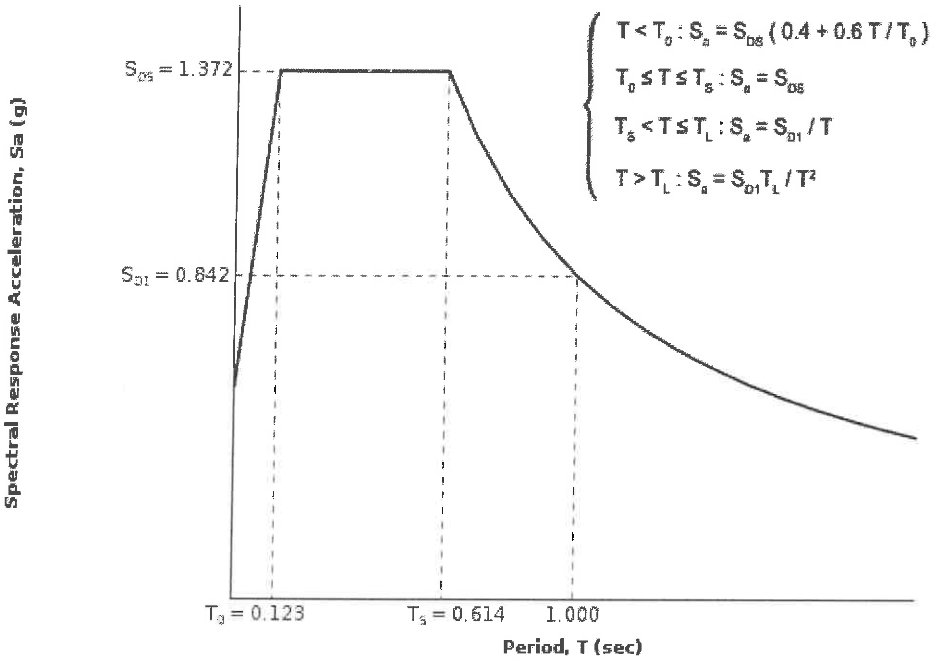
Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.059 = 1.372$ g

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 1.263 = 0.842$ g

Section 11.4.5 — Design Response Spectrum

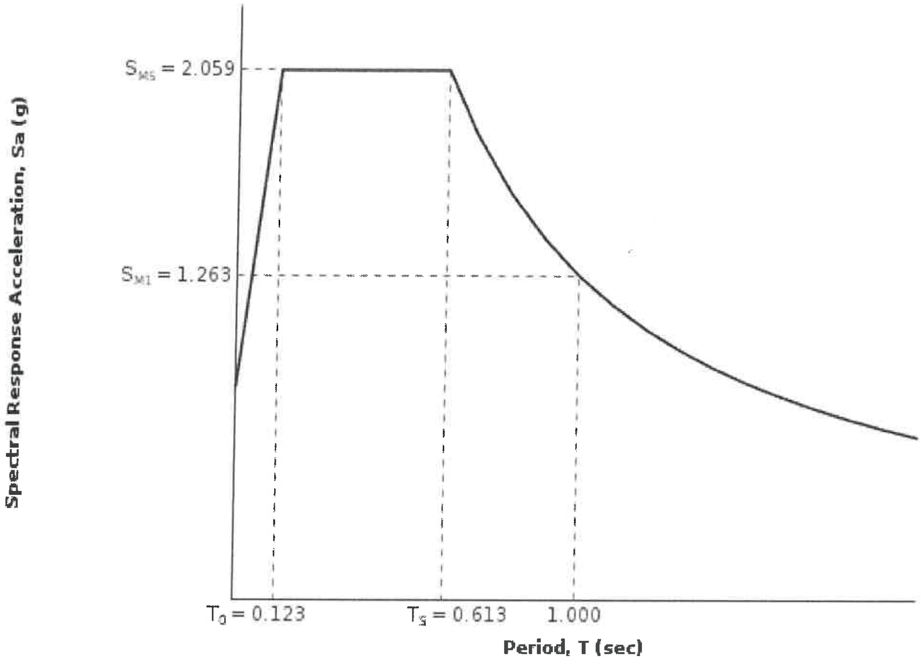
From Figure 22-12 [3] T_L = 8 seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.792

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.792 = 0.792$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.792 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 1.004

From Figure 22-18 [6] C_{R1} = 0.983

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.372 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.842 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

Attachment D

Limited Site Investigation

Limited Site Investigation

Village Green
16015 Via Arriba, 596 Paseo Grande, and 500, 520, 550 Via Mercado
San Lorenzo, Alameda County, California

May 18, 2018
Terracon Project No. R1187337

Prepared for:
Demmon Partners
Sacramento, California

Prepared by:
Terracon Consultants, Inc.
Emeryville, California

May 18, 2018

Demmon Partners
2394 Fair Oaks Blvd., Ste 100
Sacramento, CA 95825

Attn: Mr. Mitch McKinzie
P: (916) 385-8126
E: mitchell@demmonpartners.com

Re: Limited Site Investigation
Village Green
16015 Via Arriba, 596 Paseo Grande, and 500, 520, 550 Via Mercado
San Lorenzo, Alameda County, California
Terracon Project No. R1187337

Dear Mr. McKinzie:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Limited Site Investigation (LSI) activities completed at the site referenced above. The report presents data from recent field activities that included the completion of soil borings and the collection of soil, soil gas, and groundwater samples for chemical analysis. The activities were completed to address the findings of the Phase I Environmental Site Assessment (ESA) of the property dated March 5, 2018. Terracon conducted the LSI in general accordance with our proposal (NB187029A) and the Supplemental Agreement for Services dated March 22, 2018.

Terracon appreciates this opportunity to provide environmental engineering services to Demmon Partners. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

DRAFT

Stephen Farley, P.G. 4672
Senior Scientist

DRAFT

Scott Gable, P.G. 6366
Environmental Department Manager

TABLE OF CONTENTS

LIMITED SITE INVESTIGATION
VILLAGE GREEN
16015 VIA ARRIBA, 596 PASEO GRANDE, AND 500, 520, 550 VIA MERCADO
SAN LORENZO, ALAMEDA COUNTY, CALIFORNIA

Terracon Project No. R1187337
May 18, 2018

1.0 SITE DESCRIPTION

The site is located at 16015 Via Arriba, 596 Paseo Grande, and 500, 520, and 550 Via Mercado in San Lorenzo, Alameda County, California and consists six Assessor's Parcel Numbers (APNs) (412-42-112, 412-42-113, 412-39-1-3, 412-39-2, 412-38-4-2, and 412-39- 3) totaling approximately 4.03 acres. The portion of the site west of Via Arriba road consists of cleared vacant land. The portion to the northeast of the intersection of Via Arriba and Via Mercado consists of an asphalt-paved parking lot. The portion to the southeast of the Via Arriba and Via Mercado intersection consists of vacant land and an approximately 5,000-square foot (SF) vacant retail store. The site was observed unoccupied during the site reconnaissance. A Topographic Map showing the site location is included as Exhibit 1 and a Site Diagram is included as Exhibit 2 in Appendix A.

Terracon previously performed a Phase I Environmental Site Assessment (ESA) of the property for Demmon Properties (client) (Terracon Project No. NB187029, report dated March 5, 2018). Based on review of the historical information, Sandborn maps indicate that a portion of the site (16035 Via Arriba) was occupied by a dry-cleaning business from at least 1957 through 1963. Historical information also indicates an off-site dry cleaner on the east adjoining property (northeast of Hesperian Boulevard) in a hydrologically up-gradient position relative to the site. The potential for undocumented spills or releases of dry cleaning chemicals associated with the historical on and off-site dry cleaning operations represents a recognized environmental condition (REC) to the site. Additionally, the regulatory databases indicate a LUST incident in 1995 associated with an historical fueling station on the northern adjoining property (northwest of Paseo Grande). Based on the reported groundwater concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline-range organics (-GRO), benzene, and naphthalene, and absence of groundwater plume delineation between monitoring well MW-2 and the site, there is a potential of groundwater impacts to the site from the former off-site fueling station, which represents a REC.

Based on the scope of services, limitations, and findings of the assessment, Terracon recommended that a subsurface investigation be performed to assess potential impacts from the historical on-site dry cleaning operations, off-site dry cleaning business, and fueling station.

2.0 SCOPE OF SERVICES

Terracon's LSI was undertaken in response to the results of our Phase I ESA report dated March 5, 2018, which identified the following RECs.

- **Historical on-site dry cleaning operations**: Based on the unknown nature of operations associated with the historical dry-cleaning business (16031 and 16035 Via Arriba), the potential for undocumented spills or releases associated with dry cleaning chemicals represents a REC to the site.

- **Historical off-site dry cleaning operations**: Based on the facility's proximity, hydrogeologic up-gradient position relative to the site, and length of operations, there is a potential for undocumented spills or releases of dry cleaning chemicals associated with the Village Cleaner's Drive-In operations, which represents a REC to the site.

- **Off-site fueling operations**: Based on the reported groundwater concentrations of TPH-GRO, benzene, and naphthalene in MW-2 and absence of groundwater plume delineation between MW-2 and the site, there is a potential of groundwater impacts to the site from the former off-site fueling station, which represents a REC.

Terracon's scope of work was conducted in accordance with our Proposal No. NB187029A and Supplemental Agreement for Services dated March 22, 2018. This LSI was conducted to investigate for the presence of indicator contaminants associated with the RECs identified during Terracon's Phase I ESA. The scope of services was not intended to identify every chemical possibly associated with the site or surrounding facilities. Similarly, the proposed scope was not intended to determine the extent or magnitude of any existing contamination, if present.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These LSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this LSI. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This report has been prepared for the exclusive use of Demmon Partners, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Demmon Partners and Terracon.

3.0 FIELD INVESTIGATION

Terracon has a 100% commitment to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free®* safety goals, Terracon conducted the fieldwork under a site-specific health and safety plan developed for this project. Work was performed using the Occupational Health and Safety Administration (OSHA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots. To locate underground utilities in the work area, Terracon contacted Underground Service Alert (USA) 811 North to arrange for public underground utility clearance for the proposed borings. In addition, a geophysical survey was performed as described in the following section.

3.1 Geophysical Survey for Utility Clearance

On April 24, 2018, Terracon personnel mobilized to the site with a subcontracted geophysical contractor to perform the geophysical survey of drilling locations. The subcontractor utilized ground-penetrating radar (GPR) and magnetometer survey methods. The purpose of the survey was to attempt to identify the location of possible utilities or other anomalies that may be present on the site.

The geophysical survey consisted of scanning the soil boring / temporary well and soil vapor point locations first with an electromagnetic (EM) instrument followed by a GPR scan to further evaluate any EM anomalies, if present. The survey areas are depicted on Exhibit 2 in Appendix A.

3.2 Soil Sampling and Groundwater Sampling

Field activities were performed in three locations associated with the RECs discussed in Section 1. Boring locations relative to site features are depicted on Exhibit 2 of Appendix A.

Terracon field representative, P. Keicher, mobilized to the site on April 24, 2018, to oversee the drilling of soil borings using limited access and track-mounted direct-push drill rig owned and operated by Penecore Drilling (Penecore), a California State-licensed driller. A total of six borings, identified as soil borings SGP1 through SGP3, and temporary sampling wells TSW1 through TSW3, were advanced using a direct-push sampler equipped with disposable acetate sample sleeves. Non-disposable sampling equipment was cleaned using an Alconox^{â} wash and potable water prior to the beginning of the project and before collecting each soil sample.

Borings SGP1 through SGP3 were advanced to a depth of approximately five below ground surface (bgs) for the collection of soil and soil gas samples, and borings (TSW1 through TSW3) were advanced to a depth of approximately 20 feet bgs for the collection of soil and groundwater samples. Exhibit 2, Site Diagram, shows the six sampling locations in relation to general site boundaries (Appendix A).

Terracon field screened soil samples for organic vapors using a photoionization detector (PID). This device provides a direct reading in parts per million by volume (ppmV) isobutylene equivalents. Upon removal of the sampler from the borehole, Terracon put a portion of each sample in a sealable plastic bag. After a stabilization period, Terracon screened the headspace above the soil using the PID equipped with a 10.6 electron-volt (eV) ultraviolet lamp source. Terracon calibrated the PID in accordance with the manufacturer's recommendations before the field activities. The boring logs (Appendix C) include the field screening results for each soil boring. Field screening results were considered when selecting soil sample intervals

Six soil samples, one each from boring (SGP1 through SGP3, and TSW1 through TSW3), were collected. Soil samples were placed directly into laboratory-supplied glassware.

Subsequent to the collection of soil samples, groundwater samples were collected from soil borings TSW1 through TSW3. Terracon inserted sections of disposable polyvinyl chloride (PVC) well riser and screen into the boreholes to facilitate the collection of groundwater samples from these borings. Terracon collected groundwater samples using precleaned, disposable tubing and a peristaltic pump. Groundwater samples were decanted into laboratory-supplied glassware.

Each sample container was labeled with the project number, date, time, boring number, and sample number. Sample containers were placed in a chilled cooler immediately after sampling, and subsequently transported to a ESC Lab Sciences, a California Environmental Laboratory Accreditation Program (ELAP)-certified laboratory under strict chain-of-custody procedures. The laboratory report, which includes the Chain-of-Custody form, is provided in Appendix D.

At the completion of field activities, the borings were backfilled with bentonite chips to match the existing ground surface.

3.3 Soil Vapor Sampling

Soil borings SGP1 through SGP3 were converted to soil vapor points. Soil vapor point locations are shown on Exhibit 2 in Appendix A. Soil vapor sampling implants, consisting of a screened 6-inch stainless-steel sampling tip and Teflon® lined tubing, were placed in the boreholes through a hollow rod with the sampling tips located at the bottom of the boring. Once advanced, the hollow rod was raised exposing the screen to the soil. The boreholes were backfilled with 10/20 silica sand from the bottom of the boring to six inches above the top of the stainless-steel sampling tip, followed by a seal of granular bentonite that was hydrated with deionized water. The bentonite was placed in multiple lifts to the ground surface. The remaining end of the Teflon® sample tubing protruded from the bentonite seal at the ground surface and was connected to a dedicated quick-connect valve to allow for purging and collection of the soil vapor samples.

Following a two-hour equilibration period, approximately one air volume was purged from the sampling tubing connected to the soil vapor probe. The completely assembled sampling train was leak tested by using a low flow purge summa canister (~150 milliliters per minute [mL/min]) with a negative pressure/vacuum of 30 inches of mercury (in Hg). The sampling train was observed for one minute to monitor for evidence of leakage of atmospheric air entering the samples. No leakage was observed.

Once the sampling train was confirmed to be leak-free and the equilibration time had passed, a soil vapor sample was collected. All Summa® canisters used for this assessment were pre-tested and batch-certified as free of Chemicals of Concern (COCs) by the analytical laboratory. The canisters were equipped with laboratory-supplied flow regulators allowing for sample collection at a low-flow rate of a maximum of approximately 200 mL/min. The flow regulator valve was opened to start vapor collection for approximately 10 to 15 minutes. A cotton swab with a leak detection compound, isopropyl alcohol (IPA), was placed beneath the connection between the Teflon® tubing and sampling manifold. Once the flow regulator indicated that respective Summa® canisters were nearly full (where pressure remaining equaled approximately 5 mm Hg), the valve was closed and the sampling assembly was dismantled and the soil vapor probe Teflon® tubing was removed. The boreholes were then filled with concrete to the ground surface.

Upon completion of sample collection as described above, the Summa® canisters were closed, secured, and appropriately labeled with pertinent sample information. Canister pressures were recorded upon initiating sample collection, after sample collection, and after receipt at the laboratory. Soil vapor samples were labelled accordingly and submitted to ESC Laboratory Services, under standard chain-of-custody procedure.

3.4 Laboratory Analysis

The soil samples collected from SGP1 through SGP3 were analyzed for TPH-GRO, diesel-range organics (-DRO), and motor oil-range organics (-MORO) by EPA Method 8015, and volatile organic compounds (VOCs), including benzene and naphthalene, by EPA Method 8260. The soil and groundwater samples collected from TSW3 were analyzed for TPH-GRO, -DRO, and -MORO by EPA Method 8015 and VOCs including benzene and naphthalene by EPA Method 8260. The soil gas samples from SGP1 through SGP3 were analyzed for VOCs including benzene and naphthalene by Environmental Protection Agency (EPA) Air Method TO-15.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Geology/Hydrogeology

The boring logs in Appendix C detail the observed soil stratigraphy. In general, silty clays and sandy silty clays to approximately 14 to 16 feet bgs and overlying clayey sandy to the total depth explored at 20 feet bgs were observed in the soil borings. Groundwater was encountered between approximately six to nine feet bgs.

4.2 Field Screening

The field screening results are summarized on the boring logs in Appendix C. PID readings ranged from not detected (ND) in borings SGP1, SGP2, and TSW2, to a maximum of 2.2 ppmV (0.5 to 1.0 feet bgs) in soil boring SGP3. The PID readings were generally measured as 0.2 ppmV or less, shown as ND on the boring logs. Consistent PID readings between 1.0 and 1.8 ppmV were observed in soil boring TSW1 between 5 and 11 feet bgs, which is located within approximately 40 feet of boring SGP1 where perchloroethene (PCE) was detected at 1390 µg/m^3.

5.0 ANALYTICAL RESULTS

Laboratory reported soil concentrations were compared with the San Francisco Bay Regional Water Quality Control Board's (SFBRWQCB), Region 2, ESLs (February 2016). The following ESLs were used as comparison criteria:

Soil

- Tier 1 for soil; and
- Direct Exposure Human Health Risk Levels (HHRLs) for Residential and Commercial/Industrial Shallow Soil Exposures and Any Land Use/Any Depth Soil Exposure for Construction Workers (Table S-1).

Groundwater

- Tier 1 for groundwater.

Soil Vapor

- Tier 1 for Subslab/Soil Gas;
- Subslab/Soil Gas Vapor Intrusion: HHRLs (Table SG-1) Residential and Commercial.

The laboratory analytical report and chain-of-custody record are attached in Appendix D. The following sections describe the results of the testing.

5.1 Soil Sample Results

The maximum concentrations of TPH-GRO (0.0496 mg/kg) and TPH-MORO (9.91J mg/kg) were detected in SGP1 and SGP2, respectively. TPH-DRO was not detected in soil samples. The detected concentrations of TPH-GRO and -MORO are lower than Tier 1 of 100 and 5,100 mg/kg, respectively.

Some VOCs were detected in the soil samples collected from borings SGP1, SGP2, and TSW1. The detected concentrations of VOCs are below their respective Tier 1 ESL. VOCs were not detected in soil samples from SGP3, TSW2, and TSW3. The soil sample results for constituents detected in samples are summarized on Table 1 of Appendix B.

5.2 Groundwater Sample Results

The maximum concentrations of TPH-DRO (251 [micrograms per liter] µg/L) and TPH-MORO (70.7 µg/L) were detected in TSW3 and TSW2, respectively. TPH-GRO was not detected in groundwater samples. The concentrations of TPH-DRO exceed the Tier 1 ESL in TSW2 and TSW3, and Direct Exposure HHRLs ESL in TSW3.

Acetone, naphthalene, PCE, and trichloroethene (TCE) were detected in groundwater samples collected from temporary monitoring well TSW1 through TSW3. Concentrations of VOCs were lower than their respective ESLs. The groundwater analytical results are summarized in Table 2 of Appendix B.

5.3 Soil Vapor Analytical Results

Multiple VOCs were detected in soil vapor samples from SGP1 through SGP3 (Table 3 – Appendix B). The detected concentrations are below their applicable Tier 1 ESLs, except for PCE, which was detected at concentrations above the Tier 1 and Soil Gas Vapor Intrusion Residential Land Use HHRLs in the sample collected from SGP1. Soil gas probe SGP1 was installed near the REC associated with the historical dry-cleaning business (16031 and 16035 Via Arriba). PCE concentrations in this soil vapor sample is 1,390 micrograms per cubic meter (µg/m^3). The Tier 1 ESL for PCE in soil vapor is 240 µg/m^3. The detected concentrations of other constituents in soil vapor are considerably below their Tier 1 ESLs. The soil vapor analytical results are summarized in Table 3 of Appendix B.

6.0 INVESTIGATION DERIVED WASTES

One 55-gallon drum of drill cuttings and one 55-gallon drum of TSW purge water were containerized during the field activities. The drums will be properly disposed by a licensed disposal facility. Once picked up and disposed, Terracon will forward the waste manifest to the client.

7.0 CONCLUSIONS

Soil, groundwater, and soil gas samples were collected from six locations (Exhibit 2 in Appendix B). TPH-GRO, -DRO, or -MORO were detected in soil or groundwater samples. The concentrations of TPH-DRO exceed ESLs in samples from in samples TSW2-GW and TSW3-GW. The highest concentrations of TPH-DRO was detected in sample TSW3-GW, which is located in the northwest corner of the site near the Off-site Fueling Station REC. Other constituents were not detected in soil and groundwater at levels exceeding their respective ESLs.

The concentrations of TPH-GRO, -DRO, and -MORO detected in groundwater are likely associated with the former offsite fueling station. The responsible party has been identified and it is currently under the oversight of Alameda County Health Care Services Agency. VOC concentrations in soil gas did not exceed ESLs. If groundwater is not going to be used as a drinking water source and is not expected to be encountered during future construction activities, no further action is necessary. Groundwater samples were collected as grab samples from soil borings and concentrations are considered suitable as a screening tool for evaluating the presence of TPH fractions in groundwater.

PCE was detected in the soil gas sample collected from SGP1 at a concentration 1,390 µg/m^3, which is above the Tier 1 ESL and the ESL for soil gas vapor intrusion HHRLs for residential uses. The soil gas probe was installed near the REC associated with the historical on-site dry-cleaning business (16031 and 16035 Via Arriba).

8.0 RECOMMENDATIONS

Based on the findings of this investigation, Terracon recommends additional investigation to address the unexplained occurrence of PCE in soil gas a SGP3. This location is in the REC associated with the historical on-site dry-cleaning business (16031 and 16035 Via Arriba).

Terracon expects that the occurrence of PCE in this soil gas sample is related to one or more historical releases of dry cleaning solutions to the environment.

Terracon recommends the following:

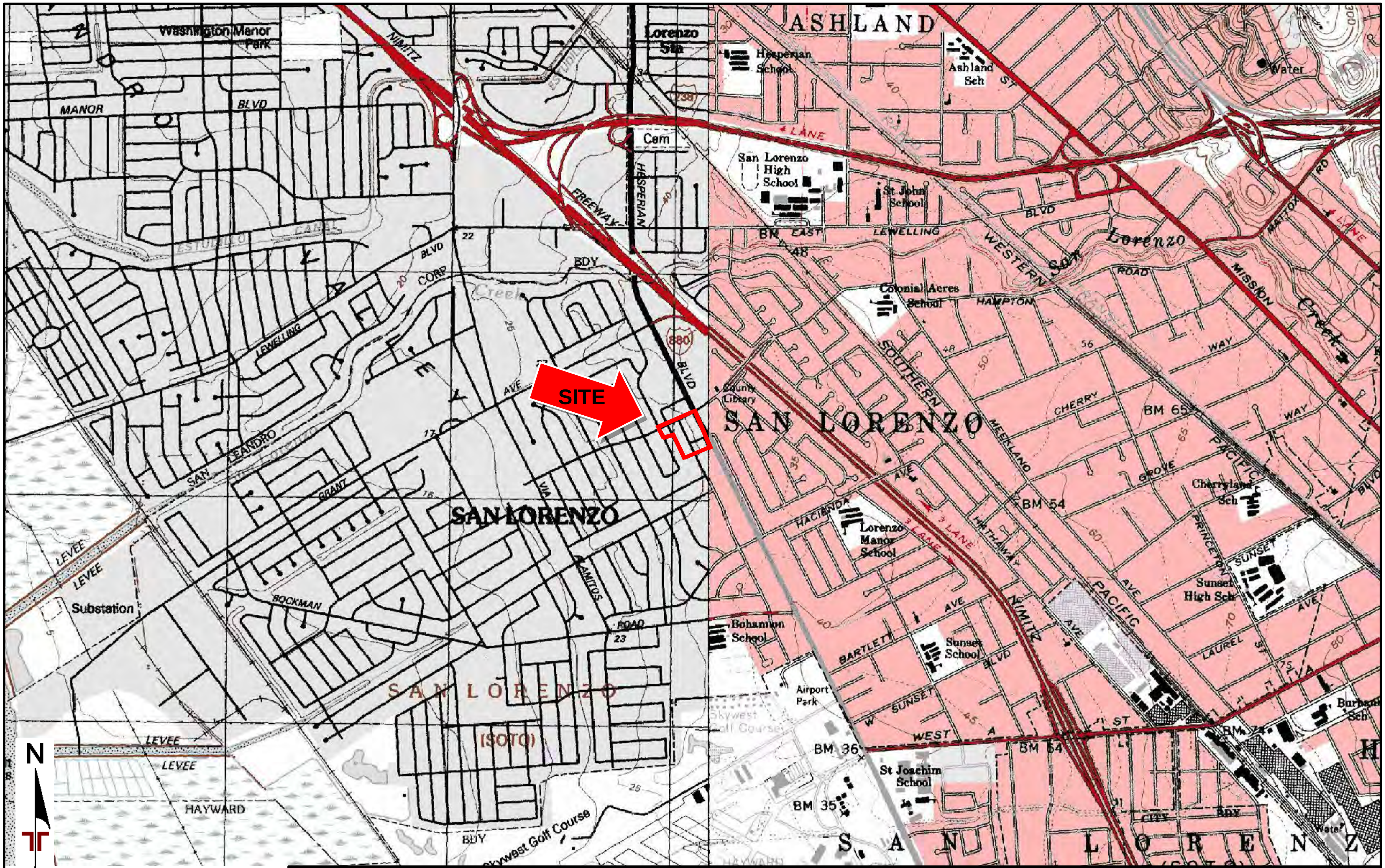
- **Install three soil gas probes:** Based on the PCE concentrations in soil gas at SGP1 and PID readings in TSW1, one soil gas probe will be install near SGP1 to confirm the result from the shallow sample and evaluate the vertical extent of PCE. The other two soil gas probes will be located near the Via Arriba and the western property boundary within the REC. Soil gas samples will be analyzed for VOCs using EPA Method TO-15.

- **Soil samples:** Collect two soil samples from two horizons within two soil borings, four total soil samples. Samples will be collected near the top of the saturated zone and the boring terminus of approximately 20 feet. The borings will be evenly distributed across this REC; and

- **Report of Findings:** Terracon will prepare a report of findings of these additional evaluations, updating the conceptual site model for the occurrence of PCE in soil gas. The report will be submitted as an appendix to this LSI report.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map
Exhibit 2 – Site Diagram



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: SAN LEANDRO, CA (1/1/1993) and HAYWARD, CA (1/1/1993).

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KS	Project No. NB187029
Drawn by: MD	Scale: 1"=2,000'
Checked by: KS	File Name: TOPO
Approved by: IRN	Date: MAR 2018

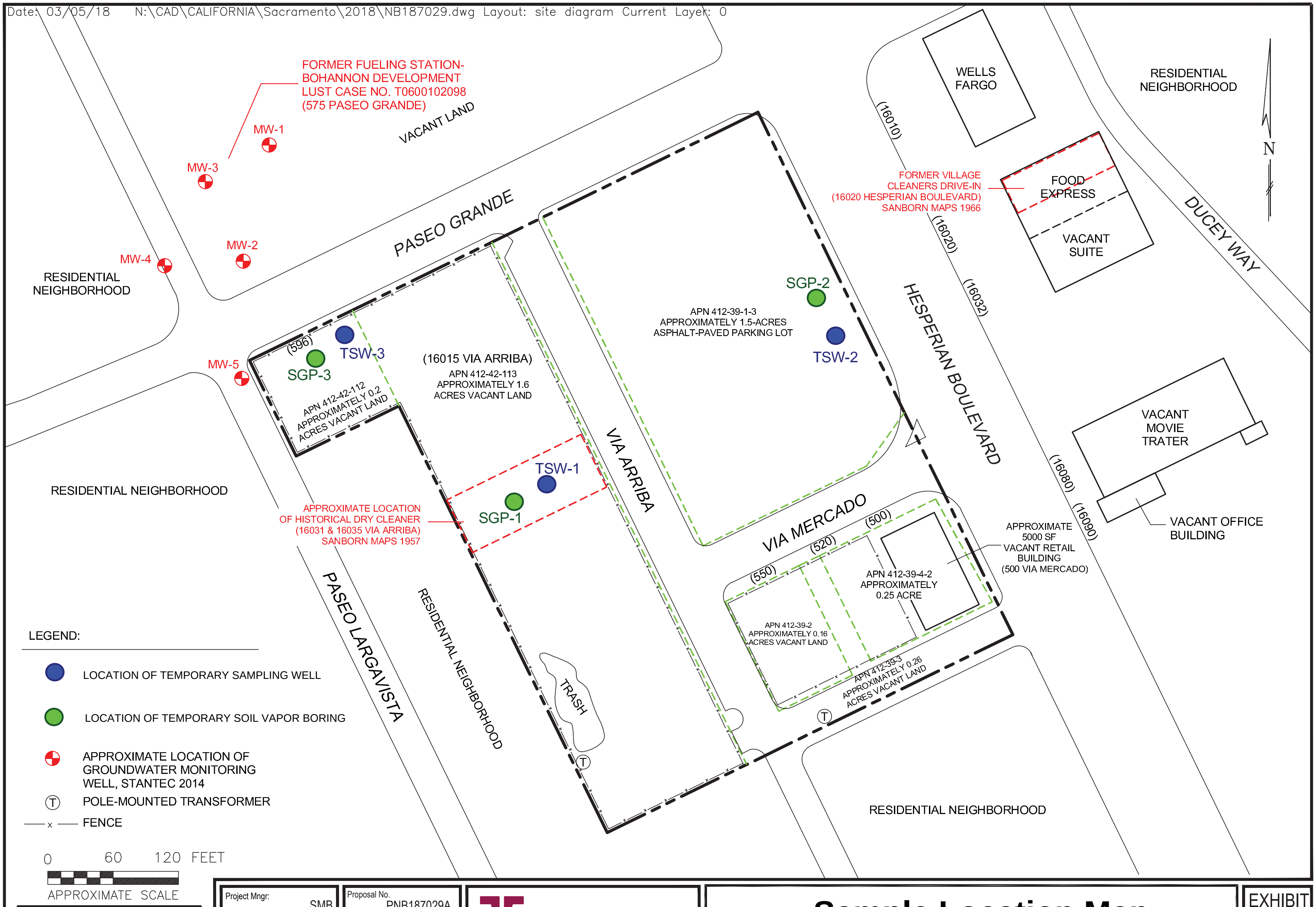
Terracon
50 Golden Land Ct Ste 100
Sacramento, CA 95834-2425

TOPOGRAPHIC MAP

VILLAGE GREEN

16015 VIA ARRIBA, 596 PASEO GRANDE, AND 500, 520, AND 550 VIA MERCADO
SAN LORENZO, ALAMEDA COUNTY, CALIFORNIA

Exhibit
1



THIS DRAWING SHOULD NOT BE USED SEPARATELY FROM ORIGINAL REPORT.

NOTE: ALL BORING LOCATIONS ARE APPROXIMATE.

Project Mngr:	SMB
Drawn By:	JJD
Checked By:	SMB
Approved By:	SG

Proposal No.	PNB187029A
Scale:	AS SHOWN
Date:	03/05/18

Terracon

Consulting Engineers and Scientists

50 GOLDENLAND CT., SUITE 100 SACRAMENTO, CA 95834
PH. (916) 858-1579 FAX. (916) 858-8277

Sample Location Map

VILLAGE GREEN
16015 VIA ARRIBA, 596 PASEO GRANDE AND 500, 520 & 550 VIA MERCADO
SAN LORENZO, ALAMEDA COUNTY, CALIFORNIA

EXHIBIT
2

APPENDIX B – TABLES

Table 1 – Summary of Soil Analytical Results

Table 2 – Summary of Groundwater Analytical Results

Table 3 – Summary of Soil Gas Analytical Results

Table 1 - Summary of Soil Analytical Results

VILLAGE GREEN

16015 VIA ARRIBA, 596 PASEO GRANDE, AND 500, 520, 550 VIA MERCADO, SAN LORENZO, ALMMEDA COUNTY, CALIFORNIA

Terracon Project No. R1187337

Project Location/Name					**Village Green**					
Sample Date					**4/24/2018**					
Sample ID/Location					**SPG1 4.5-5**	**SPG2 4.5-5**	**SPG3 4.5-5**	**TSW1-13-14**	**TSW2 16-17**	**TSW3 10-11**
	Tier 1[1]	**Direct Exposure Human Health Risk Levels**[1]								
Substance	Tier 1	Residential	Commercial / Industrial	Any Land Use / Depth: Construction Worker	Value	Value	Value	Value	Value	Value
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH (EPA Method 8015)										
Gasoline Range Organics (GRO) [C6-C12]	100	740	3,900	2,800	**0.0496** (J)	<0.119	**0.0419** (J)	<0.125	<0.0121	<0.124
Diesel Range Organics (DRO) [C13-C22]	230	230	1,100	880	<5.23	<9.51	<4.82	<5	<4.84	<4.95
Motor Oil Range Organics (MORO) [C23-C32]	5,100	11,000	140,000	32,000	<5.23	**9.91** (J)	<4.82	<5	<4.84	<4.95
VOCs (EPA Method 8260)										
Acetone	0.5	59,000	630,000	260,000	**0.00574** (J)	**0.00331** (J)	<0.0602	**0.00445** (J)	<0.00605	<0.00619
Ethylbenzene	1.4	5.1	22	480	<0.00653	**0.000110** (J)	<0.00602	<0.00625	<0.00605	<0.00619
1,2-Dichloroethene	0.19	19	90	82	<0.00653	**0.000317** (J)	<0.00602	<0.00625	<0.00605	<0.00619
Tetrachloroethene	0.42	0.6	2.7	33	**0.00565** (J)	<0.00594	<0.00602	<0.00625	<0.00605	<0.00619
m&p-Xylenes	NE	NE	NE	NE	<0.00653	**0.000500** (J)	<0.00602	<0.00625	<0.00605	<0.00619
o-Xylenes	NE	NE	NE	NE	<0.00653	**0.000275** (J)	<0.00602	<0.00625	<0.00605	<0.00619
Xylenes, Total	2.3	560	2,400	2,400	<0.0131	**0.000775** (J)	<0.0120	<0.0125	<0.0121	<0.0124
Other VOCs	Varies	Varies	Varies	Varies	ND	ND	ND	ND	ND	ND

ND = Not Detected

J = reported value is an estimate

NE = Not established

SFBRWQCB = San Francisco Bay Regional Water Quality Control Board

ESLs = Environmental Screening Levels

mg/kg = milligrams per kilogram

[1] Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, Region 2, February 2016 (rev 3)

Table 2 - Summary of Groundwater Analytical Results

Village Green
16015 Via Arriba, 596 Paseo Grande, and 500, 520, 550 Via Mercado, San Lorenzo, Almmeda County, California
Terracon Project No. R1187337

Project Location/Name				Village Green		
Sample Date				4/24/2018	4/24/2018	4/24/2018
Sample ID/Location				TSW1-GW	TSW2-GW	TSW3-GW
Substance	**ENVIRONMENTAL SCREENING LEVELS** [1]			Value	Value	Value
	Tier 1	Groundwater Vapor Intrusion Human Health Risk Levels				
		Residential Land Use	Commercial/Industrial Land Use			
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
TPH (8015B)						
Gasoline Range Organics (GRO)	100	NE	NE	<100	<100	<100
Diesel Range Organics (DRO)	100	NE	NE	**72.2**	**130**	**251**
Motor Oil Range Organics (MORO)	50,000	NE	NE	**78.5**	**70.7**	**67.2**
VOCs (8260B)						
Acetone	1,500	34,000,000	290,000,000	**5.37**	**3.81**	**8.14**
Naphthalene	0.17	20	170	**0.152**	**0.124**	**0.125**
Tetrachloroethane	3.0	3.0	26	**0.427**	<0.5	<0.5
Trichloroethene	5.0	5.6	49	**0.139**	<0.5	<0.5
Other VOCs	Varies	Varies	Varies	ND	ND	ND

NE = Not established

ND = Non-detect or below laboratory reporting limits

[1] Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, Region 2, February 2016 (rev 3)

Table 3 - Summary of Soil Gas Analytical Results

VILLAGE GREEN
16015 VIA ARRIBA, 596 PASEO GRANDE, AND 500, 520, 550 VIA MERCADO, SAN LORENZO, ALMMEDA COUNTY, CALIFORNIA
Terracon Project No. R1187337

			Project Location/Name	Village Green		
			Sample Date	4/24/2018	4/24/2018	4/24/2018
			Sample ID/Location	SGP1	SGP2	SGP3
Substance	**ENVIRONMENTAL SCREENING LEVELS [1]**			Value	Value	Value
	Tier 1	Soil Gas Vapor Intrusion Human Health Risk Levels				
		Residential Land Use	Commercial/Industrial Land Use			
	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Organic Compounds (D1946)						
Oxygen	NE	NE	NE	**16.5**	**15.4**	**16.2**
Carbon Monoxide	NE	NE	NE	<2	<2	<2
Carbon Dioxide	NE	NE	NE	<0.5	**1.8**	<0.5
Methane	NE	NE	NE	<0.4	<0.4	<0.4
VOCs (TO-15)						
Acetone	15,000,000	16,000,000	140,000,000	**484**	**65.6**	**547**
Benzene	48	48	420	**5.45**	**2.02**	**5.71**
Carbon Disulfide	NE	NE	NE	**12.5**	<1.24	**5.76**
Cyclohexane	NE	NE	NE	<1.38	**2.98**	**1.66**
1,4-Dioxane	180	180	1,600	**2.42**	<1.44	<1.44
Ethanol	NE	NE	NE	**35.4**	**18.8**	**11**
Ethylbenzene	560	560	4,900	**75.9**	**11.3**	**44.8**
4-Ethyltoluene	NE	NE	NE	**9.32**	**2.44**	**5.79**
Heptane	NE	NE	NE	**2.70**	**3.94**	**5.60**
n-Hexane	NE	NE	NE	**6.64**	**8.99**	**7.86**
Methylene Chloride	510	510	12,000	**17.2**	**20.5**	**14.5**
2-Butanone	NE	NE	NE	**23.9**	**10.5**	**8.57**
Methyl methacrylate	NE	NE	NE	**3.32**	**1.66**	<1.64
2-Propanol	NE	NE	NE	**22.5**	**2,210**	**18.3**
Propene	NE	NE	NE	**18.7**	<1.38	**13.1**
Styrene	470,000	470,000	3,900,000	**5.69**	<1.7	**3.64**
Tetrachloroethylene	240	240	2,100	**1,390**	**4.67**	**7.98**
Tetrahydrofuran	NE	NE	NE	**3.89**	**2.71**	**3.82**
Toluene	160,000	160,000	1,300,000	**37.9**	**4.34**	**30.1**
Trichloroethylene	240	240	3,000	**12**	<2.14	<2.14
1,2,4-Trimethylbenzene	NE	NE	NE	**13.8**	<1.96	**8.04**
1,3,5-Trimethylbenzene	NE	NE	NE	**3.93**	**3.37**	**2.22**
m&p Xylenes	NE	NE	NE	**302**	**49.1**	**185**
Total Xylenes	52,000	52,000	440,000	**116**	**18.5**	**69.2**
Other VOCs	Varies	Varies	Varies	ND	ND	ND

NE = Not established
ND = Non-detect or below laboratory reporting limits
[1] Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, Region 2, February 2016 (rev 3)
B = The same analyte is found in the associated blank
J = The identification of the analyte is acceptable; the reported value is an estimate

APPENDIX C – SOIL BORING LOGS

WELL LOG NO. TSW1

Page 1 of 1

PROJECT: Village Green

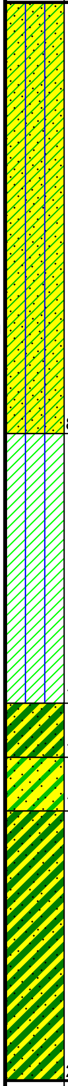
CLIENT: Demmon Partners

SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

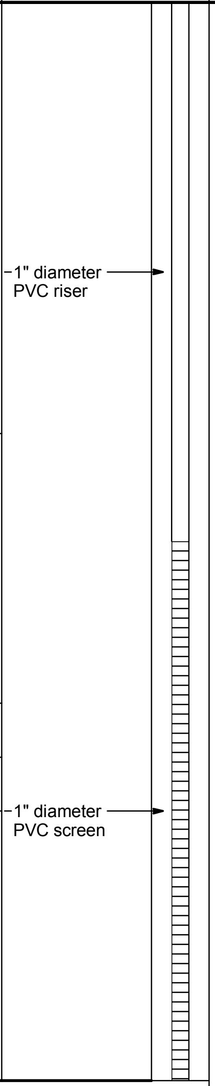
INSTALLATION DETAILS

Well Completion:



DEPTH	MATERIAL DESCRIPTION
8.0	**SANDY SILTY CLAY (CL-ML)**, brown, dry, no odor, darker staining at 5'
13.0	**SILTY CLAY (CL-ML)**, trace sand, brown gray, dry, no odor or staining
14.0	**SANDY CLAY (CH)**, brown gray, wet, no odor or staining
15.0	**CLAYEY SAND (SC)**, fine grained, brown gray with orange mottling, dry, no odor or staining
20.0	**SANDY CLAY (CH)**, trace silt, gray, wet, no odor or staining

Boring Terminated at 20 Feet



DEPTH (ft)	WATER LEVEL OBSERVATIONS	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
		ND	
		ND	
		ND	
		ND	
5		ND	
		1.0	
		1.5	
		1.7	
		1.8	
10	▽	1.8	
		1.7	
		ND	
		ND	
		ND	TSW1 - 13-14'
15		ND	
		ND	
		ND	
		ND	
		ND	
20		ND	

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Hand Auger 0-5' Direct Push 5-20'

Abandonment Method:
Boring completed as a temporary groundwater monitoring well, backfilled with sand and bentonite.

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents
Groundwater sample collected on 4/24/2018

WATER LEVEL OBSERVATIONS

▽ *9.63' observed on 4/24/2018*

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-1

WELL LOG NO. SGP1

Page 1 of 1

PROJECT: Village Green

CLIENT: Demmon Partners

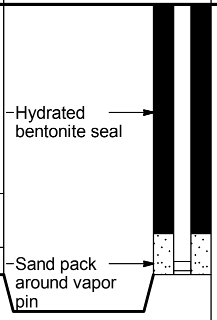
SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

INSTALLATION DETAILS

Well Completion:

GRAPHIC LOG	DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
▨		**SILTY CLAY (CL-ML)**, trace sand, brown, dry			■	ND	
					■		
▨	3.5				■	ND	
⁘	4.5	**POORLY GRADED SAND (SP)**, trace silt, light brown, moist			■		
▨	5.0	**SILTY CLAY (CL-ML)**, dark brown, moist	5		■	ND	SGP1 - 4.5-5'
		Boring Terminated at 5 Feet					



The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a temporary soil vapor point

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents

WATER LEVEL OBSERVATIONS

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-2

WELL LOG NO. TSW2

Page 1 of 1

PROJECT: Village Green

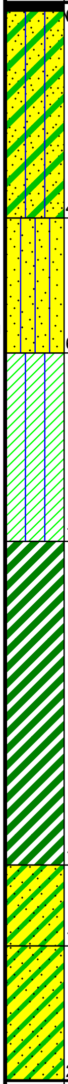
CLIENT: Demmon Partners

SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

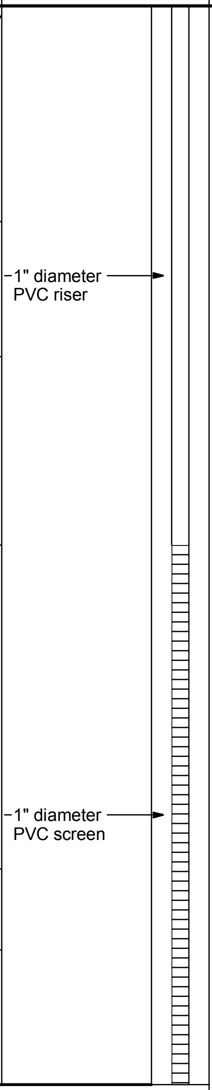
INSTALLATION DETAILS

Well Completion:



DEPTH	MATERIAL DESCRIPTION
0.2	**FILL - ASPHALT AND SITLY SANDY FILL WITH GRAVEL**, dry
4.0	**CLAYEY SAND (SC-SM)**, dark brown, dry, no odor or staining
6.5	**SAND WITH SILT (SM)**, with clay, fine grained, light brown, dry, no odor or staining
10.0	**SILTY CLAY (CL-ML)**, dark brown, dry, no odor or staining
16.0	**CLAY (CH)**, trace silt, light gray to brown, dry, no odor or staining
17.5	**SILTY CLAYEY SAND (SC)**, fine grained, brown, wet, no odor or staining
20.0	**CLAYEY SAND (SC)**, with silt, trace gravel, fine grained, light brown, dry, no odor or staining

Boring Terminated at 20 Feet



DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
			ND	
			ND	
			ND	
			ND	
			ND	
5	▽		ND	
			ND	
			ND	
			ND	
			ND	
10			ND	
			ND	
			ND	
			ND	
			ND	
15			ND	
			ND	TSW2 - 16-17'
			ND	
			ND	
			ND	
20				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Hand Auger 0-5' Direct Push 5-20'

Abandonment Method:
Boring completed as a temporary groundwater monitoring well, backfilled with sand and bentonite.

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents
Groundwater sample collected on 4/24/2018

WATER LEVEL OBSERVATIONS

▽ *6.03' observed on 4/24/2018*

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-3

WELL LOG NO. SGP2

PROJECT: Village Green

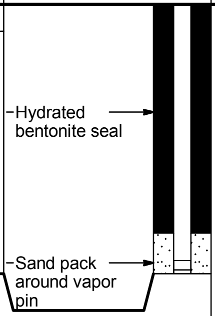
CLIENT: Demmon Partners

SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

INSTALLATION DETAILS

Well Completion:



DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.5	**FILL - 2" ASPHALT, SILTY SAND WITH GRAVEL (SM)**, dark gray, dry				ND	
	CLAYEY SAND (SC), fine to medium grained, brown, dry, diminishing clay content with depth				ND	
					ND	
					ND	
5.0		5			ND	SGP2 - 4.5-5'
	Boring Terminated at 5 Feet					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a temporary soil vapor point

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents

WATER LEVEL OBSERVATIONS

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-4

WELL LOG NO. TSW3

Page 1 of 1

PROJECT: Village Green

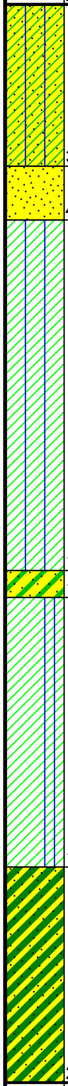
CLIENT: Demmon Partners

SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

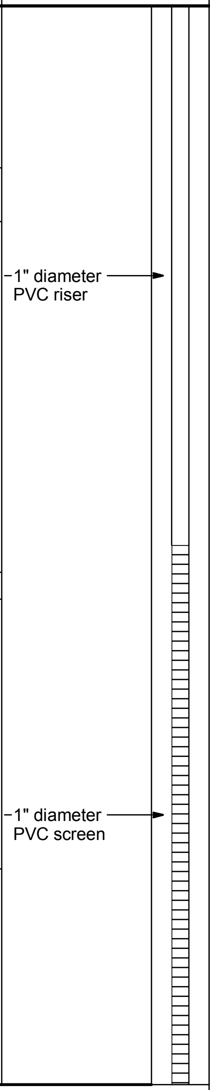
INSTALLATION DETAILS

Well Completion:



DEPTH	MATERIAL DESCRIPTION
3.0	**SANDY SILTY CLAY (CL-ML)**, fine to medium grained, brown, dry, no odor or staining
4.0	**SAND WITH SILT (SP-SM)**, trace clay, medium grained, brown, moist, no odor or staining
10.5	**SILTY CLAY (CL-ML)**, trace sand, fine grained, brown gray, dry, no odor, stained darker from 4-5'
11.0	**CLAYEY SAND (CH)**, with silt, fine grained, light brown, wet, no odor or staining
16.0	**LEAN CLAY WITH SILT (CL)**, with silt, fine grained, brown gray with orange mottling, dry, no odor or staining
20.0	**SANDY CLAY (CH)**, trace silt, fine to medium grained, brown gray, dry, no odor or staining

Boring Terminated at 20 Feet



DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0-1			ND	
1-2			ND	
2-3			1.1	
3-4			ND	
4-5			1.3	
5-6			ND	
6-7			ND	
7-8			ND	
8-9			ND	
9-10	▽		ND	
10-11			ND	TSW3-10-11
11-12			ND	
12-13			ND	
13-14			ND	
14-15			ND	
15-16			ND	
16-17			ND	
17-18			ND	
18-19			ND	
19-20			ND	

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Hand Auger 0-5' Direct Push 5-20'

Abandonment Method:
Boring completed as a temporary groundwater monitoring well, backfilled with sand and bentonite.

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents
Groundwater sample collected on 4/24/2018

WATER LEVEL OBSERVATIONS

▽ *9.30' observed on 4/24/2018*

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG R1187337 VILLAGE GREEN LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/1/18

WELL LOG NO. SGP3

PROJECT: Village Green

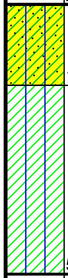
CLIENT: Demmon Partners

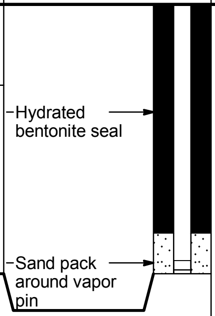
SITE:
San Lorenzo, California

LOCATION See Exhibit A-2

INSTALLATION DETAILS

Well Completion:





DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
1.5	**SANDY SILTY CLAY (CL-ML)**, light gray to brown, moist				2.2	
5.0	**SILTY CLAY (CL-ML)**, dark brown, dry, dark/black staining at 5'				1.4	
		5			ND	SGP3 - 4.5-5'

Boring Terminated at 5 Feet

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a temporary soil vapor point

Notes:

Logged by: P. Keicher
ND indicates a photoionization detector (PID) reading of less than 1 parts per million (ppm) isobutylene equivalents

WATER LEVEL OBSERVATIONS

Terracon
1466 66th St
Emeryville, CA

Well Started: 04-24-2018	Well Completed: 04-24-2018
Drill Rig: Geoprobe	Driller: Penecore
Project No.: R1187337	Exhibit: C-6

APPENDIX D – ANALYTICAL REPORT AND CHAIN OF CUSTODY

ANALYTICAL REPORT

May 01, 2018

Terracon - Sacramento, CA

Sample Delivery Group:	L988584
Samples Received:	04/25/2018
Project Number:	R1187737
Description:	Village Green

Report To:

Sadie Bodiford
50 Goldenland Ct
Suite 100
Sacramento, CA 95834

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

TABLE OF CONTENTS

SAMPLE SUMMARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 11:00	04/25/18 10:40

SGP1-4.5-5 L988584-01 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 05:13	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 18:09	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	1	04/30/18 03:41	04/30/18 16:23	AAT

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 09:30	04/25/18 10:40

SGP2-4.5-5 L988584-02 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 05:35	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 18:30	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	2	04/30/18 03:41	04/30/18 20:36	AAT

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 11:15	04/25/18 10:40

SGP3-4.5-5 L988584-03 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 05:57	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 18:51	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	1	04/30/18 03:41	04/30/18 17:10	AAT

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 12:45	04/25/18 10:40

TSW1-13-14 L988584-04 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 06:20	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 19:12	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	1	04/30/18 03:41	04/30/18 17:25	AAT

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 10:15	04/25/18 10:40

TSW2-16-17 L988584-05 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 06:42	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 19:33	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	1	04/30/18 03:41	04/30/18 17:41	AAT

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 11:50	04/25/18 10:40

TSW3-10-11 L988584-07 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1103121	1	04/25/18 13:00	04/25/18 14:00	TJJ
Volatile Organic Compounds (GC) by Method 8015	WG1104301	1	04/27/18 09:11	04/28/18 07:04	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1102871	1	04/25/18 16:55	04/25/18 20:14	JCP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1104346	1	04/30/18 03:41	04/30/18 17:57	AAT

SAMPLE SUMMARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 13:45	04/25/18 10:40

TSW3-GW L988584-08 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1104015	1	04/27/18 13:03	04/27/18 13:03	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1103131	1	04/25/18 20:37	04/25/18 20:37	TJJ
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1104274	1	04/28/18 00:38	04/28/18 12:01	SHG

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 14:15	04/25/18 10:40

TSW2-GW L988584-09 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1104015	1	04/27/18 13:27	04/27/18 13:27	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1103131	1	04/25/18 19:48	04/25/18 19:48	TJJ
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1104274	1	04/28/18 00:38	04/28/18 12:17	SHG

Collected by	Collected date/time	Received date/time
P. Keicher	04/24/18 16:00	04/25/18 10:40

TSW1-GW L988584-10 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1104015	1	04/27/18 13:50	04/27/18 13:50	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1103131	1	04/25/18 20:13	04/25/18 20:13	TJJ
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1104274	1	04/28/18 00:38	04/28/18 12:33	SHG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	76.6		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
TPHG C5 - C12	0.0496	J	0.0434	0.131	1	04/28/2018 05:13	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*92.4*			*77.0-120*		*04/28/2018 05:13*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.000125	0.00653	1	04/25/2018 18:09	WG1102871
1,1,1-Trichloroethane	U		0.000167	0.00653	1	04/25/2018 18:09	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000117	0.00653	1	04/25/2018 18:09	WG1102871
1,1,2-Trichloroethane	U		0.000176	0.00653	1	04/25/2018 18:09	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000165	0.00653	1	04/25/2018 18:09	WG1102871
1,1-Dichloroethane	U		0.000154	0.00653	1	04/25/2018 18:09	WG1102871
1,1-Dichloroethene	U		0.000124	0.00653	1	04/25/2018 18:09	WG1102871
1,1-Dichloropropene	U		0.000126	0.00653	1	04/25/2018 18:09	WG1102871
1,2,3-Trichlorobenzene	U		0.000149	0.00653	1	04/25/2018 18:09	WG1102871
1,2,3-Trichloropropane	U		0.000310	0.00653	1	04/25/2018 18:09	WG1102871
1,2,4-Trichlorobenzene	U		0.000184	0.00653	1	04/25/2018 18:09	WG1102871
1,2,4-Trimethylbenzene	U		0.000129	0.00653	1	04/25/2018 18:09	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000543	0.00653	1	04/25/2018 18:09	WG1102871
1,2-Dibromoethane	U		0.000132	0.00653	1	04/25/2018 18:09	WG1102871
1,2-Dichlorobenzene	U		0.000359	0.00653	1	04/25/2018 18:09	WG1102871
1,2-Dichloroethane	U		0.000169	0.00653	1	04/25/2018 18:09	WG1102871
1,2-Dichloropropane	U		0.000159	0.00653	1	04/25/2018 18:09	WG1102871
1,3,5-Trimethylbenzene	U		0.000130	0.00653	1	04/25/2018 18:09	WG1102871
1,3-Dichlorobenzene	U		0.000112	0.00653	1	04/25/2018 18:09	WG1102871
1,3-Dichloropropane	U		0.000103	0.00653	1	04/25/2018 18:09	WG1102871
1,4-Dichlorobenzene	U		0.000172	0.00653	1	04/25/2018 18:09	WG1102871
2,2-Dichloropropane	U		0.000162	0.00653	1	04/25/2018 18:09	WG1102871
2-Butanone (MEK)	U		0.00344	0.0653	1	04/25/2018 18:09	WG1102871
2-Chlorotoluene	U		0.000165	0.00653	1	04/25/2018 18:09	WG1102871
2-Hexanone	U		0.00116	0.0653	1	04/25/2018 18:09	WG1102871
4-Chlorotoluene	U		0.000187	0.00653	1	04/25/2018 18:09	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000619	0.0653	1	04/25/2018 18:09	WG1102871
Acetone	0.00574	J	0.00342	0.0653	1	04/25/2018 18:09	WG1102871
Acrylonitrile	U		0.00162	0.0653	1	04/25/2018 18:09	WG1102871
Benzene	U		0.0000888	0.00653	1	04/25/2018 18:09	WG1102871
Bromobenzene	U		0.000140	0.00653	1	04/25/2018 18:09	WG1102871
Bromochloromethane	U		0.000204	0.00653	1	04/25/2018 18:09	WG1102871
Bromodichloromethane	U		0.000456	0.00653	1	04/25/2018 18:09	WG1102871
Bromoform	U		0.000456	0.00653	1	04/25/2018 18:09	WG1102871
Bromomethane	U		0.000236	0.0261	1	04/25/2018 18:09	WG1102871
Carbon Tetrachloride	U		0.000118	0.00653	1	04/25/2018 18:09	WG1102871
Chlorobenzene	U		0.0000874	0.00653	1	04/25/2018 18:09	WG1102871
Chloroethane	U		0.000240	0.00653	1	04/25/2018 18:09	WG1102871
Chloroform	U		0.000167	0.00653	1	04/25/2018 18:09	WG1102871
Chloromethane	U		0.000145	0.00653	1	04/25/2018 18:09	WG1102871
Cis-1,2-Dichloroethene	U		0.000142	0.00653	1	04/25/2018 18:09	WG1102871
Cis-1,3-Dichloropropene	U		0.000140	0.00653	1	04/25/2018 18:09	WG1102871
Chlorodibromomethane	U		0.00127	0.00653	1	04/25/2018 18:09	WG1102871
Dibromomethane	U		0.000192	0.00653	1	04/25/2018 18:09	WG1102871

SGP1-4.5-5

Collected date/time: 04/24/18 11:00

SAMPLE RESULTS - 01

L988584

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dichlorodifluoromethane	U		0.000185	0.00653	1	04/25/2018 18:09	WG1102871
Di-isopropyl ether	U		0.000179	0.00653	1	04/25/2018 18:09	WG1102871
Ethylbenzene	U		0.0000969	0.00653	1	04/25/2018 18:09	WG1102871
Hexachloro-1,3-butadiene	U		0.000276	0.00653	1	04/25/2018 18:09	WG1102871
Isopropylbenzene	U		0.000110	0.00653	1	04/25/2018 18:09	WG1102871
Methylene Chloride	U		0.000273	0.00653	1	04/25/2018 18:09	WG1102871
Methyl tert-butyl ether	U		0.000108	0.00653	1	04/25/2018 18:09	WG1102871
Naphthalene	U		0.000277	0.00653	1	04/25/2018 18:09	WG1102871
n-Butylbenzene	U		0.000162	0.00653	1	04/25/2018 18:09	WG1102871
n-Propylbenzene	U		0.000105	0.00653	1	04/25/2018 18:09	WG1102871
p-Isopropyltoluene	U		0.000138	0.00653	1	04/25/2018 18:09	WG1102871
sec-Butylbenzene	U		0.0000959	0.00653	1	04/25/2018 18:09	WG1102871
Styrene	U		0.000388	0.00653	1	04/25/2018 18:09	WG1102871
tert-Butylbenzene	U		0.000266	0.00653	1	04/25/2018 18:09	WG1102871
Tetrachloroethene	0.00565	J	0.000124	0.00653	1	04/25/2018 18:09	WG1102871
Tetrahydrofuran	U		0.00172	0.131	1	04/25/2018 18:09	WG1102871
Toluene	U		0.0000910	0.00653	1	04/25/2018 18:09	WG1102871
trans-1,2-Dichloroethene	U		0.000170	0.00653	1	04/25/2018 18:09	WG1102871
trans-1,3-Dichloropropene	U		0.000120	0.00653	1	04/25/2018 18:09	WG1102871
Trichloroethene	U		0.000199	0.00653	1	04/25/2018 18:09	WG1102871
Trichlorofluoromethane	U		0.000127	0.00653	1	04/25/2018 18:09	WG1102871
Vinyl Chloride	U		0.000141	0.00653	1	04/25/2018 18:09	WG1102871
m&p-Xylenes	U		0.000162	0.00653	1	04/25/2018 18:09	WG1102871
o-Xylene	U		0.000119	0.00653	1	04/25/2018 18:09	WG1102871
Xylenes, Total	U		0.000282	0.0131	1	04/25/2018 18:09	WG1102871
(S) 1,2-Dichloroethane-d4	*98.7*			*80.0-128*		*04/25/2018 18:09*	WG1102871
(S) 4-Bromofluorobenzene	*97.2*			*72.0-122*		*04/25/2018 18:09*	WG1102871
(S) Toluene-d8	*100*			*80.0-120*		*04/25/2018 18:09*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	U		0.958	5.23	1	04/30/2018 16:23	WG1104346
C22-C32 Hydrocarbons	U		1.74	5.23	1	04/30/2018 16:23	WG1104346
C32-C40 Hydrocarbons	U		1.74	5.23	1	04/30/2018 16:23	WG1104346
(S) o-Terphenyl	*73.4*			*18.0-148*		*04/30/2018 16:23*	WG1104346

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	84.1		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
TPHG C5 - C12	U		0.0395	0.119	1	04/28/2018 05:35	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*92.3*			*77.0-120*		*04/28/2018 05:35*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.000114	0.00594	1	04/25/2018 18:30	WG1102871
1,1,1-Trichloroethane	U		0.000152	0.00594	1	04/25/2018 18:30	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000107	0.00594	1	04/25/2018 18:30	WG1102871
1,1,2-Trichloroethane	U		0.000160	0.00594	1	04/25/2018 18:30	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000150	0.00594	1	04/25/2018 18:30	WG1102871
1,1-Dichloroethane	U		0.000140	0.00594	1	04/25/2018 18:30	WG1102871
1,1-Dichloroethene	U		0.000113	0.00594	1	04/25/2018 18:30	WG1102871
1,1-Dichloropropene	U		0.000114	0.00594	1	04/25/2018 18:30	WG1102871
1,2,3-Trichlorobenzene	U		0.000135	0.00594	1	04/25/2018 18:30	WG1102871
1,2,3-Trichloropropane	U		0.000282	0.00594	1	04/25/2018 18:30	WG1102871
1,2,4-Trichlorobenzene	U		0.000168	0.00594	1	04/25/2018 18:30	WG1102871
1,2,4-Trimethylbenzene	U		0.000117	0.00594	1	04/25/2018 18:30	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000494	0.00594	1	04/25/2018 18:30	WG1102871
1,2-Dibromoethane	U		0.000120	0.00594	1	04/25/2018 18:30	WG1102871
1,2-Dichlorobenzene	U		0.000327	0.00594	1	04/25/2018 18:30	WG1102871
1,2-Dichloroethane	0.000317	J	0.000153	0.00594	1	04/25/2018 18:30	WG1102871
1,2-Dichloropropane	U		0.000145	0.00594	1	04/25/2018 18:30	WG1102871
1,3,5-Trimethylbenzene	U		0.000119	0.00594	1	04/25/2018 18:30	WG1102871
1,3-Dichlorobenzene	U		0.000102	0.00594	1	04/25/2018 18:30	WG1102871
1,3-Dichloropropane	U		0.0000933	0.00594	1	04/25/2018 18:30	WG1102871
1,4-Dichlorobenzene	U		0.000157	0.00594	1	04/25/2018 18:30	WG1102871
2,2-Dichloropropane	U		0.000147	0.00594	1	04/25/2018 18:30	WG1102871
2-Butanone (MEK)	U		0.00313	0.0594	1	04/25/2018 18:30	WG1102871
2-Chlorotoluene	U		0.000150	0.00594	1	04/25/2018 18:30	WG1102871
2-Hexanone	U		0.00106	0.0594	1	04/25/2018 18:30	WG1102871
4-Chlorotoluene	U		0.000170	0.00594	1	04/25/2018 18:30	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000563	0.0594	1	04/25/2018 18:30	WG1102871
Acetone	0.00331	J	0.00311	0.0594	1	04/25/2018 18:30	WG1102871
Acrylonitrile	U		0.00147	0.0594	1	04/25/2018 18:30	WG1102871
Benzene	U		0.0000808	0.00594	1	04/25/2018 18:30	WG1102871
Bromobenzene	U		0.000127	0.00594	1	04/25/2018 18:30	WG1102871
Bromochloromethane	U		0.000185	0.00594	1	04/25/2018 18:30	WG1102871
Bromodichloromethane	U		0.000415	0.00594	1	04/25/2018 18:30	WG1102871
Bromoform	U		0.000415	0.00594	1	04/25/2018 18:30	WG1102871
Bromomethane	U		0.000215	0.0238	1	04/25/2018 18:30	WG1102871
Carbon Tetrachloride	U		0.000108	0.00594	1	04/25/2018 18:30	WG1102871
Chlorobenzene	U		0.0000795	0.00594	1	04/25/2018 18:30	WG1102871
Chloroethane	U		0.000219	0.00594	1	04/25/2018 18:30	WG1102871
Chloroform	U		0.000152	0.00594	1	04/25/2018 18:30	WG1102871
Chloromethane	U		0.000132	0.00594	1	04/25/2018 18:30	WG1102871
Cis-1,2-Dichloroethene	U		0.000130	0.00594	1	04/25/2018 18:30	WG1102871
Cis-1,3-Dichloropropene	U		0.000127	0.00594	1	04/25/2018 18:30	WG1102871
Chlorodibromomethane	U		0.00116	0.00594	1	04/25/2018 18:30	WG1102871
Dibromomethane	U		0.000175	0.00594	1	04/25/2018 18:30	WG1102871

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Dichlorodifluoromethane	U		0.000169	0.00594	1	04/25/2018 18:30	WG1102871
Di-isopropyl ether	U		0.000163	0.00594	1	04/25/2018 18:30	WG1102871
Ethylbenzene	0.000110	J	0.0000882	0.00594	1	04/25/2018 18:30	WG1102871
Hexachloro-1,3-butadiene	U		0.000251	0.00594	1	04/25/2018 18:30	WG1102871
Isopropylbenzene	U		0.000100	0.00594	1	04/25/2018 18:30	WG1102871
Methylene Chloride	U		0.000248	0.00594	1	04/25/2018 18:30	WG1102871
Methyl tert-butyl ether	U		0.0000979	0.00594	1	04/25/2018 18:30	WG1102871
Naphthalene	U		0.000252	0.00594	1	04/25/2018 18:30	WG1102871
n-Butylbenzene	U		0.000147	0.00594	1	04/25/2018 18:30	WG1102871
n-Propylbenzene	U		0.0000952	0.00594	1	04/25/2018 18:30	WG1102871
p-Isopropyltoluene	U		0.000126	0.00594	1	04/25/2018 18:30	WG1102871
sec-Butylbenzene	U		0.0000872	0.00594	1	04/25/2018 18:30	WG1102871
Styrene	U		0.000353	0.00594	1	04/25/2018 18:30	WG1102871
tert-Butylbenzene	U		0.000242	0.00594	1	04/25/2018 18:30	WG1102871
Tetrachloroethene	U		0.000113	0.00594	1	04/25/2018 18:30	WG1102871
Tetrahydrofuran	U		0.00157	0.119	1	04/25/2018 18:30	WG1102871
Toluene	U		0.0000828	0.00594	1	04/25/2018 18:30	WG1102871
trans-1,2-Dichloroethene	U		0.000155	0.00594	1	04/25/2018 18:30	WG1102871
trans-1,3-Dichloropropene	U		0.000109	0.00594	1	04/25/2018 18:30	WG1102871
Trichloroethene	U		0.000181	0.00594	1	04/25/2018 18:30	WG1102871
Trichlorofluoromethane	U		0.000116	0.00594	1	04/25/2018 18:30	WG1102871
Vinyl Chloride	U		0.000128	0.00594	1	04/25/2018 18:30	WG1102871
m&p-Xylenes	0.000500	J	0.000147	0.00594	1	04/25/2018 18:30	WG1102871
o-Xylene	0.000275	J	0.000109	0.00594	1	04/25/2018 18:30	WG1102871
Xylenes, Total	0.000775	J	0.000257	0.0119	1	04/25/2018 18:30	WG1102871
(S) 1,2-Dichloroethane-d4	*105*			*80.0-128*		*04/25/2018 18:30*	WG1102871
(S) 4-Bromofluorobenzene	*95.0*			*72.0-122*		*04/25/2018 18:30*	WG1102871
(S) Toluene-d8	*101*			*80.0-120*		*04/25/2018 18:30*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
C12-C22 Hydrocarbons	U		1.75	9.51	2	04/30/2018 20:36	WG1104346
C22-C32 Hydrocarbons	9.91		3.16	9.51	2	04/30/2018 20:36	WG1104346
C32-C40 Hydrocarbons	10.1		3.16	9.51	2	04/30/2018 20:36	WG1104346
(S) o-Terphenyl	*59.0*			*18.0-148*		*04/30/2018 20:36*	WG1104346

Sample Narrative:

L988584-02 WG1104346: Cannot run at lower dilution due to viscosity of extract

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	83.1		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
TPHG C5 - C12	0.0419	J	0.0400	0.120	1	04/28/2018 05:57	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*92.4*			*77.0-120*		*04/28/2018 05:57*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.000115	0.00602	1	04/25/2018 18:51	WG1102871
1,1,1-Trichloroethane	U		0.000154	0.00602	1	04/25/2018 18:51	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000108	0.00602	1	04/25/2018 18:51	WG1102871
1,1,2-Trichloroethane	U		0.000163	0.00602	1	04/25/2018 18:51	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000152	0.00602	1	04/25/2018 18:51	WG1102871
1,1-Dichloroethane	U		0.000142	0.00602	1	04/25/2018 18:51	WG1102871
1,1-Dichloroethene	U		0.000114	0.00602	1	04/25/2018 18:51	WG1102871
1,1-Dichloropropene	U		0.000116	0.00602	1	04/25/2018 18:51	WG1102871
1,2,3-Trichlorobenzene	U		0.000137	0.00602	1	04/25/2018 18:51	WG1102871
1,2,3-Trichloropropane	U		0.000285	0.00602	1	04/25/2018 18:51	WG1102871
1,2,4-Trichlorobenzene	U		0.000170	0.00602	1	04/25/2018 18:51	WG1102871
1,2,4-Trimethylbenzene	U		0.000119	0.00602	1	04/25/2018 18:51	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000501	0.00602	1	04/25/2018 18:51	WG1102871
1,2-Dibromoethane	U		0.000122	0.00602	1	04/25/2018 18:51	WG1102871
1,2-Dichlorobenzene	U		0.000331	0.00602	1	04/25/2018 18:51	WG1102871
1,2-Dichloroethane	U		0.000155	0.00602	1	04/25/2018 18:51	WG1102871
1,2-Dichloropropane	U		0.000147	0.00602	1	04/25/2018 18:51	WG1102871
1,3,5-Trimethylbenzene	U		0.000120	0.00602	1	04/25/2018 18:51	WG1102871
1,3-Dichlorobenzene	U		0.000103	0.00602	1	04/25/2018 18:51	WG1102871
1,3-Dichloropropane	U		0.0000945	0.00602	1	04/25/2018 18:51	WG1102871
1,4-Dichlorobenzene	U		0.000159	0.00602	1	04/25/2018 18:51	WG1102871
2,2-Dichloropropane	U		0.000149	0.00602	1	04/25/2018 18:51	WG1102871
2-Butanone (MEK)	U		0.00317	0.0602	1	04/25/2018 18:51	WG1102871
2-Chlorotoluene	U		0.000152	0.00602	1	04/25/2018 18:51	WG1102871
2-Hexanone	U		0.00107	0.0602	1	04/25/2018 18:51	WG1102871
4-Chlorotoluene	U		0.000172	0.00602	1	04/25/2018 18:51	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000571	0.0602	1	04/25/2018 18:51	WG1102871
Acetone	U		0.00315	0.0602	1	04/25/2018 18:51	WG1102871
Acrylonitrile	U		0.00149	0.0602	1	04/25/2018 18:51	WG1102871
Benzene	U		0.0000819	0.00602	1	04/25/2018 18:51	WG1102871
Bromobenzene	U		0.000129	0.00602	1	04/25/2018 18:51	WG1102871
Bromochloromethane	U		0.000188	0.00602	1	04/25/2018 18:51	WG1102871
Bromodichloromethane	U		0.000420	0.00602	1	04/25/2018 18:51	WG1102871
Bromoform	U		0.000420	0.00602	1	04/25/2018 18:51	WG1102871
Bromomethane	U		0.000218	0.0241	1	04/25/2018 18:51	WG1102871
Carbon Tetrachloride	U		0.000109	0.00602	1	04/25/2018 18:51	WG1102871
Chlorobenzene	U		0.0000806	0.00602	1	04/25/2018 18:51	WG1102871
Chloroethane	U		0.000222	0.00602	1	04/25/2018 18:51	WG1102871
Chloroform	U		0.000154	0.00602	1	04/25/2018 18:51	WG1102871
Chloromethane	U		0.000134	0.00602	1	04/25/2018 18:51	WG1102871
Cis-1,2-Dichloroethene	U		0.000131	0.00602	1	04/25/2018 18:51	WG1102871
Cis-1,3-Dichloropropene	U		0.000129	0.00602	1	04/25/2018 18:51	WG1102871
Chlorodibromomethane	U		0.00117	0.00602	1	04/25/2018 18:51	WG1102871
Dibromomethane	U		0.000177	0.00602	1	04/25/2018 18:51	WG1102871

Volatile Organic Compounds (GC/MS) by Method 8260B

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Dichlorodifluoromethane	U		0.000171	0.00602	1	04/25/2018 18:51	WG1102871
Di-isopropyl ether	U		0.000165	0.00602	1	04/25/2018 18:51	WG1102871
Ethylbenzene	U		0.0000893	0.00602	1	04/25/2018 18:51	WG1102871
Hexachloro-1,3-butadiene	U		0.000254	0.00602	1	04/25/2018 18:51	WG1102871
Isopropylbenzene	U		0.000102	0.00602	1	04/25/2018 18:51	WG1102871
Methylene Chloride	U		0.000252	0.00602	1	04/25/2018 18:51	WG1102871
Methyl tert-butyl ether	U		0.0000992	0.00602	1	04/25/2018 18:51	WG1102871
Naphthalene	U		0.000255	0.00602	1	04/25/2018 18:51	WG1102871
n-Butylbenzene	U		0.000149	0.00602	1	04/25/2018 18:51	WG1102871
n-Propylbenzene	U		0.0000964	0.00602	1	04/25/2018 18:51	WG1102871
p-Isopropyltoluene	U		0.000128	0.00602	1	04/25/2018 18:51	WG1102871
sec-Butylbenzene	U		0.0000884	0.00602	1	04/25/2018 18:51	WG1102871
Styrene	U		0.000358	0.00602	1	04/25/2018 18:51	WG1102871
tert-Butylbenzene	U		0.000246	0.00602	1	04/25/2018 18:51	WG1102871
Tetrachloroethene	U		0.000114	0.00602	1	04/25/2018 18:51	WG1102871
Tetrahydrofuran	U		0.00159	0.120	1	04/25/2018 18:51	WG1102871
Toluene	U		0.0000839	0.00602	1	04/25/2018 18:51	WG1102871
trans-1,2-Dichloroethene	U		0.000157	0.00602	1	04/25/2018 18:51	WG1102871
trans-1,3-Dichloropropene	U		0.000111	0.00602	1	04/25/2018 18:51	WG1102871
Trichloroethene	U		0.000183	0.00602	1	04/25/2018 18:51	WG1102871
Trichlorofluoromethane	U		0.000117	0.00602	1	04/25/2018 18:51	WG1102871
Vinyl Chloride	U		0.000130	0.00602	1	04/25/2018 18:51	WG1102871
m&p-Xylenes	U		0.000149	0.00602	1	04/25/2018 18:51	WG1102871
o-Xylene	U		0.000110	0.00602	1	04/25/2018 18:51	WG1102871
Xylenes, Total	U		0.000260	0.0120	1	04/25/2018 18:51	WG1102871
(S) 1,2-Dichloroethane-d4	*99.1*			*80.0-128*		*04/25/2018 18:51*	WG1102871
(S) 4-Bromofluorobenzene	*95.2*			*72.0-122*		*04/25/2018 18:51*	WG1102871
(S) Toluene-d8	*101*			*80.0-120*		*04/25/2018 18:51*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
C12-C22 Hydrocarbons	U		0.883	4.82	1	04/30/2018 17:10	WG1104346
C22-C32 Hydrocarbons	U		1.60	4.82	1	04/30/2018 17:10	WG1104346
C32-C40 Hydrocarbons	U		1.60	4.82	1	04/30/2018 17:10	WG1104346
(S) o-Terphenyl	*72.6*			*18.0-148*		*04/30/2018 17:10*	WG1104346

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	80.0		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
TPHG C5 - C12	U		0.0415	0.125	1	04/28/2018 06:20	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*92.4*			*77.0-120*		*04/28/2018 06:20*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.000120	0.00625	1	04/25/2018 19:12	WG1102871
1,1,1-Trichloroethane	U		0.000160	0.00625	1	04/25/2018 19:12	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000112	0.00625	1	04/25/2018 19:12	WG1102871
1,1,2-Trichloroethane	U		0.000169	0.00625	1	04/25/2018 19:12	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000157	0.00625	1	04/25/2018 19:12	WG1102871
1,1-Dichloroethane	U		0.000147	0.00625	1	04/25/2018 19:12	WG1102871
1,1-Dichloroethene	U		0.000118	0.00625	1	04/25/2018 19:12	WG1102871
1,1-Dichloropropene	U		0.000120	0.00625	1	04/25/2018 19:12	WG1102871
1,2,3-Trichlorobenzene	U		0.000142	0.00625	1	04/25/2018 19:12	WG1102871
1,2,3-Trichloropropane	U		0.000296	0.00625	1	04/25/2018 19:12	WG1102871
1,2,4-Trichlorobenzene	U		0.000176	0.00625	1	04/25/2018 19:12	WG1102871
1,2,4-Trimethylbenzene	U		0.000123	0.00625	1	04/25/2018 19:12	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000520	0.00625	1	04/25/2018 19:12	WG1102871
1,2-Dibromoethane	U		0.000126	0.00625	1	04/25/2018 19:12	WG1102871
1,2-Dichlorobenzene	U		0.000344	0.00625	1	04/25/2018 19:12	WG1102871
1,2-Dichloroethane	U		0.000161	0.00625	1	04/25/2018 19:12	WG1102871
1,2-Dichloropropane	U		0.000152	0.00625	1	04/25/2018 19:12	WG1102871
1,3,5-Trimethylbenzene	U		0.000125	0.00625	1	04/25/2018 19:12	WG1102871
1,3-Dichlorobenzene	U		0.000107	0.00625	1	04/25/2018 19:12	WG1102871
1,3-Dichloropropane	U		0.0000981	0.00625	1	04/25/2018 19:12	WG1102871
1,4-Dichlorobenzene	U		0.000165	0.00625	1	04/25/2018 19:12	WG1102871
2,2-Dichloropropane	U		0.000155	0.00625	1	04/25/2018 19:12	WG1102871
2-Butanone (MEK)	U		0.00329	0.0625	1	04/25/2018 19:12	WG1102871
2-Chlorotoluene	U		0.000157	0.00625	1	04/25/2018 19:12	WG1102871
2-Hexanone	U		0.00111	0.0625	1	04/25/2018 19:12	WG1102871
4-Chlorotoluene	U		0.000179	0.00625	1	04/25/2018 19:12	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000592	0.0625	1	04/25/2018 19:12	WG1102871
Acetone	0.00445	J	0.00327	0.0625	1	04/25/2018 19:12	WG1102871
Acrylonitrile	U		0.00155	0.0625	1	04/25/2018 19:12	WG1102871
Benzene	U		0.0000850	0.00625	1	04/25/2018 19:12	WG1102871
Bromobenzene	U		0.000134	0.00625	1	04/25/2018 19:12	WG1102871
Bromochloromethane	U		0.000195	0.00625	1	04/25/2018 19:12	WG1102871
Bromodichloromethane	U		0.000436	0.00625	1	04/25/2018 19:12	WG1102871
Bromoform	U		0.000436	0.00625	1	04/25/2018 19:12	WG1102871
Bromomethane	U		0.000226	0.0250	1	04/25/2018 19:12	WG1102871
Carbon Tetrachloride	U		0.000113	0.00625	1	04/25/2018 19:12	WG1102871
Chlorobenzene	U		0.0000836	0.00625	1	04/25/2018 19:12	WG1102871
Chloroethane	U		0.000230	0.00625	1	04/25/2018 19:12	WG1102871
Chloroform	U		0.000160	0.00625	1	04/25/2018 19:12	WG1102871
Chloromethane	U		0.000139	0.00625	1	04/25/2018 19:12	WG1102871
Cis-1,2-Dichloroethene	U		0.000136	0.00625	1	04/25/2018 19:12	WG1102871
Cis-1,3-Dichloropropene	U		0.000134	0.00625	1	04/25/2018 19:12	WG1102871
Chlorodibromomethane	U		0.00122	0.00625	1	04/25/2018 19:12	WG1102871
Dibromomethane	U		0.000184	0.00625	1	04/25/2018 19:12	WG1102871

TSW1-13-14

Collected date/time: 04/24/18 12:45

SAMPLE RESULTS - 04

L988584

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dichlorodifluoromethane	U		0.000177	0.00625	1	04/25/2018 19:12	WG1102871
Di-isopropyl ether	U		0.000171	0.00625	1	04/25/2018 19:12	WG1102871
Ethylbenzene	U		0.0000927	0.00625	1	04/25/2018 19:12	WG1102871
Hexachloro-1,3-butadiene	U		0.000264	0.00625	1	04/25/2018 19:12	WG1102871
Isopropylbenzene	U		0.000105	0.00625	1	04/25/2018 19:12	WG1102871
Methylene Chloride	U		0.000261	0.00625	1	04/25/2018 19:12	WG1102871
Methyl tert-butyl ether	U		0.000103	0.00625	1	04/25/2018 19:12	WG1102871
Naphthalene	U		0.000265	0.00625	1	04/25/2018 19:12	WG1102871
n-Butylbenzene	U		0.000155	0.00625	1	04/25/2018 19:12	WG1102871
n-Propylbenzene	U		0.000100	0.00625	1	04/25/2018 19:12	WG1102871
p-Isopropyltoluene	U		0.000132	0.00625	1	04/25/2018 19:12	WG1102871
sec-Butylbenzene	U		0.0000917	0.00625	1	04/25/2018 19:12	WG1102871
Styrene	U		0.000371	0.00625	1	04/25/2018 19:12	WG1102871
tert-Butylbenzene	U		0.000255	0.00625	1	04/25/2018 19:12	WG1102871
Tetrachloroethene	U		0.000118	0.00625	1	04/25/2018 19:12	WG1102871
Tetrahydrofuran	U		0.00165	0.125	1	04/25/2018 19:12	WG1102871
Toluene	U		0.0000871	0.00625	1	04/25/2018 19:12	WG1102871
trans-1,2-Dichloroethene	U		0.000162	0.00625	1	04/25/2018 19:12	WG1102871
trans-1,3-Dichloropropene	U		0.000115	0.00625	1	04/25/2018 19:12	WG1102871
Trichloroethene	U		0.000190	0.00625	1	04/25/2018 19:12	WG1102871
Trichlorofluoromethane	U		0.000122	0.00625	1	04/25/2018 19:12	WG1102871
Vinyl Chloride	U		0.000135	0.00625	1	04/25/2018 19:12	WG1102871
m&p-Xylenes	U		0.000155	0.00625	1	04/25/2018 19:12	WG1102871
o-Xylene	U		0.000114	0.00625	1	04/25/2018 19:12	WG1102871
Xylenes, Total	U		0.000270	0.0125	1	04/25/2018 19:12	WG1102871
(S) 1,2-Dichloroethane-d4	*102*			*80.0-128*		*04/25/2018 19:12*	WG1102871
(S) 4-Bromofluorobenzene	*97.2*			*72.0-122*		*04/25/2018 19:12*	WG1102871
(S) Toluene-d8	*102*			*80.0-120*		*04/25/2018 19:12*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	U		0.916	5.00	1	04/30/2018 17:25	WG1104346
C22-C32 Hydrocarbons	U		1.66	5.00	1	04/30/2018 17:25	WG1104346
C32-C40 Hydrocarbons	U		1.66	5.00	1	04/30/2018 17:25	WG1104346
(S) o-Terphenyl	*67.4*			*18.0-148*		*04/30/2018 17:25*	WG1104346

TSW2-16-17

Collected date/time: 04/24/18 10:15

SAMPLE RESULTS - 05

L988584

Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	82.6		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
TPHG C5 - C12	U		0.0402	0.121	1	04/28/2018 06:42	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*92.2*			*77.0-120*		*04/28/2018 06:42*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.000116	0.00605	1	04/25/2018 19:33	WG1102871
1,1,1-Trichloroethane	U		0.000155	0.00605	1	04/25/2018 19:33	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000109	0.00605	1	04/25/2018 19:33	WG1102871
1,1,2-Trichloroethane	U		0.000163	0.00605	1	04/25/2018 19:33	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000152	0.00605	1	04/25/2018 19:33	WG1102871
1,1-Dichloroethane	U		0.000143	0.00605	1	04/25/2018 19:33	WG1102871
1,1-Dichloroethene	U		0.000115	0.00605	1	04/25/2018 19:33	WG1102871
1,1-Dichloropropene	U		0.000116	0.00605	1	04/25/2018 19:33	WG1102871
1,2,3-Trichlorobenzene	U		0.000138	0.00605	1	04/25/2018 19:33	WG1102871
1,2,3-Trichloropropane	U		0.000287	0.00605	1	04/25/2018 19:33	WG1102871
1,2,4-Trichlorobenzene	U		0.000171	0.00605	1	04/25/2018 19:33	WG1102871
1,2,4-Trimethylbenzene	U		0.000120	0.00605	1	04/25/2018 19:33	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000503	0.00605	1	04/25/2018 19:33	WG1102871
1,2-Dibromoethane	U		0.000122	0.00605	1	04/25/2018 19:33	WG1102871
1,2-Dichlorobenzene	U		0.000333	0.00605	1	04/25/2018 19:33	WG1102871
1,2-Dichloroethane	U		0.000156	0.00605	1	04/25/2018 19:33	WG1102871
1,2-Dichloropropane	U		0.000148	0.00605	1	04/25/2018 19:33	WG1102871
1,3,5-Trimethylbenzene	U		0.000121	0.00605	1	04/25/2018 19:33	WG1102871
1,3-Dichlorobenzene	U		0.000103	0.00605	1	04/25/2018 19:33	WG1102871
1,3-Dichloropropane	U		0.0000950	0.00605	1	04/25/2018 19:33	WG1102871
1,4-Dichlorobenzene	U		0.000160	0.00605	1	04/25/2018 19:33	WG1102871
2,2-Dichloropropane	U		0.000150	0.00605	1	04/25/2018 19:33	WG1102871
2-Butanone (MEK)	U		0.00318	0.0605	1	04/25/2018 19:33	WG1102871
2-Chlorotoluene	U		0.000152	0.00605	1	04/25/2018 19:33	WG1102871
2-Hexanone	U		0.00108	0.0605	1	04/25/2018 19:33	WG1102871
4-Chlorotoluene	U		0.000173	0.00605	1	04/25/2018 19:33	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000574	0.0605	1	04/25/2018 19:33	WG1102871
Acetone	U		0.00317	0.0605	1	04/25/2018 19:33	WG1102871
Acrylonitrile	U		0.00150	0.0605	1	04/25/2018 19:33	WG1102871
Benzene	U		0.0000823	0.00605	1	04/25/2018 19:33	WG1102871
Bromobenzene	U		0.000129	0.00605	1	04/25/2018 19:33	WG1102871
Bromochloromethane	U		0.000189	0.00605	1	04/25/2018 19:33	WG1102871
Bromodichloromethane	U		0.000422	0.00605	1	04/25/2018 19:33	WG1102871
Bromoform	U		0.000422	0.00605	1	04/25/2018 19:33	WG1102871
Bromomethane	U		0.000219	0.0242	1	04/25/2018 19:33	WG1102871
Carbon Tetrachloride	U		0.000110	0.00605	1	04/25/2018 19:33	WG1102871
Chlorobenzene	U		0.0000810	0.00605	1	04/25/2018 19:33	WG1102871
Chloroethane	U		0.000223	0.00605	1	04/25/2018 19:33	WG1102871
Chloroform	U		0.000155	0.00605	1	04/25/2018 19:33	WG1102871
Chloromethane	U		0.000134	0.00605	1	04/25/2018 19:33	WG1102871
Cis-1,2-Dichloroethene	U		0.000132	0.00605	1	04/25/2018 19:33	WG1102871
Cis-1,3-Dichloropropene	U		0.000129	0.00605	1	04/25/2018 19:33	WG1102871
Chlorodibromomethane	U		0.00118	0.00605	1	04/25/2018 19:33	WG1102871
Dibromomethane	U		0.000178	0.00605	1	04/25/2018 19:33	WG1102871

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dichlorodifluoromethane	U		0.000172	0.00605	1	04/25/2018 19:33	WG1102871
Di-isopropyl ether	U		0.000166	0.00605	1	04/25/2018 19:33	WG1102871
Ethylbenzene	U		0.0000898	0.00605	1	04/25/2018 19:33	WG1102871
Hexachloro-1,3-butadiene	U		0.000255	0.00605	1	04/25/2018 19:33	WG1102871
Isopropylbenzene	U		0.000102	0.00605	1	04/25/2018 19:33	WG1102871
Methylene Chloride	U		0.000253	0.00605	1	04/25/2018 19:33	WG1102871
Methyl tert-butyl ether	U		0.0000997	0.00605	1	04/25/2018 19:33	WG1102871
Naphthalene	U		0.000257	0.00605	1	04/25/2018 19:33	WG1102871
n-Butylbenzene	U		0.000150	0.00605	1	04/25/2018 19:33	WG1102871
n-Propylbenzene	U		0.0000969	0.00605	1	04/25/2018 19:33	WG1102871
p-Isopropyltoluene	U		0.000128	0.00605	1	04/25/2018 19:33	WG1102871
sec-Butylbenzene	U		0.0000888	0.00605	1	04/25/2018 19:33	WG1102871
Styrene	U		0.000359	0.00605	1	04/25/2018 19:33	WG1102871
tert-Butylbenzene	U		0.000247	0.00605	1	04/25/2018 19:33	WG1102871
Tetrachloroethene	U		0.000115	0.00605	1	04/25/2018 19:33	WG1102871
Tetrahydrofuran	U		0.00160	0.121	1	04/25/2018 19:33	WG1102871
Toluene	U		0.0000843	0.00605	1	04/25/2018 19:33	WG1102871
trans-1,2-Dichloroethene	U		0.000157	0.00605	1	04/25/2018 19:33	WG1102871
trans-1,3-Dichloropropene	U		0.000111	0.00605	1	04/25/2018 19:33	WG1102871
Trichloroethene	U		0.000184	0.00605	1	04/25/2018 19:33	WG1102871
Trichlorofluoromethane	U		0.000118	0.00605	1	04/25/2018 19:33	WG1102871
Vinyl Chloride	U		0.000131	0.00605	1	04/25/2018 19:33	WG1102871
m&p-Xylenes	U		0.000150	0.00605	1	04/25/2018 19:33	WG1102871
o-Xylene	U		0.000110	0.00605	1	04/25/2018 19:33	WG1102871
Xylenes, Total	U		0.000261	0.0121	1	04/25/2018 19:33	WG1102871
(S) 1,2-Dichloroethane-d4	*99.9*			*80.0-128*		*04/25/2018 19:33*	WG1102871
(S) 4-Bromofluorobenzene	*97.5*			*72.0-122*		*04/25/2018 19:33*	WG1102871
(S) Toluene-d8	*102*			*80.0-120*		*04/25/2018 19:33*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	U		0.887	4.84	1	04/30/2018 17:41	WG1104346
C22-C32 Hydrocarbons	U		1.61	4.84	1	04/30/2018 17:41	WG1104346
C32-C40 Hydrocarbons	U		1.61	4.84	1	04/30/2018 17:41	WG1104346
(S) o-Terphenyl	*70.4*			*18.0-148*		*04/30/2018 17:41*	WG1104346

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	%			date / time	
Total Solids	80.7		1	04/25/2018 14:00	WG1103121

Volatile Organic Compounds (GC) by Method 8015

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
TPHG C5 - C12	U		0.0411	0.124	1	04/28/2018 07:04	WG1104301
(S) a,a,a-Trifluorotoluene(FID)	*91.5*			*77.0-120*		*04/28/2018 07:04*	WG1104301

Volatile Organic Compounds (GC/MS) by Method 8260B

	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
1,1,1,2-Tetrachloroethane	U		0.000119	0.00619	1	04/25/2018 20:14	WG1102871
1,1,1-Trichloroethane	U		0.000159	0.00619	1	04/25/2018 20:14	WG1102871
1,1,2,2-Tetrachloroethane	U		0.000111	0.00619	1	04/25/2018 20:14	WG1102871
1,1,2-Trichloroethane	U		0.000167	0.00619	1	04/25/2018 20:14	WG1102871
1,1,2-Trichlorotrifluoroethane	U		0.000156	0.00619	1	04/25/2018 20:14	WG1102871
1,1-Dichloroethane	U		0.000146	0.00619	1	04/25/2018 20:14	WG1102871
1,1-Dichloroethene	U		0.000117	0.00619	1	04/25/2018 20:14	WG1102871
1,1-Dichloropropene	U		0.000119	0.00619	1	04/25/2018 20:14	WG1102871
1,2,3-Trichlorobenzene	U		0.000141	0.00619	1	04/25/2018 20:14	WG1102871
1,2,3-Trichloropropane	U		0.000294	0.00619	1	04/25/2018 20:14	WG1102871
1,2,4-Trichlorobenzene	U		0.000175	0.00619	1	04/25/2018 20:14	WG1102871
1,2,4-Trimethylbenzene	U		0.000122	0.00619	1	04/25/2018 20:14	WG1102871
1,2-Dibromo-3-Chloropropane	U		0.000515	0.00619	1	04/25/2018 20:14	WG1102871
1,2-Dibromoethane	U		0.000125	0.00619	1	04/25/2018 20:14	WG1102871
1,2-Dichlorobenzene	U		0.000341	0.00619	1	04/25/2018 20:14	WG1102871
1,2-Dichloroethane	U		0.000160	0.00619	1	04/25/2018 20:14	WG1102871
1,2-Dichloropropane	U		0.000151	0.00619	1	04/25/2018 20:14	WG1102871
1,3,5-Trimethylbenzene	U		0.000124	0.00619	1	04/25/2018 20:14	WG1102871
1,3-Dichlorobenzene	U		0.000106	0.00619	1	04/25/2018 20:14	WG1102871
1,3-Dichloropropane	U		0.0000972	0.00619	1	04/25/2018 20:14	WG1102871
1,4-Dichlorobenzene	U		0.000164	0.00619	1	04/25/2018 20:14	WG1102871
2,2-Dichloropropane	U		0.000154	0.00619	1	04/25/2018 20:14	WG1102871
2-Butanone (MEK)	U		0.00326	0.0619	1	04/25/2018 20:14	WG1102871
2-Chlorotoluene	U		0.000156	0.00619	1	04/25/2018 20:14	WG1102871
2-Hexanone	U		0.00110	0.0619	1	04/25/2018 20:14	WG1102871
4-Chlorotoluene	U		0.000177	0.00619	1	04/25/2018 20:14	WG1102871
4-Methyl-2-pentanone (MIBK)	U		0.000587	0.0619	1	04/25/2018 20:14	WG1102871
Acetone	U		0.00325	0.0619	1	04/25/2018 20:14	WG1102871
Acrylonitrile	U		0.00154	0.0619	1	04/25/2018 20:14	WG1102871
Benzene	U		0.0000842	0.00619	1	04/25/2018 20:14	WG1102871
Bromobenzene	U		0.000133	0.00619	1	04/25/2018 20:14	WG1102871
Bromochloromethane	U		0.000193	0.00619	1	04/25/2018 20:14	WG1102871
Bromodichloromethane	U		0.000432	0.00619	1	04/25/2018 20:14	WG1102871
Bromoform	U		0.000432	0.00619	1	04/25/2018 20:14	WG1102871
Bromomethane	U		0.000224	0.0248	1	04/25/2018 20:14	WG1102871
Carbon Tetrachloride	U		0.000112	0.00619	1	04/25/2018 20:14	WG1102871
Chlorobenzene	U		0.0000829	0.00619	1	04/25/2018 20:14	WG1102871
Chloroethane	U		0.000228	0.00619	1	04/25/2018 20:14	WG1102871
Chloroform	U		0.000159	0.00619	1	04/25/2018 20:14	WG1102871
Chloromethane	U		0.000138	0.00619	1	04/25/2018 20:14	WG1102871
Cis-1,2-Dichloroethene	U		0.000135	0.00619	1	04/25/2018 20:14	WG1102871
Cis-1,3-Dichloropropene	U		0.000133	0.00619	1	04/25/2018 20:14	WG1102871
Chlorodibromomethane	U		0.00121	0.00619	1	04/25/2018 20:14	WG1102871
Dibromomethane	U		0.000182	0.00619	1	04/25/2018 20:14	WG1102871

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dichlorodifluoromethane	U		0.000176	0.00619	1	04/25/2018 20:14	WG1102871
Di-isopropyl ether	U		0.000170	0.00619	1	04/25/2018 20:14	WG1102871
Ethylbenzene	U		0.0000919	0.00619	1	04/25/2018 20:14	WG1102871
Hexachloro-1,3-butadiene	U		0.000261	0.00619	1	04/25/2018 20:14	WG1102871
Isopropylbenzene	U		0.000105	0.00619	1	04/25/2018 20:14	WG1102871
Methylene Chloride	U		0.000259	0.00619	1	04/25/2018 20:14	WG1102871
Methyl tert-butyl ether	U		0.000102	0.00619	1	04/25/2018 20:14	WG1102871
Naphthalene	U		0.000263	0.00619	1	04/25/2018 20:14	WG1102871
n-Butylbenzene	U		0.000154	0.00619	1	04/25/2018 20:14	WG1102871
n-Propylbenzene	U		0.0000992	0.00619	1	04/25/2018 20:14	WG1102871
p-Isopropyltoluene	U		0.000131	0.00619	1	04/25/2018 20:14	WG1102871
sec-Butylbenzene	U		0.0000909	0.00619	1	04/25/2018 20:14	WG1102871
Styrene	U		0.000368	0.00619	1	04/25/2018 20:14	WG1102871
tert-Butylbenzene	U		0.000253	0.00619	1	04/25/2018 20:14	WG1102871
Tetrachloroethene	U		0.000117	0.00619	1	04/25/2018 20:14	WG1102871
Tetrahydrofuran	U		0.00164	0.124	1	04/25/2018 20:14	WG1102871
Toluene	U		0.0000863	0.00619	1	04/25/2018 20:14	WG1102871
trans-1,2-Dichloroethene	U		0.000161	0.00619	1	04/25/2018 20:14	WG1102871
trans-1,3-Dichloropropene	U		0.000114	0.00619	1	04/25/2018 20:14	WG1102871
Trichloroethene	U		0.000188	0.00619	1	04/25/2018 20:14	WG1102871
Trichlorofluoromethane	U		0.000121	0.00619	1	04/25/2018 20:14	WG1102871
Vinyl Chloride	U		0.000134	0.00619	1	04/25/2018 20:14	WG1102871
m&p-Xylenes	U		0.000154	0.00619	1	04/25/2018 20:14	WG1102871
o-Xylene	U		0.000113	0.00619	1	04/25/2018 20:14	WG1102871
Xylenes, Total	U		0.000268	0.0124	1	04/25/2018 20:14	WG1102871
(S) 1,2-Dichloroethane-d4	*100*			*80.0-128*		*04/25/2018 20:14*	WG1102871
(S) 4-Bromofluorobenzene	*96.0*			*72.0-122*		*04/25/2018 20:14*	WG1102871
(S) Toluene-d8	*99.9*			*80.0-120*		*04/25/2018 20:14*	WG1102871

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	U		0.908	4.95	1	04/30/2018 17:57	WG1104346
C22-C32 Hydrocarbons	U		1.65	4.95	1	04/30/2018 17:57	WG1104346
C32-C40 Hydrocarbons	U		1.65	4.95	1	04/30/2018 17:57	WG1104346
(S) o-Terphenyl	*70.9*			*18.0-148*		*04/30/2018 17:57*	WG1104346

Volatile Organic Compounds (GC) by Method 8015

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPHG C5 - C12	U		30.4	100	1	04/27/2018 13:03	WG1104015
(S) a,a,a-Trifluorotoluene(FID)	*110*			*77.0-122*		*04/27/2018 13:03*	WG1104015

Volatile Organic Compounds (GC/MS) by Method 8260B

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		0.0913	0.500	1	04/25/2018 20:37	WG1103131
1,1,1-Trichloroethane	U		0.0892	0.500	1	04/25/2018 20:37	WG1103131
1,1,2,2-Tetrachloroethane	U		0.0971	0.500	1	04/25/2018 20:37	WG1103131
1,1,2-Trichloroethane	U		0.0109	0.500	1	04/25/2018 20:37	WG1103131
1,1,2-Trichlorotrifluoroethane	U		0.0948	0.500	1	04/25/2018 20:37	WG1103131
1,1-Dichloroethane	U		0.110	0.500	1	04/25/2018 20:37	WG1103131
1,1-Dichloroethene	U		0.108	0.500	1	04/25/2018 20:37	WG1103131
1,1-Dichloropropene	U		0.118	0.500	1	04/25/2018 20:37	WG1103131
1,2,3-Trichlorobenzene	U		0.162	0.500	1	04/25/2018 20:37	WG1103131
1,2,3-Trichloropropane	U		0.165	0.500	1	04/25/2018 20:37	WG1103131
1,2,4-Trichlorobenzene	U		0.182	0.500	1	04/25/2018 20:37	WG1103131
1,2,4-Trimethylbenzene	U		0.0984	0.500	1	04/25/2018 20:37	WG1103131
1,2-Dibromo-3-Chloropropane	U		0.452	2.00	1	04/25/2018 20:37	WG1103131
1,2-Dibromoethane	U		0.114	0.500	1	04/25/2018 20:37	WG1103131
1,2-Dichlorobenzene	U		0.126	0.500	1	04/25/2018 20:37	WG1103131
1,2-Dichloroethane	U		0.218	0.500	1	04/25/2018 20:37	WG1103131
1,2-Dichloropropane	U		0.0975	0.500	1	04/25/2018 20:37	WG1103131
1,3,5-Trimethylbenzene	U		0.109	0.500	1	04/25/2018 20:37	WG1103131
1,3-Dichlorobenzene	U		0.136	0.500	1	04/25/2018 20:37	WG1103131
1,3-Dichloropropane	U		0.0984	0.500	1	04/25/2018 20:37	WG1103131
1,4-Dichlorobenzene	U		0.154	0.500	1	04/25/2018 20:37	WG1103131
2,2-Dichloropropane	U		0.252	2.00	1	04/25/2018 20:37	WG1103131
2-Butanone (MEK)	U		1.28	5.00	1	04/25/2018 20:37	WG1103131
2-Chlorotoluene	U		0.141	1.00	1	04/25/2018 20:37	WG1103131
2-Hexanone	U		1.27	5.00	1	04/25/2018 20:37	WG1103131
4-Chlorotoluene	U		0.128	1.00	1	04/25/2018 20:37	WG1103131
4-Methyl-2-pentanone (MIBK)	U		0.537	5.00	1	04/25/2018 20:37	WG1103131
Acetone	8.14	J	3.45	10.0	1	04/25/2018 20:37	WG1103131
Acrylonitrile	U		1.20	5.00	1	04/25/2018 20:37	WG1103131
Benzene	U		0.102	0.500	1	04/25/2018 20:37	WG1103131
Bromobenzene	U		0.0947	0.500	1	04/25/2018 20:37	WG1103131
Bromochloromethane	U		0.165	0.500	1	04/25/2018 20:37	WG1103131
Bromodichloromethane	U		0.0920	0.500	1	04/25/2018 20:37	WG1103131
Bromoform	U		0.129	0.500	1	04/25/2018 20:37	WG1103131
Bromomethane	U	J4	0.472	20.0	1	04/25/2018 20:37	WG1103131
Carbon Disulfide	U		0.0868	0.500	1	04/25/2018 20:37	WG1103131
Carbon Tetrachloride	U		0.0916	0.500	1	04/25/2018 20:37	WG1103131
Chlorobenzene	U		0.104	0.500	1	04/25/2018 20:37	WG1103131
Chloroethane	U		0.152	2.00	1	04/25/2018 20:37	WG1103131
Chloroform	U		0.103	0.500	1	04/25/2018 20:37	WG1103131
Chloromethane	U		0.101	0.500	1	04/25/2018 20:37	WG1103131
Cis-1,2-Dichloroethene	U		0.114	0.500	1	04/25/2018 20:37	WG1103131
Cis-1,3-Dichloropropene	U		0.130	0.500	1	04/25/2018 20:37	WG1103131
Chlorodibromomethane	U		0.0882	0.500	1	04/25/2018 20:37	WG1103131
Dibromomethane	U		0.151	0.500	1	04/25/2018 20:37	WG1103131
Dichlorodifluoromethane	U		0.0998	0.500	1	04/25/2018 20:37	WG1103131
Di-isopropyl ether	U		0.122	0.500	1	04/25/2018 20:37	WG1103131
Ethylbenzene	U		0.0955	0.500	1	04/25/2018 20:37	WG1103131
Hexachloro-1,3-butadiene	U		0.234	0.500	1	04/25/2018 20:37	WG1103131

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Isopropylbenzene	U		0.0841	0.500	1	04/25/2018 20:37	WG1103131
Methylene Chloride	U		0.113	5.00	1	04/25/2018 20:37	WG1103131
Methyl tert-butyl ether	U		0.105	0.500	1	04/25/2018 20:37	WG1103131
Naphthalene	0.125	B J	0.0975	0.500	1	04/25/2018 20:37	WG1103131
n-Butylbenzene	U		0.133	0.500	1	04/25/2018 20:37	WG1103131
n-Propylbenzene	U		0.159	0.500	1	04/25/2018 20:37	WG1103131
p-Isopropyltoluene	U		0.126	0.500	1	04/25/2018 20:37	WG1103131
sec-Butylbenzene	U		0.128	0.500	1	04/25/2018 20:37	WG1103131
Styrene	U		0.0763	0.500	1	04/25/2018 20:37	WG1103131
tert-Butylbenzene	U		0.193	0.500	1	04/25/2018 20:37	WG1103131
Tetrachloroethene	U		0.157	0.500	1	04/25/2018 20:37	WG1103131
Tetrahydrofuran	U		1.48	5.00	1	04/25/2018 20:37	WG1103131
Toluene	U		0.104	0.500	1	04/25/2018 20:37	WG1103131
trans-1,2-Dichloroethene	U		0.104	0.500	1	04/25/2018 20:37	WG1103131
trans-1,3-Dichloropropene	U		0.0841	0.500	1	04/25/2018 20:37	WG1103131
trans-1,4-Dichloro-2-butene	U		0.276	5.00	1	04/25/2018 20:37	WG1103131
Trichloroethene	U		0.101	0.500	1	04/25/2018 20:37	WG1103131
Trichlorofluoromethane	U		0.140	0.500	1	04/25/2018 20:37	WG1103131
Vinyl Chloride	U		0.129	0.500	1	04/25/2018 20:37	WG1103131
m&p-Xylenes	U		0.186	1.00	1	04/25/2018 20:37	WG1103131
o-Xylene	U		0.102	0.500	1	04/25/2018 20:37	WG1103131
Xylenes, Total	U		0.288	1.50	1	04/25/2018 20:37	WG1103131
(S) 1,2-Dichloroethane-d4	*104*			*80.0-125*		*04/25/2018 20:37*	WG1103131
(S) 4-Bromofluorobenzene	*84.4*			*75.0-120*		*04/25/2018 20:37*	WG1103131
(S) Toluene-d8	*101*			*80.0-120*		*04/25/2018 20:37*	WG1103131

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	251		33.0	100	1	04/28/2018 12:01	WG1104274
C22-C32 Hydrocarbons	67.2	J	33.0	100	1	04/28/2018 12:01	WG1104274
C32-C40 Hydrocarbons	U		33.0	100	1	04/28/2018 12:01	WG1104274
(S) o-Terphenyl	*87.2*			*52.0-156*		*04/28/2018 12:01*	WG1104274

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TPHG C5 - C12	U		30.4	100	1	04/27/2018 13:27	WG1104015
(S) a,a,a-Trifluorotoluene(FID)	*111*			*77.0-122*		*04/27/2018 13:27*	WG1104015

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.0913	0.500	1	04/25/2018 19:48	WG1103131
1,1,1-Trichloroethane	U		0.0892	0.500	1	04/25/2018 19:48	WG1103131
1,1,2,2-Tetrachloroethane	U		0.0971	0.500	1	04/25/2018 19:48	WG1103131
1,1,2-Trichloroethane	U		0.0109	0.500	1	04/25/2018 19:48	WG1103131
1,1,2-Trichlorotrifluoroethane	U		0.0948	0.500	1	04/25/2018 19:48	WG1103131
1,1-Dichloroethane	U		0.110	0.500	1	04/25/2018 19:48	WG1103131
1,1-Dichloroethene	U		0.108	0.500	1	04/25/2018 19:48	WG1103131
1,1-Dichloropropene	U		0.118	0.500	1	04/25/2018 19:48	WG1103131
1,2,3-Trichlorobenzene	U		0.162	0.500	1	04/25/2018 19:48	WG1103131
1,2,3-Trichloropropane	U		0.165	0.500	1	04/25/2018 19:48	WG1103131
1,2,4-Trichlorobenzene	U		0.182	0.500	1	04/25/2018 19:48	WG1103131
1,2,4-Trimethylbenzene	U		0.0984	0.500	1	04/25/2018 19:48	WG1103131
1,2-Dibromo-3-Chloropropane	U		0.452	2.00	1	04/25/2018 19:48	WG1103131
1,2-Dibromoethane	U		0.114	0.500	1	04/25/2018 19:48	WG1103131
1,2-Dichlorobenzene	U		0.126	0.500	1	04/25/2018 19:48	WG1103131
1,2-Dichloroethane	U		0.218	0.500	1	04/25/2018 19:48	WG1103131
1,2-Dichloropropane	U		0.0975	0.500	1	04/25/2018 19:48	WG1103131
1,3,5-Trimethylbenzene	U		0.109	0.500	1	04/25/2018 19:48	WG1103131
1,3-Dichlorobenzene	U		0.136	0.500	1	04/25/2018 19:48	WG1103131
1,3-Dichloropropane	U		0.0984	0.500	1	04/25/2018 19:48	WG1103131
1,4-Dichlorobenzene	U		0.154	0.500	1	04/25/2018 19:48	WG1103131
2,2-Dichloropropane	U		0.252	2.00	1	04/25/2018 19:48	WG1103131
2-Butanone (MEK)	U		1.28	5.00	1	04/25/2018 19:48	WG1103131
2-Chlorotoluene	U		0.141	1.00	1	04/25/2018 19:48	WG1103131
2-Hexanone	U		1.27	5.00	1	04/25/2018 19:48	WG1103131
4-Chlorotoluene	U		0.128	1.00	1	04/25/2018 19:48	WG1103131
4-Methyl-2-pentanone (MIBK)	U		0.537	5.00	1	04/25/2018 19:48	WG1103131
Acetone	3.81	J	3.45	10.0	1	04/25/2018 19:48	WG1103131
Acrylonitrile	U		1.20	5.00	1	04/25/2018 19:48	WG1103131
Benzene	U		0.102	0.500	1	04/25/2018 19:48	WG1103131
Bromobenzene	U		0.0947	0.500	1	04/25/2018 19:48	WG1103131
Bromochloromethane	U		0.165	0.500	1	04/25/2018 19:48	WG1103131
Bromodichloromethane	U		0.0920	0.500	1	04/25/2018 19:48	WG1103131
Bromoform	U		0.129	0.500	1	04/25/2018 19:48	WG1103131
Bromomethane	U	J4 J5	0.472	20.0	1	04/25/2018 19:48	WG1103131
Carbon Disulfide	U		0.0868	0.500	1	04/25/2018 19:48	WG1103131
Carbon Tetrachloride	U		0.0916	0.500	1	04/25/2018 19:48	WG1103131
Chlorobenzene	U		0.104	0.500	1	04/25/2018 19:48	WG1103131
Chloroethane	U	J5	0.152	2.00	1	04/25/2018 19:48	WG1103131
Chloroform	U		0.103	0.500	1	04/25/2018 19:48	WG1103131
Chloromethane	U	J5	0.101	0.500	1	04/25/2018 19:48	WG1103131
Cis-1,2-Dichloroethene	U		0.114	0.500	1	04/25/2018 19:48	WG1103131
Cis-1,3-Dichloropropene	U		0.130	0.500	1	04/25/2018 19:48	WG1103131
Chlorodibromomethane	U		0.0882	0.500	1	04/25/2018 19:48	WG1103131
Dibromomethane	U		0.151	0.500	1	04/25/2018 19:48	WG1103131
Dichlorodifluoromethane	U		0.0998	0.500	1	04/25/2018 19:48	WG1103131
Di-isopropyl ether	U		0.122	0.500	1	04/25/2018 19:48	WG1103131
Ethylbenzene	U		0.0955	0.500	1	04/25/2018 19:48	WG1103131
Hexachloro-1,3-butadiene	U		0.234	0.500	1	04/25/2018 19:48	WG1103131

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Isopropylbenzene	U		0.0841	0.500	1	04/25/2018 19:48	WG1103131
Methylene Chloride	U		0.113	5.00	1	04/25/2018 19:48	WG1103131
Methyl tert-butyl ether	U		0.105	0.500	1	04/25/2018 19:48	WG1103131
Naphthalene	0.124	B J	0.0975	0.500	1	04/25/2018 19:48	WG1103131
n-Butylbenzene	U		0.133	0.500	1	04/25/2018 19:48	WG1103131
n-Propylbenzene	U		0.159	0.500	1	04/25/2018 19:48	WG1103131
p-Isopropyltoluene	U		0.126	0.500	1	04/25/2018 19:48	WG1103131
sec-Butylbenzene	U		0.128	0.500	1	04/25/2018 19:48	WG1103131
Styrene	U		0.0763	0.500	1	04/25/2018 19:48	WG1103131
tert-Butylbenzene	U		0.193	0.500	1	04/25/2018 19:48	WG1103131
Tetrachloroethene	U		0.157	0.500	1	04/25/2018 19:48	WG1103131
Tetrahydrofuran	U		1.48	5.00	1	04/25/2018 19:48	WG1103131
Toluene	U		0.104	0.500	1	04/25/2018 19:48	WG1103131
trans-1,2-Dichloroethene	U		0.104	0.500	1	04/25/2018 19:48	WG1103131
trans-1,3-Dichloropropene	U		0.0841	0.500	1	04/25/2018 19:48	WG1103131
trans-1,4-Dichloro-2-butene	U		0.276	5.00	1	04/25/2018 19:48	WG1103131
Trichloroethene	U		0.101	0.500	1	04/25/2018 19:48	WG1103131
Trichlorofluoromethane	U		0.140	0.500	1	04/25/2018 19:48	WG1103131
Vinyl Chloride	U		0.129	0.500	1	04/25/2018 19:48	WG1103131
m&p-Xylenes	U		0.186	1.00	1	04/25/2018 19:48	WG1103131
o-Xylene	U		0.102	0.500	1	04/25/2018 19:48	WG1103131
Xylenes, Total	U		0.288	1.50	1	04/25/2018 19:48	WG1103131
(S) 1,2-Dichloroethane-d4	*105*			*80.0-125*		*04/25/2018 19:48*	WG1103131
(S) 4-Bromofluorobenzene	*87.0*			*75.0-120*		*04/25/2018 19:48*	WG1103131
(S) Toluene-d8	*102*			*80.0-120*		*04/25/2018 19:48*	WG1103131

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	130		33.0	100	1	04/28/2018 12:17	WG1104274
C22-C32 Hydrocarbons	70.7	J	33.0	100	1	04/28/2018 12:17	WG1104274
C32-C40 Hydrocarbons	U		33.0	100	1	04/28/2018 12:17	WG1104274
(S) o-Terphenyl	*89.5*			*52.0-156*		*04/28/2018 12:17*	WG1104274

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC) by Method 8015

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TPHG C5 - C12	U		30.4	100	1	04/27/2018 13:50	WG1104015
(S) a,a,a-Trifluorotoluene(FID)	*111*			*77.0-122*		*04/27/2018 13:50*	WG1104015

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1,2-Tetrachloroethane	U		0.0913	0.500	1	04/25/2018 20:13	WG1103131
1,1,1-Trichloroethane	U		0.0892	0.500	1	04/25/2018 20:13	WG1103131
1,1,2,2-Tetrachloroethane	U		0.0971	0.500	1	04/25/2018 20:13	WG1103131
1,1,2-Trichloroethane	U		0.0109	0.500	1	04/25/2018 20:13	WG1103131
1,1,2-Trichlorotrifluoroethane	U		0.0948	0.500	1	04/25/2018 20:13	WG1103131
1,1-Dichloroethane	U		0.110	0.500	1	04/25/2018 20:13	WG1103131
1,1-Dichloroethene	U		0.108	0.500	1	04/25/2018 20:13	WG1103131
1,1-Dichloropropene	U		0.118	0.500	1	04/25/2018 20:13	WG1103131
1,2,3-Trichlorobenzene	U		0.162	0.500	1	04/25/2018 20:13	WG1103131
1,2,3-Trichloropropane	U		0.165	0.500	1	04/25/2018 20:13	WG1103131
1,2,4-Trichlorobenzene	U		0.182	0.500	1	04/25/2018 20:13	WG1103131
1,2,4-Trimethylbenzene	U		0.0984	0.500	1	04/25/2018 20:13	WG1103131
1,2-Dibromo-3-Chloropropane	U		0.452	2.00	1	04/25/2018 20:13	WG1103131
1,2-Dibromoethane	U		0.114	0.500	1	04/25/2018 20:13	WG1103131
1,2-Dichlorobenzene	U		0.126	0.500	1	04/25/2018 20:13	WG1103131
1,2-Dichloroethane	U		0.218	0.500	1	04/25/2018 20:13	WG1103131
1,2-Dichloropropane	U		0.0975	0.500	1	04/25/2018 20:13	WG1103131
1,3,5-Trimethylbenzene	U		0.109	0.500	1	04/25/2018 20:13	WG1103131
1,3-Dichlorobenzene	U		0.136	0.500	1	04/25/2018 20:13	WG1103131
1,3-Dichloropropane	U		0.0984	0.500	1	04/25/2018 20:13	WG1103131
1,4-Dichlorobenzene	U		0.154	0.500	1	04/25/2018 20:13	WG1103131
2,2-Dichloropropane	U		0.252	2.00	1	04/25/2018 20:13	WG1103131
2-Butanone (MEK)	U		1.28	5.00	1	04/25/2018 20:13	WG1103131
2-Chlorotoluene	U		0.141	1.00	1	04/25/2018 20:13	WG1103131
2-Hexanone	U		1.27	5.00	1	04/25/2018 20:13	WG1103131
4-Chlorotoluene	U		0.128	1.00	1	04/25/2018 20:13	WG1103131
4-Methyl-2-pentanone (MIBK)	U		0.537	5.00	1	04/25/2018 20:13	WG1103131
Acetone	5.37	J	3.45	10.0	1	04/25/2018 20:13	WG1103131
Acrylonitrile	U		1.20	5.00	1	04/25/2018 20:13	WG1103131
Benzene	U		0.102	0.500	1	04/25/2018 20:13	WG1103131
Bromobenzene	U		0.0947	0.500	1	04/25/2018 20:13	WG1103131
Bromochloromethane	U		0.165	0.500	1	04/25/2018 20:13	WG1103131
Bromodichloromethane	U		0.0920	0.500	1	04/25/2018 20:13	WG1103131
Bromoform	U		0.129	0.500	1	04/25/2018 20:13	WG1103131
Bromomethane	U	J4	0.472	20.0	1	04/25/2018 20:13	WG1103131
Carbon Disulfide	U		0.0868	0.500	1	04/25/2018 20:13	WG1103131
Carbon Tetrachloride	U		0.0916	0.500	1	04/25/2018 20:13	WG1103131
Chlorobenzene	U		0.104	0.500	1	04/25/2018 20:13	WG1103131
Chloroethane	U		0.152	2.00	1	04/25/2018 20:13	WG1103131
Chloroform	U		0.103	0.500	1	04/25/2018 20:13	WG1103131
Chloromethane	U		0.101	0.500	1	04/25/2018 20:13	WG1103131
Cis-1,2-Dichloroethene	U		0.114	0.500	1	04/25/2018 20:13	WG1103131
Cis-1,3-Dichloropropene	U		0.130	0.500	1	04/25/2018 20:13	WG1103131
Chlorodibromomethane	U		0.0882	0.500	1	04/25/2018 20:13	WG1103131
Dibromomethane	U		0.151	0.500	1	04/25/2018 20:13	WG1103131
Dichlorodifluoromethane	U		0.0998	0.500	1	04/25/2018 20:13	WG1103131
Di-isopropyl ether	U		0.122	0.500	1	04/25/2018 20:13	WG1103131
Ethylbenzene	U		0.0955	0.500	1	04/25/2018 20:13	WG1103131
Hexachloro-1,3-butadiene	U		0.234	0.500	1	04/25/2018 20:13	WG1103131

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Isopropylbenzene	U		0.0841	0.500	1	04/25/2018 20:13	WG1103131
Methylene Chloride	U		0.113	5.00	1	04/25/2018 20:13	WG1103131
Methyl tert-butyl ether	U		0.105	0.500	1	04/25/2018 20:13	WG1103131
Naphthalene	0.152	B J	0.0975	0.500	1	04/25/2018 20:13	WG1103131
n-Butylbenzene	U		0.133	0.500	1	04/25/2018 20:13	WG1103131
n-Propylbenzene	U		0.159	0.500	1	04/25/2018 20:13	WG1103131
p-Isopropyltoluene	U		0.126	0.500	1	04/25/2018 20:13	WG1103131
sec-Butylbenzene	U		0.128	0.500	1	04/25/2018 20:13	WG1103131
Styrene	U		0.0763	0.500	1	04/25/2018 20:13	WG1103131
tert-Butylbenzene	U		0.193	0.500	1	04/25/2018 20:13	WG1103131
Tetrachloroethene	0.427	J	0.157	0.500	1	04/25/2018 20:13	WG1103131
Tetrahydrofuran	U		1.48	5.00	1	04/25/2018 20:13	WG1103131
Toluene	U		0.104	0.500	1	04/25/2018 20:13	WG1103131
trans-1,2-Dichloroethene	U		0.104	0.500	1	04/25/2018 20:13	WG1103131
trans-1,3-Dichloropropene	U		0.0841	0.500	1	04/25/2018 20:13	WG1103131
trans-1,4-Dichloro-2-butene	U		0.276	5.00	1	04/25/2018 20:13	WG1103131
Trichloroethene	0.139	J	0.101	0.500	1	04/25/2018 20:13	WG1103131
Trichlorofluoromethane	U		0.140	0.500	1	04/25/2018 20:13	WG1103131
Vinyl Chloride	U		0.129	0.500	1	04/25/2018 20:13	WG1103131
m&p-Xylenes	U		0.186	1.00	1	04/25/2018 20:13	WG1103131
o-Xylene	U		0.102	0.500	1	04/25/2018 20:13	WG1103131
Xylenes, Total	U		0.288	1.50	1	04/25/2018 20:13	WG1103131
(S) 1,2-Dichloroethane-d4	*104*			*80.0-125*		*04/25/2018 20:13*	WG1103131
(S) 4-Bromofluorobenzene	*86.4*			*75.0-120*		*04/25/2018 20:13*	WG1103131
(S) Toluene-d8	*102*			*80.0-120*		*04/25/2018 20:13*	WG1103131

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
C12-C22 Hydrocarbons	72.2	J	33.0	100	1	04/28/2018 12:33	WG1104274
C22-C32 Hydrocarbons	78.5	J	33.0	100	1	04/28/2018 12:33	WG1104274
C32-C40 Hydrocarbons	U		33.0	100	1	04/28/2018 12:33	WG1104274
(S) o-Terphenyl	*89.3*			*52.0-156*		*04/28/2018 12:33*	WG1104274

Method Blank (MB)

(MB) R3304873-1 04/25/18 14:00

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L988003-01 Original Sample (OS) • Duplicate (DUP)

(OS) L988003-01 04/25/18 14:00 • (DUP) R3304873-3 04/25/18 14:00

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	81.2	82.6	1	1.82		5

L988003-02 Original Sample (OS) • Duplicate (DUP)

(OS) L988003-02 04/25/18 14:00 • (DUP) R3304873-4 04/25/18 14:00

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	85.2	84.8	1	0.504		5

Laboratory Control Sample (LCS)

(LCS) R3304873-2 04/25/18 14:00

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.3	101	85.0-115	

Method Blank (MB)

(MB) R3305623-5 04/27/18 11:58

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TPHG C5 - C12	U		30.4	100
(S) a,a,a-Trifluorotoluene(FID)	*111*			*77.0-122*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305623-3 04/27/18 10:46 • (LCSD) R3305623-4 04/27/18 11:10

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHG C5 - C12	5500	5740	5680	104	103	71.0-130			1.11	20
(S) a,a,a-Trifluorotoluene(FID)				*116*	*115*	*77.0-122*				

L989050-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L989050-05 04/27/18 17:50 • (MS) R3305623-8 04/27/18 21:03 • (MSD) R3305623-9 04/27/18 21:27

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPHG C5 - C12	5500	178	4120	4320	71.6	75.3	1	18.0-158			4.86	20
(S) a,a,a-Trifluorotoluene(FID)					*111*	*113*		*77.0-122*				

Method Blank (MB)

(MB) R3305748-3 04/28/18 03:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHG C5 - C12	U		0.0332	0.100
(S) a,a,a-Trifluorotoluene(FID)	*94.1*			*77.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305748-1 04/28/18 02:52 • (LCSD) R3305748-2 04/28/18 03:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHG C5 - C12	5.50	4.76	4.72	86.5	85.8	75.0-128			0.753	20
(S) a,a,a-Trifluorotoluene(FID)				*106*	*107*	*77.0-120*				

L988976-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988976-01 04/28/18 07:26 • (MS) R3305748-4 04/28/18 12:38 • (MSD) R3305748-5 04/28/18 13:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPHG C5 - C12	5.50	ND	101	97.2	95.3	91.5	19	10.0-146			3.98	35
(S) a,a,a-Trifluorotoluene(FID)					*110*	*107*		*77.0-120*				

Method Blank (MB)

(MB) R3304897-4 04/25/18 14:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,1,1,2-Tetrachloroethane	U		0.0000958	0.00500
1,1,1-Trichloroethane	U		0.000128	0.00500
1,1,2,2-Tetrachloroethane	U		0.0000898	0.00500
1,1,2-Trichloroethane	U		0.000135	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000126	0.00500
1,1-Dichloroethane	U		0.000118	0.00500
1,1-Dichloroethene	U		0.0000947	0.00500
1,1-Dichloropropene	U		0.0000961	0.00500
1,2,3-Trichlorobenzene	0.000123	J	0.000114	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00500
1,2,4-Trichlorobenzene	U		0.000141	0.00500
1,2,4-Trimethylbenzene	U		0.0000988	0.00500
1,2-Dibromo-3-Chloropropane	U		0.000416	0.00500
1,2-Dibromoethane	U		0.000101	0.00500
1,2-Dichlorobenzene	U		0.000275	0.00500
1,2-Dichloroethane	U		0.000129	0.00500
1,2-Dichloropropane	U		0.000122	0.00500
1,3,5-Trimethylbenzene	U		0.0000998	0.00500
1,3-Dichlorobenzene	U		0.0000855	0.00500
1,3-Dichloropropane	U		0.0000785	0.00500
1,4-Dichlorobenzene	U		0.000132	0.00500
2,2-Dichloropropane	U		0.000124	0.00500
2-Butanone (MEK)	U		0.00263	0.0500
2-Chlorotoluene	U		0.000126	0.00500
2-Hexanone	U		0.000891	0.0500
4-Chlorotoluene	U		0.000143	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000474	0.0500
Acetone	U		0.00262	0.0500
Acrylonitrile	U		0.00124	0.0500
Benzene	U		0.0000680	0.00500
Bromobenzene	U		0.000107	0.00500
Bromochloromethane	U		0.000156	0.00500
Bromodichloromethane	U		0.000349	0.00500
Bromoform	U		0.000349	0.00500
Bromomethane	U		0.000181	0.0200
Carbon Tetrachloride	U		0.0000906	0.00500
Chlorobenzene	U		0.0000669	0.00500
Chloroethane	U		0.000184	0.00500
Chloroform	U		0.000128	0.00500
Chloromethane	U		0.000111	0.00500

Method Blank (MB)

(MB) R3304897-4 04/25/18 14:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cis-1,2-Dichloroethene	U		0.000109	0.00500
Cis-1,3-Dichloropropene	U		0.000107	0.00500
Chlorodibromomethane	U		0.000975	0.00500
Dibromomethane	U		0.000147	0.00500
Dichlorodifluoromethane	U		0.000142	0.00500
Di-isopropyl ether	U		0.000137	0.00500
Ethylbenzene	U		0.0000742	0.00500
Hexachloro-1,3-butadiene	U		0.000211	0.00500
Isopropylbenzene	U		0.0000844	0.00500
m&p-Xylenes	U		0.000124	0.00500
Methylene Chloride	U		0.000209	0.00500
Methyl tert-butyl ether	U		0.0000824	0.00500
Naphthalene	U		0.000212	0.00500
n-Butylbenzene	U		0.000124	0.00500
n-Propylbenzene	U		0.0000801	0.00500
o-Xylene	U		0.0000913	0.00500
p-Isopropyltoluene	U		0.000106	0.00500
sec-Butylbenzene	U		0.0000734	0.00500
Styrene	U		0.000297	0.00500
tert-Butylbenzene	U		0.000204	0.00500
Tetrachloroethene	U		0.0000948	0.00500
Tetrahydrofuran	U		0.00132	0.100
Toluene	U		0.0000697	0.00500
trans-1,2-Dichloroethene	U		0.000130	0.00500
trans-1,3-Dichloropropene	U		0.0000921	0.00500
Trichloroethene	U		0.000152	0.00500
Trichlorofluoromethane	U		0.0000975	0.00500
Vinyl Chloride	U		0.000108	0.00500
Xylenes, Total	U		0.000216	0.0100
(S) 1,2-Dichloroethane-d4	*102*			*80.0-128*
(S) 4-Bromofluorobenzene	*96.0*			*72.0-122*
(S) Toluene-d8	*102*			*80.0-120*

Laboratory Control Sample (LCS)

(LCS) R3304897-1 04/25/18 13:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,1,1,2-Tetrachloroethane	0.0400	0.0406	101	69.0-120	
1,1,1-Trichloroethane	0.0400	0.0408	102	74.0-120	
1,1,2,2-Tetrachloroethane	0.0400	0.0320	80.1	68.0-120	
1,1,2-Trichloroethane	0.0400	0.0339	84.9	70.0-120	
1,1,2-Trichlorotrifluoroethane	0.0400	0.0377	94.2	73.0-120	
1,1-Dichloroethane	0.0400	0.0377	94.2	72.0-120	
1,1-Dichloroethene	0.0400	0.0370	92.6	73.0-120	
1,1-Dichloropropene	0.0400	0.0375	93.9	76.0-120	
1,2,3-Trichlorobenzene	0.0400	0.0344	86.1	61.0-120	
1,2,3-Trichloropropane	0.0400	0.0321	80.3	67.0-120	
1,2,4-Trichlorobenzene	0.0400	0.0348	87.0	58.0-120	
1,2,4-Trimethylbenzene	0.0400	0.0360	90.1	68.0-120	
1,2-Dibromo-3-Chloropropane	0.100	0.0793	79.3	64.0-120	
1,2-Dibromoethane	0.0400	0.0349	87.3	69.0-120	
1,2-Dichlorobenzene	0.0400	0.0341	85.1	66.0-120	
1,2-Dichloroethane	0.0400	0.0330	82.4	68.0-120	
1,2-Dichloropropane	0.0400	0.0359	89.8	71.0-120	
1,3,5-Trimethylbenzene	0.0400	0.0365	91.1	70.0-120	
1,3-Dichlorobenzene	0.0400	0.0358	89.6	62.0-120	
1,3-Dichloropropane	0.0400	0.0360	90.1	71.0-120	
1,4-Dichlorobenzene	0.0400	0.0347	86.7	67.0-120	
2,2-Dichloropropane	0.0400	0.0409	102	71.0-120	
2-Butanone (MEK)	0.200	0.150	75.0	54.0-134	
2-Chlorotoluene	0.0400	0.0364	91.1	67.0-120	
2-Hexanone	0.200	0.151	75.5	55.0-137	
4-Chlorotoluene	0.0400	0.0361	90.3	65.0-120	
4-Methyl-2-pentanone (MIBK)	0.200	0.155	77.3	59.0-132	
Acetone	0.200	0.142	71.1	50.0-135	
Acrylonitrile	0.400	0.315	78.7	59.0-127	
Benzene	0.0400	0.0368	92.0	72.0-120	
Bromobenzene	0.0400	0.0356	88.9	64.0-120	
Bromochloromethane	0.0400	0.0375	93.8	73.0-120	
Bromodichloromethane	0.0400	0.0368	92.0	72.0-120	
Bromoform	0.0400	0.0400	100	63.0-120	
Bromomethane	0.0400	0.0433	108	34.0-134	
Carbon Tetrachloride	0.0400	0.0385	96.2	71.0-120	
Chlorobenzene	0.0400	0.0357	89.1	71.0-120	
Chloroethane	0.0400	0.0394	98.6	47.0-135	
Chloroform	0.0400	0.0372	93.0	74.0-120	
Chloromethane	0.0400	0.0376	94.1	56.0-121	

Laboratory Control Sample (LCS)

(LCS) R3304897-1 04/25/18 13:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cis-1,2-Dichloroethene	0.0400	0.0377	94.3	73.0-120	
Cis-1,3-Dichloropropene	0.0400	0.0381	95.2	71.0-120	
Chlorodibromomethane	0.0400	0.0382	95.5	70.0-120	
Dibromomethane	0.0400	0.0365	91.2	68.0-120	
Dichlorodifluoromethane	0.0400	0.0372	93.1	49.0-130	
Di-isopropyl ether	0.0400	0.0341	85.2	70.0-120	
Ethylbenzene	0.0400	0.0353	88.2	72.0-120	
Hexachloro-1,3-butadiene	0.0400	0.0373	93.1	53.0-120	
Isopropylbenzene	0.0400	0.0373	93.3	71.0-120	
m&p-Xylenes	0.0800	0.0725	90.6	68.0-120	
Methylene Chloride	0.0400	0.0349	87.2	70.0-120	
Methyl tert-butyl ether	0.0400	0.0358	89.5	67.0-120	
Naphthalene	0.0400	0.0342	85.5	63.0-120	
n-Butylbenzene	0.0400	0.0371	92.7	65.0-120	
n-Propylbenzene	0.0400	0.0370	92.6	71.0-120	
o-Xylene	0.0400	0.0368	91.9	69.0-120	
p-Isopropyltoluene	0.0400	0.0367	91.8	69.0-120	
sec-Butylbenzene	0.0400	0.0367	91.7	70.0-120	
Styrene	0.0400	0.0358	89.4	71.0-120	
tert-Butylbenzene	0.0400	0.0361	90.3	69.0-120	
Tetrachloroethene	0.0400	0.0375	93.7	71.0-120	
Tetrahydrofuran	0.400	0.290	72.5	56.0-130	
Toluene	0.0400	0.0371	92.7	69.0-120	
trans-1,2-Dichloroethene	0.0400	0.0367	91.8	73.0-120	
trans-1,3-Dichloropropene	0.0400	0.0353	88.2	68.0-120	
Trichloroethene	0.0400	0.0386	96.4	72.0-120	
Trichlorofluoromethane	0.0400	0.0387	96.8	67.0-120	
Vinyl Chloride	0.0400	0.0380	95.1	66.0-120	
Xylenes, Total	0.120	0.109	91.1	69.0-120	
(S) 1,2-Dichloroethane-d4			*99.7*	*80.0-128*	
(S) 4-Bromofluorobenzene			*101*	*72.0-122*	
(S) Toluene-d8			*102*	*80.0-120*	

Method Blank (MB)

(MB) R3304866-7 04/25/18 19:24

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
1,1,1,2-Tetrachloroethane	U		0.0913	0.500
1,1,1-Trichloroethane	U		0.0892	0.500
1,1,2,2-Tetrachloroethane	U		0.0971	0.500
1,1,2-Trichloroethane	U		0.0109	0.500
1,1,2-Trichlorotrifluoroethane	U		0.0948	0.500
1,1-Dichloroethane	U		0.110	0.500
1,1-Dichloroethene	U		0.108	0.500
1,1-Dichloropropene	U		0.118	0.500
1,2,3-Trichlorobenzene	U		0.162	0.500
1,2,3-Trichloropropane	U		0.165	0.500
1,2,4-Trichlorobenzene	U		0.182	0.500
1,2,4-Trimethylbenzene	U		0.0984	0.500
1,2-Dibromo-3-Chloropropane	U		0.452	2.00
1,2-Dibromoethane	U		0.114	0.500
1,2-Dichlorobenzene	U		0.126	0.500
1,2-Dichloroethane	U		0.218	0.500
1,2-Dichloropropane	U		0.0975	0.500
1,3,5-Trimethylbenzene	U		0.109	0.500
1,3-Dichlorobenzene	U		0.136	0.500
1,3-Dichloropropane	U		0.0984	0.500
1,4-Dichlorobenzene	U		0.154	0.500
2,2-Dichloropropane	U		0.252	2.00
2-Butanone (MEK)	U		1.28	5.00
2-Chlorotoluene	U		0.141	1.00
2-Hexanone	U		1.27	5.00
4-Chlorotoluene	U		0.128	1.00
4-Methyl-2-pentanone (MIBK)	U		0.537	5.00
Acetone	U		3.45	10.0
Acrylonitrile	U		1.20	5.00
Benzene	U		0.102	0.500
Bromobenzene	U		0.0947	0.500
Bromochloromethane	U		0.165	0.500
Bromodichloromethane	U		0.0920	0.500
Bromoform	U		0.129	0.500
Bromomethane	U		0.472	20.0
Carbon Disulfide	U		0.0868	0.500
Carbon Tetrachloride	U		0.0916	0.500
Chlorobenzene	U		0.104	0.500
Chloroethane	U		0.152	2.00
Chloroform	U		0.103	0.500

Method Blank (MB)

(MB) R3304866-7 04/25/18 19:24

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloromethane	U		0.101	0.500
Cis-1,2-Dichloroethene	U		0.114	0.500
Cis-1,3-Dichloropropene	U		0.130	0.500
Chlorodibromomethane	U		0.0882	0.500
Dibromomethane	U		0.151	0.500
Dichlorodifluoromethane	U		0.0998	0.500
Di-isopropyl ether	U		0.122	0.500
Ethylbenzene	U		0.0955	0.500
Hexachloro-1,3-butadiene	U		0.234	0.500
Isopropylbenzene	U		0.0841	0.500
m&p-Xylenes	U		0.186	1.00
Methylene Chloride	U		0.113	5.00
Methyl tert-butyl ether	U		0.105	0.500
Naphthalene	0.162	J	0.0975	0.500
n-Butylbenzene	U		0.133	0.500
n-Propylbenzene	U		0.159	0.500
o-Xylene	U		0.102	0.500
p-Isopropyltoluene	U		0.126	0.500
sec-Butylbenzene	U		0.128	0.500
Styrene	U		0.0763	0.500
tert-Butylbenzene	U		0.193	0.500
Tetrachloroethene	U		0.157	0.500
Tetrahydrofuran	U		1.48	5.00
Toluene	U		0.104	0.500
trans-1,2-Dichloroethene	U		0.104	0.500
trans-1,3-Dichloropropene	U		0.0841	0.500
trans-1,4-Dichloro-2-butene	U		0.276	5.00
Trichloroethene	U		0.101	0.500
Trichlorofluoromethane	U		0.140	0.500
Vinyl Chloride	U		0.129	0.500
Xylenes, Total	U		0.288	1.50
(S) 1,2-Dichloroethane-d4	*104*			*80.0-125*
(S) 4-Bromofluorobenzene	*85.9*			*75.0-120*
(S) Toluene-d8	*102*			*80.0-120*

Laboratory Control Sample (LCS)

(LCS) R3304866-1 04/25/18 12:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,1,1,2-Tetrachloroethane	40.0	39.8	99.5	80.0-120	
1,1,1-Trichloroethane	40.0	40.4	101	80.0-125	
1,1,2,2-Tetrachloroethane	40.0	43.8	109	79.0-121	
1,1,2-Trichloroethane	40.0	42.5	106	78.0-121	
1,1,2-Trichlorotrifluoroethane	40.0	41.6	104	77.0-122	
1,1-Dichloroethane	40.0	41.8	105	78.0-124	
1,1-Dichloroethene	40.0	42.4	106	78.0-121	
1,1-Dichloropropene	40.0	42.2	105	80.0-125	
1,2,3-Trichlorobenzene	40.0	42.0	105	61.0-129	
1,2,3-Trichloropropane	40.0	42.5	106	77.0-120	
1,2,4-Trichlorobenzene	40.0	43.1	108	70.0-122	
1,2,4-Trimethylbenzene	40.0	45.8	114	77.0-128	
1,2-Dibromo-3-Chloropropane	100	105	105	67.0-135	
1,2-Dibromoethane	40.0	43.2	108	78.0-121	
1,2-Dichlorobenzene	40.0	40.7	102	80.0-120	
1,2-Dichloroethane	40.0	38.1	95.4	72.0-126	
1,2-Dichloropropane	40.0	42.6	106	79.0-123	
1,3,5-Trimethylbenzene	40.0	44.6	112	80.0-124	
1,3-Dichlorobenzene	40.0	42.9	107	80.0-120	
1,3-Dichloropropane	40.0	42.2	105	78.0-122	
1,4-Dichlorobenzene	40.0	39.0	97.6	80.0-120	
2,2-Dichloropropane	40.0	42.9	107	72.0-130	
2-Butanone (MEK)	200	221	110	64.0-142	
2-Chlorotoluene	40.0	45.1	113	80.0-121	
2-Hexanone	200	232	116	66.0-140	
4-Chlorotoluene	40.0	41.1	103	80.0-121	
4-Methyl-2-pentanone (MIBK)	200	235	118	68.0-137	
Acetone	200	211	105	56.0-140	
Acrylonitrile	400	455	114	65.0-137	
Benzene	40.0	42.4	106	79.0-120	
Bromobenzene	40.0	41.6	104	80.0-120	
Bromochloromethane	40.0	43.3	108	78.0-120	
Bromodichloromethane	40.0	42.0	105	80.0-125	
Bromoform	40.0	40.4	101	74.0-129	
Bromomethane	40.0	69.4	174	25.0-160	J4
Carbon Disulfide	40.0	44.5	111	74.0-123	
Carbon Tetrachloride	40.0	40.2	100	78.0-131	
Chlorobenzene	40.0	40.5	101	80.0-120	
Chloroethane	40.0	48.0	120	55.0-143	
Chloroform	40.0	41.0	102	80.0-122	

Laboratory Control Sample (LCS)

(LCS) R3304866-1 04/25/18 12:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloromethane	40.0	50.1	125	57.0-130	
Cis-1,2-Dichloroethene	40.0	42.8	107	80.0-120	
Cis-1,3-Dichloropropene	40.0	45.1	113	80.0-123	
Chlorodibromomethane	40.0	42.5	106	80.0-123	
Dibromomethane	40.0	40.8	102	77.0-122	
Dichlorodifluoromethane	40.0	38.2	95.5	49.0-146	
Di-isopropyl ether	40.0	44.3	111	79.0-126	
Ethylbenzene	40.0	42.1	105	80.0-120	
Hexachloro-1,3-butadiene	40.0	39.8	99.5	61.0-137	
Isopropylbenzene	40.0	43.8	110	80.0-123	
m&p-Xylenes	80.0	86.5	108	78.0-124	
Methylene Chloride	40.0	43.8	110	78.0-120	
Methyl tert-butyl ether	40.0	42.6	106	77.0-121	
Naphthalene	40.0	42.0	105	62.0-130	
n-Butylbenzene	40.0	44.9	112	78.0-126	
n-Propylbenzene	40.0	44.0	110	80.0-121	
o-Xylene	40.0	43.2	108	80.0-120	
p-Isopropyltoluene	40.0	41.6	104	79.0-127	
sec-Butylbenzene	40.0	45.1	113	80.0-126	
Styrene	40.0	43.5	109	80.0-123	
tert-Butylbenzene	40.0	43.9	110	79.0-129	
Tetrachloroethene	40.0	41.1	103	78.0-122	
Tetrahydrofuran	400	449	112	66.0-134	
Toluene	40.0	42.8	107	80.0-121	
trans-1,2-Dichloroethene	40.0	42.3	106	80.0-121	
trans-1,3-Dichloropropene	40.0	44.4	111	78.0-125	
trans-1,4-Dichloro-2-butene	100	115	115	57.0-153	
Trichloroethene	40.0	40.7	102	78.0-121	
Trichlorofluoromethane	40.0	40.7	102	65.0-135	
Vinyl Chloride	40.0	46.4	116	72.0-124	
Xylenes, Total	120	130	108	80.0-121	
(S) 1,2-Dichloroethane-d4			*99.9*	*80.0-125*	
(S) 4-Bromofluorobenzene			*103*	*75.0-120*	
(S) Toluene-d8			*103*	*80.0-120*	

L988584-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988584-09 04/25/18 19:48 • (MS) R3304866-3 04/25/18 16:43 • (MSD) R3304866-4 04/25/18 17:07

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
1,1,1,2-Tetrachloroethane	40.0	U	39.7	39.4	99.2	98.5	1	75.0-125			0.757	30
1,1,1-Trichloroethane	40.0	U	40.3	39.7	101	99.2	1	75.0-125			1.58	30
1,1,2,2-Tetrachloroethane	40.0	U	43.1	43.2	108	108	1	75.0-125			0.435	30
1,1,2-Trichloroethane	40.0	U	42.3	41.5	106	104	1	75.0-125			2.06	30
1,1,2-Trichlorotrifluoroethane	40.0	U	41.8	42.4	104	106	1	75.0-125			1.34	30
1,1-Dichloroethane	40.0	U	42.1	41.1	105	103	1	75.0-125			2.43	30
1,1-Dichloroethene	40.0	U	43.7	42.9	109	107	1	69.0-136			1.96	30
1,1-Dichloropropene	40.0	U	41.8	41.4	104	103	1	75.0-125			0.972	30
1,2,3-Trichlorobenzene	40.0	U	41.4	41.3	104	103	1	51.0-132			0.194	30
1,2,3-Trichloropropane	40.0	U	41.9	41.6	105	104	1	75.0-125			0.791	30
1,2,4-Trichlorobenzene	40.0	U	42.4	42.1	106	105	1	55.0-125			0.658	30
1,2,4-Trimethylbenzene	40.0	U	44.3	44.3	111	111	1	71.0-125			0.111	30
1,2-Dibromo-3-Chloropropane	100	U	106	107	106	107	1	69.0-130			1.02	30
1,2-Dibromoethane	40.0	U	42.4	42.4	106	106	1	75.0-125			0.0137	30
1,2-Dichlorobenzene	40.0	U	39.9	40.4	99.8	101	1	75.0-125			1.32	30
1,2-Dichloroethane	40.0	U	37.5	36.5	93.6	91.3	1	75.0-125			2.49	30
1,2-Dichloropropane	40.0	U	42.6	42.1	106	105	1	75.0-125			1.20	30
1,3,5-Trimethylbenzene	40.0	U	43.3	43.4	108	109	1	70.0-125			0.383	30
1,3-Dichlorobenzene	40.0	U	41.7	41.5	104	104	1	70.0-125			0.401	30
1,3-Dichloropropane	40.0	U	42.4	41.7	106	104	1	75.0-125			1.66	30
1,4-Dichlorobenzene	40.0	U	38.2	38.9	95.4	97.3	1	73.0-125			1.96	30
2,2-Dichloropropane	40.0	U	43.4	42.4	108	106	1	74.0-125			2.31	30
2-Butanone (MEK)	200	U	226	221	113	111	1	63.0-141			1.88	30
2-Chlorotoluene	40.0	U	42.3	43.7	106	109	1	73.0-125			3.25	30
2-Hexanone	200	U	230	224	115	112	1	63.0-148			2.49	30
4-Chlorotoluene	40.0	U	40.2	40.2	100	101	1	73.0-125			0.163	30
4-Methyl-2-pentanone (MIBK)	200	U	233	229	117	114	1	66.0-138			1.86	30
Acetone	200	3.81	216	209	106	103	1	61.0-133			3.40	30
Acrylonitrile	400	U	471	457	118	114	1	74.0-131			2.99	30
Benzene	40.0	U	42.2	41.9	106	105	1	75.0-125			0.823	30
Bromobenzene	40.0	U	40.6	40.9	101	102	1	75.0-125			0.743	30
Bromochloromethane	40.0	U	43.7	42.8	109	107	1	75.0-125			2.07	30
Bromodichloromethane	40.0	U	41.8	40.9	104	102	1	72.0-132			2.17	30
Bromoform	40.0	U	40.8	40.6	102	102	1	75.0-125			0.424	30
Bromomethane	40.0	U	72.0	71.2	180	178	1	30.0-150	J5	J5	1.18	30
Carbon Disulfide	40.0	U	45.0	44.8	113	112	1	68.0-129			0.381	30
Carbon Tetrachloride	40.0	U	40.1	39.7	100	99.3	1	75.0-127			1.01	30
Chlorobenzene	40.0	U	39.8	40.3	99.6	101	1	75.0-125			1.06	30
Chloroethane	40.0	U	50.3	49.3	126	123	1	75.0-125	J5		2.04	30
Chloroform	40.0	U	41.2	40.6	103	101	1	75.0-125			1.55	30

L988584-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988584-09 04/25/18 19:48 • (MS) R3304866-3 04/25/18 16:43 • (MSD) R3304866-4 04/25/18 17:07

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloromethane	40.0	U	52.7	51.4	132	129	1	54.0-125	J5	J5	2.33	30
Cis-1,2-Dichloroethene	40.0	U	43.2	42.4	108	106	1	75.0-125			1.89	30
Cis-1,3-Dichloropropene	40.0	U	44.8	44.3	112	111	1	75.0-125			1.13	30
Chlorodibromomethane	40.0	U	42.3	41.4	106	104	1	64.0-150			2.07	30
Dibromomethane	40.0	U	41.1	39.7	103	99.2	1	75.0-125			3.45	30
Dichlorodifluoromethane	40.0	U	39.8	38.3	99.6	95.7	1	44.0-144			4.00	30
Di-isopropyl ether	40.0	U	43.6	43.4	109	108	1	75.0-125			0.494	30
Ethylbenzene	40.0	U	41.3	41.7	103	104	1	75.0-125			0.996	30
Hexachloro-1,3-butadiene	40.0	U	39.0	38.8	97.6	97.0	1	30.0-150			0.625	30
Isopropylbenzene	40.0	U	42.9	42.9	107	107	1	72.0-125			0.117	30
m&p-Xylenes	80.0	U	84.4	85.2	106	106	1	75.0-125			0.935	30
Methylene Chloride	40.0	U	43.5	43.0	109	107	1	75.0-125			1.31	30
Methyl tert-butyl ether	40.0	U	42.2	41.2	105	103	1	75.0-125			2.45	30
Naphthalene	40.0	0.124	41.9	41.9	104	104	1	61.0-132			0.0603	30
n-Butylbenzene	40.0	U	44.3	44.7	111	112	1	53.0-129			0.895	30
n-Propylbenzene	40.0	U	42.7	43.2	107	108	1	70.0-125			1.03	30
o-Xylene	40.0	U	42.1	42.8	105	107	1	75.0-125			1.57	30
p-Isopropyltoluene	40.0	U	41.2	41.7	103	104	1	61.0-125			1.23	30
sec-Butylbenzene	40.0	U	43.9	44.4	110	111	1	61.0-125			1.09	30
Styrene	40.0	U	42.4	42.8	106	107	1	75.0-125			1.05	30
tert-Butylbenzene	40.0	U	43.0	43.5	108	109	1	66.0-125			0.991	30
Tetrachloroethene	40.0	U	40.6	40.6	102	101	1	68.0-126			0.106	30
Tetrahydrofuran	400	U	459	448	115	112	1	74.0-128			2.50	30
Toluene	40.0	U	42.2	42.1	105	105	1	75.0-125			0.285	30
trans-1,2-Dichloroethene	40.0	U	42.1	42.2	105	105	1	73.0-127			0.0988	30
trans-1,3-Dichloropropene	40.0	U	44.6	43.7	112	109	1	75.0-128			2.06	30
trans-1,4-Dichloro-2-butene	100	U	111	112	111	112	1	75.0-125			0.216	30
Trichloroethene	40.0	U	40.9	40.9	102	102	1	71.0-125			0.112	30
Trichlorofluoromethane	40.0	U	41.2	40.4	103	101	1	70.0-125			1.93	30
Vinyl Chloride	40.0	U	48.8	47.7	122	119	1	72.0-129			2.35	30
Xylenes, Total	120	U	127	128	105	107	1	75.0-125			1.18	30
(S) 1,2-Dichloroethane-d4					*99.6*	*101*		*80.0-125*				
(S) 4-Bromofluorobenzene					*102*	*101*		*75.0-120*				
(S) Toluene-d8					*102*	*102*		*80.0-120*				

Method Blank (MB)

(MB) R3305612-1 04/28/18 11:13

Analyte	MB Result ug/l	**MB Qualifier**	MB MDL ug/l	MB RDL ug/l
C12-C22 Hydrocarbons	U		33.0	100
C22-C32 Hydrocarbons	U		33.0	100
C32-C40 Hydrocarbons	U		33.0	100
(S) o-Terphenyl	*84.5*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305612-2 04/28/18 11:29 • (LCSD) R3305612-3 04/28/18 11:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	**LCS Qualifier**	**LCSD Qualifier**	RPD %	RPD Limits %
C22-C32 Hydrocarbons	750	436	450	58.2	60.0	50.0-150			3.20	20
C12-C22 Hydrocarbons	750	470	474	62.6	63.2	50.0-150			0.981	20
(S) o-Terphenyl				*90.7*	*90.4*	*52.0-156*				

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3305871-1 04/30/18 09:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C12-C22 Hydrocarbons	U		0.733	4.00
C22-C32 Hydrocarbons	U		1.33	4.00
C32-C40 Hydrocarbons	U		1.33	4.00
(S) o-Terphenyl	*70.3*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305871-2 04/30/18 09:39 • (LCSD) R3305871-3 04/30/18 09:54

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C22-C32 Hydrocarbons	25.0	16.0	15.7	63.8	62.6	50.0-150			1.85	20
C12-C22 Hydrocarbons	25.0	14.9	14.3	59.6	57.3	50.0-150			4.07	20
(S) o-Terphenyl				*64.1*	*61.7*	*18.0-148*				

L988584-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988584-01 04/30/18 16:23 • (MS) R3305871-4 04/30/18 16:38 • (MSD) R3305871-5 04/30/18 16:54

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C22-C32 Hydrocarbons	32.7	U	20.9	18.9	64.1	57.9	1	50.0-150			10.2	20
C12-C22 Hydrocarbons	32.7	U	18.7	17.6	57.2	53.9	1	50.0-150			5.85	20
(S) o-Terphenyl					*62.5*	*56.8*		*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1] [6]	90010
Kentucky [2]	16
Louisiana	AI30792
Louisiana [1]	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico [1]	n/a
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [3]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee [1] [4]	2006
Texas	T 104704245-17-14
Texas [5]	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

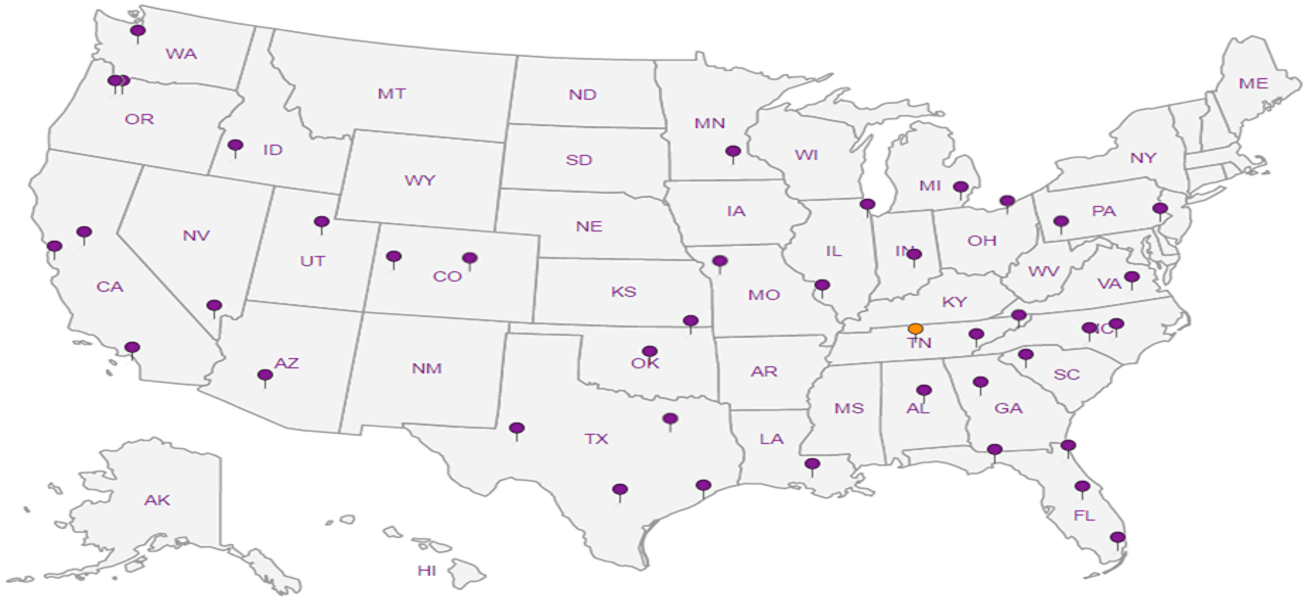
A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Terracon - Sacramento, CA

50 Goldenland Ct
Suite 100
Sacramento, CA 95834

Billing Information:

Accounts Payable
50 Goldenland Ct, Ste. 100
Sacramento, CA 95834

Pres Chk

Chain of Custody Page ___ of ___ 2

ESC LAB SCIENCES
a subsidiary of Pace

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 988584

Ta E228

Acctnum: **TERRSCA**
Template: **T135101**
Prelogin: **P648808**
TSR: **110 - Brian Ford**
PB:
Shipped Via:

Report to:
Sadie Bodiford / Kristin Stout

Email To: **sadie.bodiford@terracon.com** Kristin.Stout@terracon.com

Project Description: Village Green

City/State Collected:

Phone: **916-246-5079**
Fax:

Client Project #
R1187737

Lab Project #
TERRSCA-R1187737

Collected by (print): Patrick Keicher

Site/Facility ID #

P.O. #

Collected by (signature): Patrick

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROCAER DRO/ORO 4ozClr-NoPres	GROCA GRO 2ozClr-NoPres	V8260 VOCs 2ozClr-NoPres	DRO/ORO 40 mL Amb-HCL-BT	GROCA GRO 40mL Amb-HCL	V8260LL VOCs 40mL Amb-HCl					Remarks	Sample # (lab only)
SGP1-4.5-5	G	SS	5	4-24-18	11:00	2	✓	✓	✓									-01
SGP2-4.5-5	G	SS	5	4-24-18	9:30	2	✓	✓	✓									-02
SGP3-4.5-5	G	SS	5	4-24-18	11:15	2	✓	✓	✓									-03
TSW1-13-14	G	SS	14	4-24-18	12:45	2	✓	✓	✓									-04
TSW2-16-17	G	SS	17	4-24-18	10:15	2	✓	✓	✓									-05
TSW3-4-5	G	SS	5	4-24-18	11:45	2	✓	✓	✓									-06
TSW3-10-11	G	SS	11	4-24-18	11:50	2	✓	✓	✓									-07
TSW3-GW	G	~~SS~~ GW	N/A	4-24-18	13:45	7				✓	✓	✓						-08
TSW2-GW	G	~~SS~~ GW	N/A	4-24-18	14:15	7				✓	✓	✓						-09
TSW1-GW	G	~~SS~~ GW	N/A	4-24-18	16:00	7				✓	✓	✓						-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier __ ______

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: ✓NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature) Patrick | Date: ~~4-24~~ 4-25-18 | Time: 7:00 | Received by: (Signature)

Relinquished by : (Signature) | Date: 4-25-18 | Time: 9:45 | Received by: (Signature) Sadie Bodiford 4-25-18 10:40

Relinquished by : (Signature) Sadie Bodiford | Date: 4-25-18 | Time: 10:40 | Received for lab by: (Signature) 600

Trip Blank Received: ~~Yes~~ / No
HCL / MeoH
TBR
l

Temp: 1.7 °C Bottles Received: 14+TB

Date: 4/26/18 Time: 845

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK

ESC 042518 1040 Relinquished by ESC 042518 1600

L988584

ESC LAB SCIENCES a subsidiary of Pace	Document Name: **CA Regulated Soil Notification**	Document Revised: 03April2018 Page 1 of 1
	Document No.: **F-DAV-C-044-Rev.02**	Issuing Authority: ESC Lab Sciences - Davis Quality Office

USDA / APHIS regulates material with organic matter, including soil, from specific counties that have invasive species, pests, or plant diseases present in the county. In order to process your project, we need to determine if special handling applies to your project.

Any soils received without this completed form cannot be received or processed until the site address is confirmed.

Receipt of Soils from California:

Are samples soil or other regulated material?

☒ Yes ☐ No If no, matrix description: ____________________

County:

☒ Alameda ☐ Contra Costa ☐ Humboldt ☐ Lake ☐ Los Angeles ☐ Marin
☐ Mendocino ☐ Monterey ☐ Napa ☐ Orange ☐ Riverside ☐ San Francisco
☐ San Mateo ☐ Santa Clara ☐ Santa Cruz ☐ Solano ☐ Sonoma ☐ Trinity

☐ Other (specify): ____________________

(If soils are from one of the 18 counties specified above, the site address is required.)

Site Address(es): 16015 Via Arriba / 596 Paseo Grande / 550 Via Mercado, San Lorenzo, Alameda County, Ca.

To be completed by ESC Lab Sciences – Davis:

(Permit # P330-16-00182 / Compliance Agreement #P525-160513-004 CAF)

Lab # L 988584

Are Samples Regulated? ☐ No ☒ Yes (If yes, complete form)

Regulated for? ☒ Phytophthora Ramorum ☐ Fire Ants ☐ Fruit Flies

Amount of soil received: ~ ~~1500~~ 042518 ~2,000 grams

Received on: 4/25/18

Will any analysis be subcontracted? ☒ Yes ☐ No

If yes, complete the following for each subcontract lab

Subcontract Lab	Amount shipped
ESC - Tennessee	~1,500g.

Sub lab notified samples are regulated and shipment sent with receiving lab's Soil Permit / Compliance Agreement?

☒ Yes 042518 (initial / date)
☐ Yes ____________ (initial / date)
☐ Yes ____________ (initial / date)
☐ Yes ____________ (initial / date)

Initial / date after a copy of form has been sent to Anthony Jackson, USDA APHIS PPQ 042518

Brian Ford

From: Stout, Kristin A <Kristin.Stout@terracon.com>
Sent: Wednesday, April 25, 2018 7:46 PM
To: Brian Ford
Subject: RE: R1187737 - L988584

Categories: Revise report or login

Brian –

These soil samples were picked up this morning. Please revise COC to place soil sample TSW3-4-5 on hold. Thank you.

Kristin Stout
Environmental Scientist I Due Diligence Lead

Terracon
50 Goldenland Court, Suite 100 I Sacramento, California 95834
D (916) 246 5098 I F (916) 928 4697 I M (949) 280 3301
kristin.stout@terracon.com I **terracon.com**

Terracon provides environmental, facilities, geotechnical, and materials consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

ANALYTICAL REPORT

May 02, 2018

Terracon - Sacramento, CA

Sample Delivery Group:	L988942
Samples Received:	04/26/2018
Project Number:	R1187337
Description:	Village Green

Report To:

Kristin Stout
50 Goldenland Ct
Suite 100
Sacramento, CA 95834

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

TABLE OF CONTENTS

SAMPLE SUMMARY

SGP1 L988942-01 Air

Collected by	Collected date/time	Received date/time
Patrick Keicher	04/24/18 14:15	04/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1103965	2	04/27/18 18:31	04/27/18 18:31	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1104403	25	04/28/18 13:55	04/28/18 13:55	MBF
Organic Compounds (GC) by Method D1946	WG1105258	1	05/01/18 13:51	05/01/18 13:51	MEL

SGP2 L988942-02 Air

Collected by	Collected date/time	Received date/time
Patrick Keicher	04/24/18 15:18	04/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1103965	2	04/27/18 19:15	04/27/18 19:15	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1104403	100	04/28/18 14:42	04/28/18 14:42	MBF
Organic Compounds (GC) by Method D1946	WG1105258	1	05/01/18 14:01	05/01/18 14:01	MEL

SGP3 L988942-03 Air

Collected by	Collected date/time	Received date/time
Patrick Keicher	04/24/18 14:45	04/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1103965	2	04/27/18 20:00	04/27/18 20:00	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1104403	25	04/28/18 15:30	04/28/18 15:30	MBF
Organic Compounds (GC) by Method D1946	WG1105258	1	05/01/18 14:45	05/01/18 14:45	MEL

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford

Brian Ford
Technical Service Representative

SAMPLE RESULTS - 01

L988942

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	31.2	74.1	204	484		25	WG1104403
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1103965
Benzene	71-43-2	78.10	0.400	1.28	1.71	5.45		2	WG1103965
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1103965
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1103965
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1103965
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1103965
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1103965
Carbon disulfide	75-15-0	76.10	0.400	1.24	4.03	12.5		2	WG1103965
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1103965
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1103965
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1103965
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1103965
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1103965
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1103965
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG1103965
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1103965
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1103965
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1103965
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1103965
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1103965
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1103965
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1103965
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1103965
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1103965
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1103965
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1103965
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1103965
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1103965
1,4-Dioxane	123-91-1	88.10	0.400	1.44	0.672	2.42		2	WG1103965
Ethanol	64-17-5	46.10	1.26	2.38	18.8	35.4		2	WG1103965
Ethylbenzene	100-41-4	106	0.400	1.73	17.5	75.9		2	WG1103965
4-Ethyltoluene	622-96-8	120	0.400	1.96	1.90	9.32		2	WG1103965
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1103965
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	ND	ND		2	WG1103965
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1103965
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1103965
Heptane	142-82-5	100	0.400	1.64	0.659	2.70		2	WG1103965
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1103965
n-Hexane	110-54-3	86.20	0.400	1.41	1.88	6.64		2	WG1103965
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1103965
Methylene Chloride	75-09-2	84.90	0.400	1.39	4.95	17.2		2	WG1103965
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1103965
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	8.11	23.9		2	WG1103965
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1103965
Methyl methacrylate	80-62-6	100.12	0.400	1.64	0.810	3.32		2	WG1103965
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1103965
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1103965
2-Propanol	67-63-0	60.10	2.50	6.15	9.16	22.5		2	WG1103965
Propene	115-07-1	42.10	0.800	1.38	10.9	18.7		2	WG1103965
Styrene	100-42-5	104	0.400	1.70	1.34	5.69		2	WG1103965
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1103965
Tetrachloroethylene	127-18-4	166	5.00	33.9	205	1390		25	WG1104403
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	1.32	3.89		2	WG1103965
Toluene	108-88-3	92.10	0.400	1.51	10.1	37.9		2	WG1103965
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1103965

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1103965
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1103965
Trichloroethylene	79-01-6	131	0.400	2.14	2.24	12.0		2	WG1103965
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	2.81	13.8		2	WG1103965
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	0.801	3.93		2	WG1103965
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1103965
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1103965
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1103965
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1103965
m&p-Xylene	1330-20-7	106	0.800	3.47	69.6	302		2	WG1103965
o-Xylene	95-47-6	106	0.400	1.73	26.8	116		2	WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*106*				WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*93.0*				WG1104403

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	16.5	B	1	WG1105258
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1105258
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1105258
Methane	74-82-8	16	0.400	ND		1	WG1105258

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2.50	5.94	27.6	65.6		2	WG1103965
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1103965
Benzene	71-43-2	78.10	0.400	1.28	0.633	2.02		2	WG1103965
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1103965
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1103965
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1103965
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1103965
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1103965
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG1103965
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1103965
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1103965
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1103965
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1103965
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1103965
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1103965
Cyclohexane	110-82-7	84.20	0.400	1.38	0.865	2.98		2	WG1103965
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1103965
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1103965
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1103965
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1103965
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1103965
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1103965
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1103965
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1103965
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1103965
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1103965
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1103965
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1103965
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1103965
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1103965
Ethanol	64-17-5	46.10	1.26	2.38	9.96	18.8		2	WG1103965
Ethylbenzene	100-41-4	106	0.400	1.73	2.60	11.3		2	WG1103965
4-Ethyltoluene	622-96-8	120	0.400	1.96	0.497	2.44		2	WG1103965
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1103965
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	ND	ND		2	WG1103965
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1103965
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1103965
Heptane	142-82-5	100	0.400	1.64	0.962	3.94		2	WG1103965
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1103965
n-Hexane	110-54-3	86.20	0.400	1.41	2.55	8.99		2	WG1103965
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1103965
Methylene Chloride	75-09-2	84.90	0.400	1.39	5.89	20.5		2	WG1103965
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1103965
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	3.55	10.5		2	WG1103965
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1103965
Methyl methacrylate	80-62-6	100.12	0.400	1.64	0.406	1.66		2	WG1103965
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1103965
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1103965
2-Propanol	67-63-0	60.10	125	307	898	2210		100	WG1104403
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG1103965
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1103965
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1103965
Tetrachloroethylene	127-18-4	166	0.400	2.72	0.688	4.67		2	WG1103965
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	0.920	2.71		2	WG1103965
Toluene	108-88-3	92.10	0.400	1.51	1.15	4.34		2	WG1103965
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1103965

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1103965
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1103965
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1103965
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	0.686	3.37		2	WG1103965
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1103965
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1103965
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1103965
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1103965
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1103965
m&p-Xylene	1330-20-7	106	0.800	3.47	11.3	49.1		2	WG1103965
o-Xylene	95-47-6	106	0.400	1.73	4.27	18.5		2	WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.9*				WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*92.0*				WG1104403

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	15.4	B	1	WG1105258
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1105258
Carbon Dioxide	124-38-9	44.01	0.500	1.80		1	WG1105258
Methane	74-82-8	16	0.400	ND		1	WG1105258

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	31.2	74.1	230	547		25	WG1104403
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1103965
Benzene	71-43-2	78.10	0.400	1.28	1.79	5.71		2	WG1103965
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1103965
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1103965
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1103965
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1103965
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1103965
Carbon disulfide	75-15-0	76.10	0.400	1.24	1.85	5.76		2	WG1103965
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1103965
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1103965
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1103965
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1103965
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1103965
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1103965
Cyclohexane	110-82-7	84.20	0.400	1.38	0.482	1.66		2	WG1103965
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1103965
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1103965
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1103965
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1103965
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1103965
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1103965
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1103965
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1103965
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1103965
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1103965
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1103965
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1103965
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1103965
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1103965
Ethanol	64-17-5	46.10	1.26	2.38	5.84	11.0		2	WG1103965
Ethylbenzene	100-41-4	106	0.400	1.73	10.3	44.8		2	WG1103965
4-Ethyltoluene	622-96-8	120	0.400	1.96	1.18	5.79		2	WG1103965
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1103965
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	ND	ND		2	WG1103965
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1103965
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1103965
Heptane	142-82-5	100	0.400	1.64	1.37	5.60		2	WG1103965
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1103965
n-Hexane	110-54-3	86.20	0.400	1.41	2.23	7.86		2	WG1103965
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1103965
Methylene Chloride	75-09-2	84.90	0.400	1.39	4.19	14.5		2	WG1103965
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1103965
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	2.91	8.57		2	WG1103965
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1103965
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1103965
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1103965
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1103965
2-Propanol	67-63-0	60.10	2.50	6.15	7.45	18.3		2	WG1103965
Propene	115-07-1	42.10	0.800	1.38	7.62	13.1		2	WG1103965
Styrene	100-42-5	104	0.400	1.70	0.857	3.64		2	WG1103965
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1103965
Tetrachloroethylene	127-18-4	166	0.400	2.72	1.17	7.98		2	WG1103965
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	1.30	3.82		2	WG1103965
Toluene	108-88-3	92.10	0.400	1.51	7.99	30.1		2	WG1103965
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1103965

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (MS) by Method TO-15

	CAS #	Mol. Wt.	RDL1	RDL2	Result	Result	Qualifier	Dilution	Batch
Analyte			ppbv	ug/m3	ppbv	ug/m3			
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1103965
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1103965
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1103965
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	1.64	8.04		2	WG1103965
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	0.453	2.22		2	WG1103965
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1103965
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1103965
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1103965
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1103965
m&p-Xylene	1330-20-7	106	0.800	3.47	42.7	185		2	WG1103965
o-Xylene	95-47-6	106	0.400	1.73	16.0	69.2		2	WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*109*				WG1103965
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*91.7*				WG1104403

Organic Compounds (GC) by Method D1946

	CAS #	Mol. Wt.	RDL	Result	Qualifier	Dilution	Batch
Analyte			%	%			
Oxygen	7782-44-7	32	2.00	16.2	B	1	WG1105258
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1105258
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1105258
Methane	74-82-8	16	0.400	ND		1	WG1105258

Method Blank (MB)

(MB) R3305489-3 04/27/18 10:44

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.0569	1.25
Allyl Chloride	U		0.0546	0.200
Benzene	U		0.0460	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0436	0.200
Bromoform	U		0.0786	0.600
Bromomethane	U		0.0609	0.200
1,3-Butadiene	U		0.0563	2.00
Carbon disulfide	U		0.0544	0.200
Carbon tetrachloride	U		0.0585	0.200
Chlorobenzene	U		0.0601	0.200
Chloroethane	U		0.0489	0.200
Chloroform	U		0.0574	0.200
Chloromethane	U		0.0544	0.200
2-Chlorotoluene	U		0.0605	0.200
Cyclohexane	U		0.0534	0.200
Dibromochloromethane	U		0.0494	0.200
1,2-Dibromoethane	U		0.0185	0.200
1,2-Dichlorobenzene	U		0.0603	0.200
1,3-Dichlorobenzene	U		0.0597	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0616	0.200
1,1-Dichloroethane	U		0.0514	0.200
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
1,2-Dichloropropane	U		0.0599	0.200
cis-1,3-Dichloropropene	U		0.0588	0.200
trans-1,3-Dichloropropene	U		0.0435	0.200
1,4-Dioxane	U		0.0554	0.200
Ethylbenzene	U		0.0506	0.200
4-Ethyltoluene	U		0.0666	0.200
Trichlorofluoromethane	U		0.0673	0.200
Dichlorodifluoromethane	U		0.0601	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0687	0.200
1,2-Dichlorotetrafluoroethane	U		0.0458	0.200
Heptane	U		0.0626	0.200
Hexachloro-1,3-butadiene	U		0.0656	0.630
n-Hexane	U		0.0457	0.200
Isopropylbenzene	U		0.0563	0.200

Method Blank (MB)

(MB) R3305489-3 04/27/18 10:44

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	U		0.0465	0.200
Methyl Butyl Ketone	U		0.0682	1.25
2-Butanone (MEK)	U		0.0493	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0650	1.25
Methyl Methacrylate	U		0.0773	0.200
MTBE	U		0.0505	0.200
Naphthalene	U		0.154	0.630
2-Propanol	U		0.0882	1.25
Propene	U		0.0932	0.400
Styrene	U		0.0465	0.200
1,1,2,2-Tetrachloroethane	U		0.0576	0.200
Tetrachloroethylene	U		0.0497	0.200
Tetrahydrofuran	U		0.0508	0.200
Toluene	U		0.0499	0.200
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0665	0.200
1,1,2-Trichloroethane	U		0.0287	0.200
Trichloroethylene	U		0.0545	0.200
1,2,4-Trimethylbenzene	U		0.0483	0.200
1,3,5-Trimethylbenzene	U		0.0631	0.200
2,2,4-Trimethylpentane	U		0.0456	0.200
Vinyl chloride	U		0.0457	0.200
Vinyl Bromide	U		0.0727	0.200
Vinyl acetate	U		0.0639	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
Ethanol	U		0.0832	0.630
(S) 1,4-Bromofluorobenzene	*97.7*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305489-1 04/27/18 09:13 • (LCSD) R3305489-2 04/27/18 09:57

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	3.32	3.38	88.6	90.2	52.0-158			1.84	25
Propene	3.75	3.65	3.71	97.3	99.0	54.0-155			1.72	25
Dichlorodifluoromethane	3.75	3.50	3.70	93.3	98.5	69.0-143			5.49	25
1,2-Dichlorotetrafluoroethane	3.75	3.74	3.81	99.8	101	70.0-130			1.63	25
Chloromethane	3.75	3.71	3.81	99.0	102	70.0-130			2.60	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305489-1 04/27/18 09:13 • (LCSD) R3305489-2 04/27/18 09:57

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	3.81	3.88	102	104	70.0-130			1.81	25
1,3-Butadiene	3.75	3.96	3.91	106	104	70.0-130			1.38	25
Bromomethane	3.75	4.12	4.17	110	111	70.0-130			1.26	25
Chloroethane	3.75	3.78	3.80	101	101	70.0-130			0.555	25
Trichlorofluoromethane	3.75	3.76	3.81	100	102	70.0-130			1.47	25
1,1,2-Trichlorotrifluoroethane	3.75	3.78	3.83	101	102	70.0-130			1.38	25
1,1-Dichloroethene	3.75	3.77	3.82	100	102	70.0-130			1.43	25
1,1-Dichloroethane	3.75	3.74	3.80	99.8	101	70.0-130			1.48	25
Acetone	3.75	3.69	3.74	98.3	99.6	70.0-130			1.37	25
2-Propanol	3.75	3.77	3.81	101	102	66.0-150			1.00	25
Carbon disulfide	3.75	3.75	3.81	100	102	70.0-130			1.57	25
Methylene Chloride	3.75	3.63	3.69	96.7	98.5	70.0-130			1.84	25
MTBE	3.75	3.80	3.84	101	102	70.0-130			1.00	25
trans-1,2-Dichloroethene	3.75	3.77	3.81	100	102	70.0-130			1.16	25
n-Hexane	3.75	3.76	3.83	100	102	70.0-130			2.00	25
Vinyl acetate	3.75	4.10	4.15	109	111	70.0-130			1.27	25
Methyl Ethyl Ketone	3.75	3.89	3.96	104	105	70.0-130			1.68	25
cis-1,2-Dichloroethene	3.75	3.80	3.85	101	103	70.0-130			1.37	25
Chloroform	3.75	3.74	3.82	99.8	102	70.0-130			2.03	25
Cyclohexane	3.75	3.78	3.84	101	102	70.0-130			1.55	25
1,1,1-Trichloroethane	3.75	3.76	3.84	100	102	70.0-130			2.14	25
Carbon tetrachloride	3.75	3.75	3.83	100	102	70.0-130			2.00	25
Benzene	3.75	3.77	3.83	101	102	70.0-130			1.55	25
1,2-Dichloroethane	3.75	3.75	3.81	99.9	102	70.0-130			1.76	25
Heptane	3.75	3.81	3.86	101	103	70.0-130			1.51	25
Trichloroethylene	3.75	3.76	3.83	100	102	70.0-130			1.89	25
1,2-Dichloropropane	3.75	3.74	3.78	99.7	101	70.0-130			1.17	25
1,4-Dioxane	3.75	3.80	3.79	101	101	70.0-152			0.320	25
Bromodichloromethane	3.75	3.80	3.85	101	103	70.0-130			1.32	25
cis-1,3-Dichloropropene	3.75	3.88	3.91	104	104	70.0-130			0.789	25
4-Methyl-2-pentanone (MIBK)	3.75	3.82	3.89	102	104	70.0-142			1.87	25
Toluene	3.75	3.88	3.90	103	104	70.0-130			0.655	25
trans-1,3-Dichloropropene	3.75	3.96	3.98	106	106	70.0-130			0.328	25
1,1,2-Trichloroethane	3.75	3.78	3.87	101	103	70.0-130			2.27	25
Tetrachloroethylene	3.75	3.84	3.88	103	103	70.0-130			0.801	25
Methyl Butyl Ketone	3.75	4.14	4.15	110	111	70.0-150			0.193	25
Dibromochloromethane	3.75	3.90	3.93	104	105	70.0-130			0.657	25
1,2-Dibromoethane	3.75	3.92	3.94	104	105	70.0-130			0.653	25
Chlorobenzene	3.75	3.86	3.88	103	104	70.0-130			0.514	25
Ethylbenzene	3.75	3.92	4.00	105	107	70.0-130			1.94	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305489-1 04/27/18 09:13 • (LCSD) R3305489-2 04/27/18 09:57

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
m&p-Xylene	7.50	7.78	7.92	104	106	70.0-130			1.87	25
o-Xylene	3.75	3.92	3.98	105	106	70.0-130			1.46	25
Styrene	3.75	4.05	4.11	108	109	70.0-130			1.27	25
Bromoform	3.75	4.00	4.07	107	108	70.0-130			1.70	25
1,1,2,2-Tetrachloroethane	3.75	3.91	3.98	104	106	70.0-130			1.71	25
4-Ethyltoluene	3.75	4.05	4.11	108	110	70.0-130			1.58	25
1,3,5-Trimethylbenzene	3.75	3.98	4.05	106	108	70.0-130			1.77	25
1,2,4-Trimethylbenzene	3.75	4.00	4.07	107	108	70.0-130			1.74	25
1,3-Dichlorobenzene	3.75	4.08	4.16	109	111	70.0-130			1.91	25
1,4-Dichlorobenzene	3.75	4.18	4.25	112	113	70.0-130			1.59	25
Benzyl Chloride	3.75	4.43	4.49	118	120	70.0-144			1.27	25
1,2-Dichlorobenzene	3.75	4.01	4.09	107	109	70.0-130			1.92	25
1,2,4-Trichlorobenzene	3.75	4.48	4.56	120	122	70.0-155			1.81	25
Hexachloro-1,3-butadiene	3.75	3.99	4.07	106	108	70.0-145			1.93	25
Naphthalene	3.75	4.45	4.52	119	121	70.0-155			1.58	25
Allyl Chloride	3.75	3.76	3.81	100	102	70.0-130			1.42	25
2-Chlorotoluene	3.75	3.95	4.02	105	107	70.0-130			1.95	25
Methyl Methacrylate	3.75	3.87	3.91	103	104	70.0-130			1.12	25
Tetrahydrofuran	3.75	3.76	3.81	100	102	70.0-140			1.36	25
2,2,4-Trimethylpentane	3.75	3.75	3.80	100	101	70.0-130			1.43	25
Vinyl Bromide	3.75	3.76	3.83	100	102	70.0-130			2.06	25
Isopropylbenzene	3.75	3.92	3.99	105	106	70.0-130			1.63	25
(S) 1,4-Bromofluorobenzene				*100*	*101*	*60.0-140*				

Method Blank (MB)

(MB) R3305716-3 04/28/18 10:43

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.0569	1.25
2-Propanol	U		0.0882	1.25
Tetrachloroethylene	U		0.0497	0.200
(S) 1,4-Bromofluorobenzene	*89.8*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3305716-1 04/28/18 09:03 • (LCSD) R3305716-2 04/28/18 09:53

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	3.75	4.33	4.42	116	118	70.0-130			2.12	25
2-Propanol	3.75	4.23	4.34	113	116	66.0-150			2.45	25
Tetrachloroethylene	3.75	4.11	4.20	109	112	70.0-130			2.23	25
(S) 1,4-Bromofluorobenzene				*94.5*	*93.9*	*60.0-140*				

Method Blank (MB)

(MB) R3306129-3 05/01/18 11:57

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	1.78	J	0.225	2.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3306129-1 05/01/18 11:41 • (LCSD) R3306129-2 05/01/18 11:48

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	2.50	2.72	2.65	109	106	70.0-130			2.57	20
Carbon Monoxide	2.50	2.63	2.69	105	108	70.0-130			2.24	20
Carbon Dioxide	2.50	2.48	2.58	99.0	103	70.0-130			4.22	20
Methane	2.00	2.15	2.17	108	108	70.0-130			0.740	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

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* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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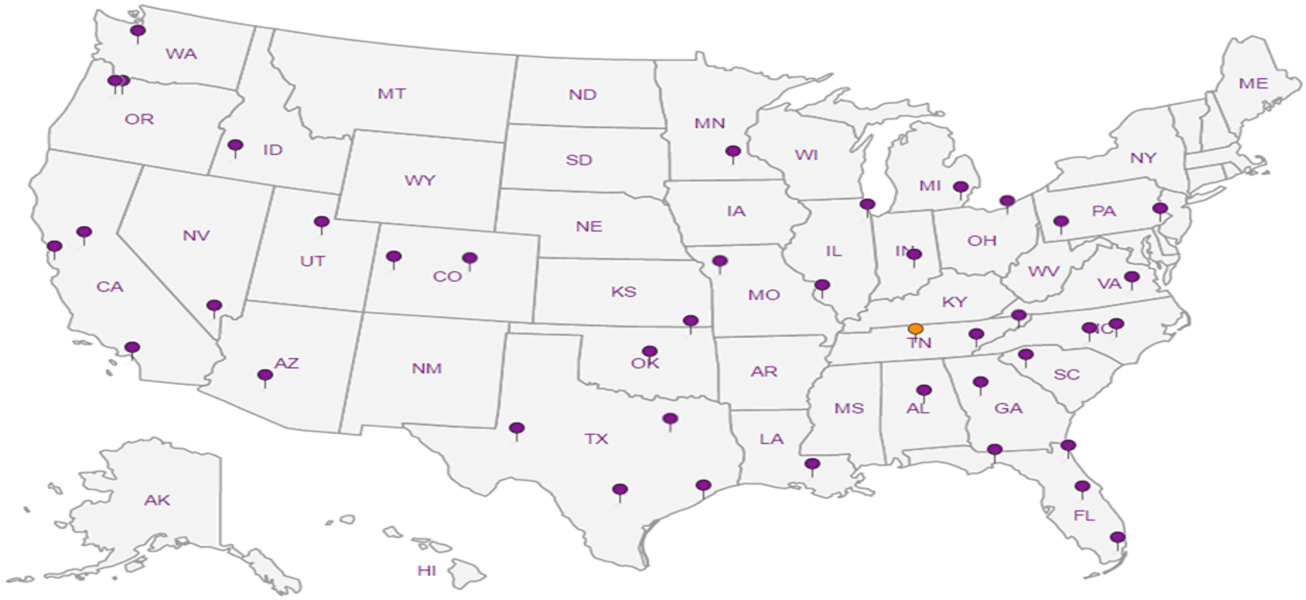

Company Name/Address:

Terracon - Sacramento, CA

50 Goldenland Ct.
Suite 100
Sacramento, CA 95834

Billing Information:

Accounts Payable
50 Goldenland Ct., Ste. 100
Sacramento, CA 95834

Chain of Custody Page ___ of ___

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M205

Acctnum: **TERRSCA**
Template: **T135267**
Prelogin: **P649189**
TSR: **110 - Brian Ford**
PB:
Shipped Via:

Report to: **Kristin Stout**

Email To: **kristin.stout @terracon.com; sadie.bodiford@terraco**

Project Description: Village Green

City/State Collected: San Lorenzo CA

Phone: **916-246-5098**
Fax:

Client Project # R1187337 ~~NB187029A~~

Lab Project # TERRSCA-~~NB187029A~~ R1187337

Collected by (print): Pat Keicher

Site/Facility ID #

P.O. #

Collected by (signature): Pat Keicher

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No [✓ Yes]
FAX? ___No ___Yes

Sample ID	Sample Description	Can #	Date	Time	Canister Pressure/Vacuum		TO-15 Summa	Fixed Gasses by ASTM			Rem./Contaminant	Sample # (lab only)
					Initial	Final						
SGP1	1L Summa	6059	4-24-18	14:15	-29	-5	/	/				-01
SGP2	1L S	7247	4-24-18	15:18	-29	-5	/	/				02
SGP3	1L S	9023	4-24-18	14:45	-30	-4	/	/				03

Remarks: **(3)1Liter summas, (3)200cc/min manifolds, (3)tubing and fittings** 4089 2100 3302

Hold #

Relinquished by: (Signature)	Date: 4-24-18	Time: 7:00	Received by: (Signature)	Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____	Condition: (lab use only) OK
Relinquished by: (Signature)	Date: 4-25-18	Time: 9:45	Received by: (Signature) Sadie Bodiford 4-25-18 10:40	Temp: AmB °C Bottles Received: 3	COC Seal Intact: ___Y ___N ___NA
Relinquished by: (Signature) Sadie Bodiford	Date: 4-25-18	Time: 10:40	Received for lab by: (Signature) 8860	Date: 4/26/18 Time: 845	pH Checked: NCF:

Recd E&Z ESC 042518 1040
Relinquished by E&Z ESC 042518 1600

ESC LAB SCIENCES

Cooler Receipt Form

Client: TERRSCA

SDG# L988942

Cooler Received/Opened On: 04 26 /18

Temperature: AmB

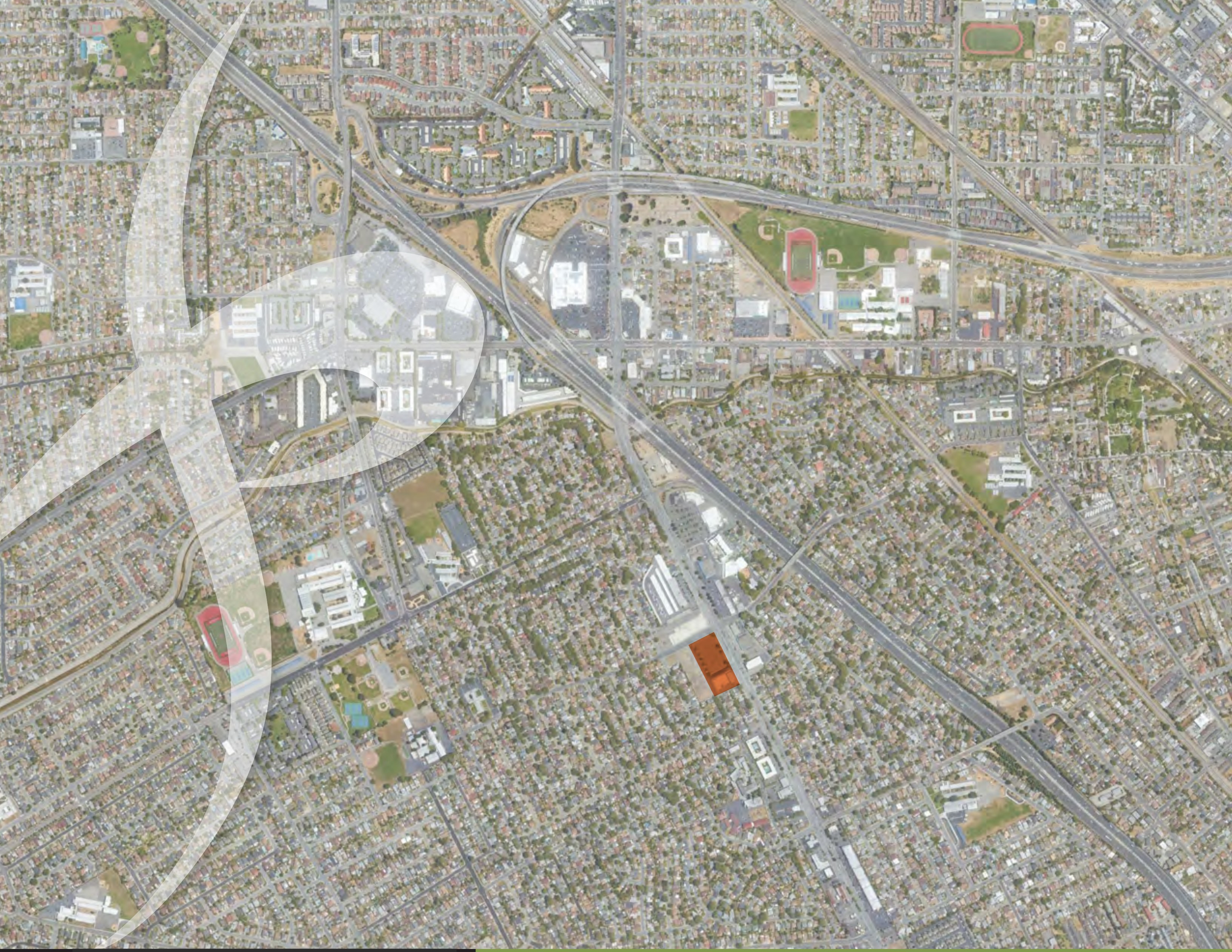
Received By: Christian Kacar

Signature:

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

Attachment E

Transportation Impact Analysis



Prepared by

FEHR & PEERS

2201 Broadway
Suite 602
Oakland, CA 94612

January 2019

Final Transportation Impact Assessment

Village Green Mixed-Use Project

Prepared for:
Alameda County
Demmon Partners
Lamphier-Gregory

Village Green Mixed-Use Project

Final Transportation Impact Analysis

Prepared for:
Alameda County
Demmon Partners
Lamphier-Gregory

January 2019

OK16-0147.00

FEHR PEERS

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1. INTRODUCTION

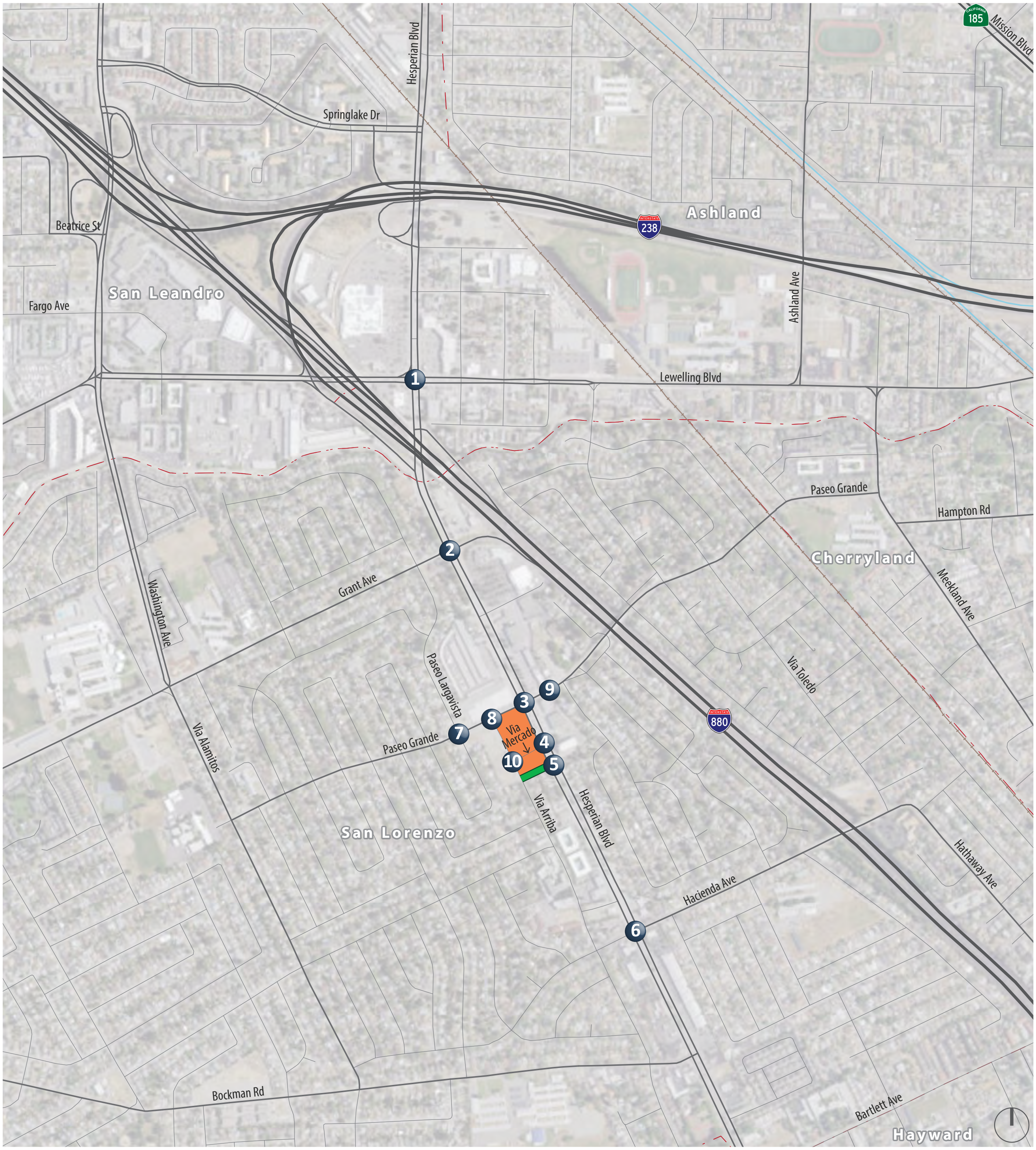
This report presents the analysis and findings of the Transportation Impact Analysis (TIA) for the Village Green Mixed-Use Project (Project) located in unincorporated Alameda County. This chapter discusses the TIA purpose, analysis methods, criteria used to identify impacts, and report organization.

1.1 Study Purpose

The purpose of this TIA is to conduct site-specific impact analysis at new and existing study intersections and evaluate the proposed Project's access, circulation, and parking. The Project site is located in San Lorenzo, an unincorporated area of Alameda County. The Project is bounded by Hesperian Boulevard to the east, Paseo Largavista to the west, Paseo Grande to the north, and Via Mercado to the south. **Figure 1** shows the Project site vicinity. The Project includes four parcels, three of which are currently vacant and one that is used as a surface parking lot. The proposed Project includes apartments, a coffee shop, a retail/commercial pad, and parking as shown on **Figure 2** (see ***Chapter 3: Project Characteristics*** for further details).

Regional access to the site is provided from Interstate-880 (I-880), with interchanges north and south of the site. Regional access is also provided from Hesperian Boulevard, which forms the eastern border of the site. Local access is provided from Paseo Grande, Paseo Largavista, Via Arriba, and Via Mercado. Project site access would be provided via the following intersections:

- On Hesperian Boulevard at a relocated Via Mercado (unsignalized, side-street stop controlled with right-turn in/right-turn out only access)
- On Paseo Largavista just south of Paseo Grande (unsignalized, side-street stop controlled with full access)
- On Paseo Grande at Via Arriba (unsignalized, side-street stop controlled with full access)
- On Via Arriba at Via Mercado (unsignalized, all-way stop controlled with full access)



LEGEND

🟧 Project Site

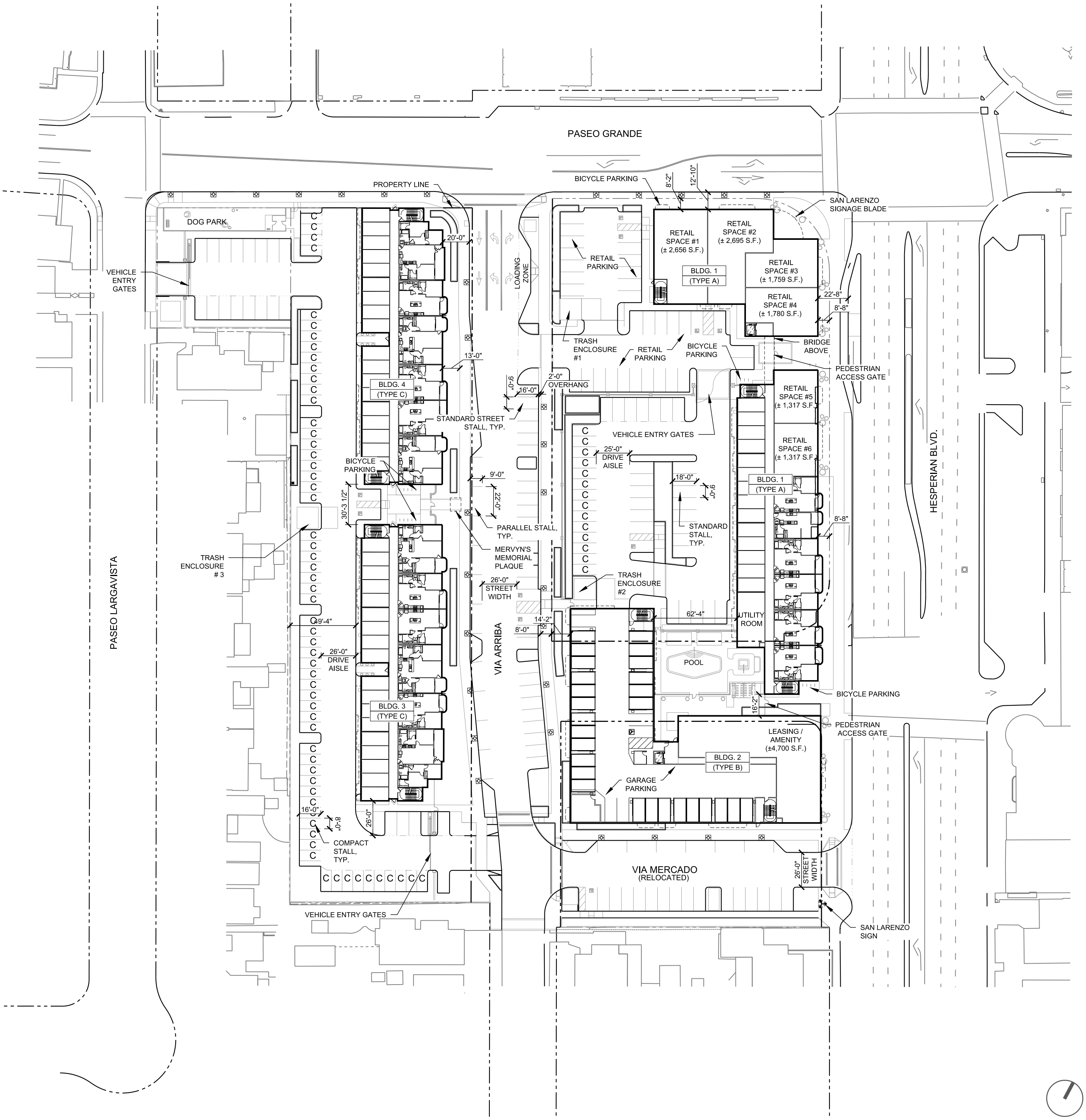
Study Intersection

🟩 Proposed Relocation of Via Mercado

Figure 1

Project Area and Study Intersection Locations

Graphics\Memo_Graphics\2018_October_Update\OK16-0147_1_ProjectArea



Site Plan Source: Architecture Design Collaborative, 1/21/19

Figure 2

Project Site Plan

1.2 Study Locations and Analysis Scenarios

The following 10 study intersections (see Figure 1) were identified based on coordination with Alameda County staff:

1. Hesperian Boulevard/Lewelling Boulevard
2. Hesperian Boulevard/Grant Avenue/I-880 Southbound On-Ramp
3. Hesperian Boulevard/Paseo Grande
4. Hesperian Boulevard/Via Mercado
5. Hesperian Boulevard/Ducey Way
6. Hesperian Boulevard/Hacienda Avenue
7. Paseo Largavista/Paseo Grande
8. Via Arriba/Paseo Grande
9. Ducey Way/Paseo Grande
10. Via Arriba/Via Mercado

For this study, the following scenarios were evaluated during the typical weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods:

- ***Existing*** – Existing (2018) conditions based on March 2018 traffic counts.
- ***Existing with Project*** – Existing (2018) conditions plus Project-related traffic.
- ***Cumulative without Project*** – Forecasts for the cumulative scenario are based on year 2040 forecasts from the Alameda County Transportation Commission (Alameda CTC) Countywide Travel Demand Model.
- ***Cumulative with Project*** – Year 2040 forecast conditions plus Project-related traffic.

1.3 Analysis Methods

The analysis results include a descriptive term known as level of service (LOS). LOS is a measure of traffic operating conditions, which varies from LOS A (indicating traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity resulting in long queues and delays). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving.

At signalized and all-way stopped controlled intersections, the LOS rating is the weighted average control delay of all movements measured in seconds per vehicle. Peak hour traffic volumes, lane configurations, and signal timing plans are used as inputs for the LOS calculations. **Table 1** summarizes the relationship between the average control delay per vehicle and LOS for signalized and unsignalized intersections. Results from the Synchro software establish delay and LOS at all intersections.

Table 1: Intersection Level of Service Thresholds

Level of Service	Signalized Intersection Control Delay (sec/veh)[1]	Unsignalized Intersection Control Delay (sec/veh)[1]	General Description
A	0 – 10.0	0 – 10.0	Little to no congestion or delays.
B	10.1 – 20.0	10.1 – 15.0	Limited congestion. Short delays.
C	20.1 – 35.0	15.1 – 25.0	Some congestion with average delays.
D	35.1 – 55.0	25.1 – 35.0	Significant congestion and delays.
E	55.1 – 80.0	35.1 – 50.0	Severe congestion and delays.
F	> 80.0	> 50.0	Total breakdown with extreme delays.

Notes:

1. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Source: *Highway Capacity Manual,* Chapter 16 (Signalized Intersections) and Chapter 17 (Unsignalized Intersections), Transportation Research Board, 2010.

Significance Criteria

Alameda County's current *Eden Area General Plan (2010)* level of service standard is to maintain LOS E or better at intersections along Alameda County Congestion Management Program (CMP) roadways (e.g., Hesperian Boulevard), and LOS D or better at intersections along non-CMP roadways. Based on this standard, automobile traffic impacts are significant if the proposed Project would:

- *Cause signalized intersection LOS on CMP roadway to degrade from LOS E or better to LOS F.*
- *Cause unsignalized intersection LOS on CMP roadway to degrade from LOS E or better to LOS F and meet the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant.*
- *Cause (a) unsignalized intersection LOS on non-CMP roadway to degrade from LOS D or better to LOS E or F and meet the MUTCD Peak Hour Signal Warrant; or (b) the LOS to degrade from LOS E to LOS F and meet the MUTCD Peak Hour Signal Warrant.*

The Alameda County Transportation Commission (Alameda CTC), the County's congestion management agency, identifies LOS E or better as acceptable for most Alameda County

CMP roadway segments, which include Hesperian Boulevard and I-880 in the Project area. The CMP roadway analysis presented in this report identifies automobile traffic impacts as significant if the proposed Project would:

- *Cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase more than 0.03 along a roadway segment that would operate at LOS F without the Project.*

The CMP also sets an LOS F standard for the following roadway segments in the study area:

- Southbound I-880 between Hegenberger Road and A Street
- Northbound I-880 between State Route 92 (SR 92) and Lewelling Boulevard
- Southbound Hesperian Boulevard between Springlake Drive and Lewelling Boulevard

The following thresholds were also considered in the evaluation of the Project from a transportation perspective:

- Would the Project substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with County design standards or incompatible uses (e.g., farm equipment)?
- Would the Project fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bicycle routes, pedestrian facilities, etc.)?
- 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?

1.4 Report Organization

This report is divided into six chapters as described below:

- **Chapter 1 – Introduction** discusses the purpose and organization of the report.
- **Chapter 2 – Existing Conditions** describes the transportation system in the Project vicinity, including the surrounding roadway network morning and evening peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection operations.
- **Chapter 3 – Project Characteristics** presents relevant Project information, including the Project components and Project trip generation, distribution, and assignment.
- **Chapter 4 – Existing with Project Conditions** addresses the Existing conditions plus the Project and discusses Project vehicular impacts.
- **Chapter 5 – Cumulative Conditions** addresses the long-term future condition, both without and with the Project, and discusses Project vehicular impacts.
- **Chapter 6 – Site Plan Review** describes Project access and circulation for all travel modes and provides recommendations to improve site access, and discusses the parking supply and estimated demand for the Project.

2. EXISTING CONDITIONS

This section describes existing transportation conditions in the study area and the analysis results of the Existing intersection operations evaluation.

2.1 Existing Roadway Network

Hesperian Boulevard, Paseo Grande, Via Mercado, Via Arriba, and Paseo Largavista provide local access to the proposed Project site; I-880 provides regional access to the site.

Interstate-880 acts as a regional spine, connecting the San Jose area to Downtown Oakland and the Bay Bridge through the East Bay Area. In the vicinity of the Project site, it provides five to six lanes in each direction, including a high occupancy vehicle lane. Access between I-880 and the Project site is provided via interchanges on Hesperian Boulevard/Lewelling Boulevard and on A Street.

Grant Avenue is an east-west collector street that extends between the East Bay Dischargers Authority Plant in the west and Hesperian Boulevard in the east. Near the Hesperian Boulevard/Grant Avenue study intersection, Grant Avenue is one lane in either direction with a posted speed limit of 25 miles-per-hour (mph). Parking is permitted along the both sides of Grant Avenue west of Paseo Largavista. Sidewalks are provided along both sides of the street, however rolled curbs allow motorists to park on the sidewalk, occasionally blocking the pedestrian right-of-way. Grant Avenue is designated as a Class III bicycle facility between Hesperian Boulevard and Washington Avenue and a Class II bicycle facility west of Washington Avenue.

Hacienda Avenue is an east-west collector street that extends between Via Alamitos in the west and just east of Via Toledo, where it becomes Hathaway Avenue. Hacienda Avenue is one lane in either direction with a posted speed limit of 25 mph. Parking is permitted along the both sides of Hacienda Avenue. Sidewalks are provided along both sides of the street, however rolled curbs allow motorists to park on the sidewalk, occasionally blocking the pedestrian right-of-way. Hacienda Avenue is designated as a Class III bicycle facility.

Hesperian Boulevard is a north-south arterial that extends through all of San Lorenzo, connecting to San Leandro in the north and Hayward to the south. It is a six-lane arterial divided by a landscaped median. Hesperian Boulevard is a major transit and commercial corridor in San Lorenzo. On-street parking is restricted on Hesperian Boulevard immediately adjacent to the proposed Project site between Paseo Grande and Via Mercado. On-street parking is generally permitted on both sides of Hesperian Boulevard south of Ducey Way and along select segments north of Paseo Grande. Sidewalks are continuous along Hesperian Boulevard and the posted speed limit is 35 mph. Caltrans designated Hesperian Boulevard as a reliever route for I-880 when I-880 is congested.

Lewelling Boulevard is an east-west two- to four-lane arterial between Anchorage Drive and Mission Boulevard (State Route 185 – SR 185). The land uses along Lewelling Boulevard alternate between commercial and residential and include San Lorenzo High School. Recent streetscape enhancements were implemented along the Lewelling Boulevard segment between Hesperian Boulevard and Meekland Avenue, including landscaped medians, widened sidewalks, bicycle lanes, and pedestrian-scale lighting. On-street parking is allowed along select segments. The posted speed limit is 30 mph.

Paseo Grande is an east-west collector street that extends from Meekland Avenue in the east to just west of Via Alamitos. Sidewalks are continuous and the posted speed limit is 25 mph. Parking is permitted along the north side of the street just west of Hesperian Boulevard and along both sides of Paseo Grande west of Paseo Largavista. Paseo Grande acts as the northern border of the Project site. Paseo Grande is designated as a Class III bicycle facility.

Paseo Largavista is a north-south local street that begins at Paseo Del Rio in the north and ends at Via Del Sol in the south. Sidewalks are continuous and the posted speed limit is 25 mph. On-street parking is permitted on both sides of the street.

Via Arriba is a north-south local street that begins at Paseo Grande in the north and ends at the Skywest Golf Course in the south. Sidewalks are continuous and the posted speed limit is 25 mph; there is on-street parking on both sides of the street. Via Arriba extends through the Project site and would remain fully accessible to the public as part of the Project.

Via Mercado is an east-west local street just 200 feet long between Via Arriba and Hesperian Boulevard. It currently has 15 angled parking spots on the south side and driveway access to the existing parking lot between Paseo Grande and Via Mercado on its north side. There are continuous sidewalks on both sides. The Project proposes to relocate Via Mercado approximately 150 feet south.

2.2 Existing Pedestrian Facilities

Pedestrian facilities within the Project vicinity include sidewalks, crosswalks, and pedestrian signal heads. The streets immediately adjacent to the Project site, Hesperian Boulevard, Paseo Grande, Via Mercado, Via Arriba and Paseo Largavista, all provide sidewalks on both sides of the street. The following pedestrian facilities are provided at Project-adjacent intersections:

- The Hesperian Boulevard/Paseo Grande intersection (Intersection #3) provides crosswalks and pedestrian signals on all four approaches. Diagonal curb ramps are provided at the south corners and directional curb ramps are provided at the north corners. Truncated domes are not provided at any of the ramps. The westbound approach has a slip lane with a pedestrian refuge island.
- The Hesperian Boulevard/Via Mercado intersection (#4) provides crosswalks and pedestrian signals on the west and south sides of the intersection. The Hesperian Boulevard median nose protrudes into the south crosswalk. Diagonal curb ramps are provided on the west side of the intersection, and a directional curb ramp is provided on the southeast corner of the intersection. Truncated domes are not provided at any of the ramps. The southbound approach has a slip lane with a pedestrian refuge island.
- The Via Arriba/Paseo Grande intersection (#7) is stop-controlled along the Via Arriba approach and provides a crosswalk on the south side of the intersection. A diagonal curb ramp is provided at the southeast corner and a bulb out and directional curb ramp is provided on the southwest corner. Truncated domes are not provided on either of the curb ramps.
- The Via Arriba/Via Mercado intersection (#9) is stop-controlled along the Via Mercado approach and provides crosswalks on the north and east sides of the intersection. Directional curb ramps are provided at the northwest and southeast corners, and a diagonal curb ramp is provided at the northeast corner. Truncated domes are not provided at any of the curb ramps.

Planned pedestrian improvements in the area include improvements on Hesperian Boulevard between Lewelling Boulevard and A Street as a part of Alameda County's Hesperian Boulevard Corridor Improvement Project. Improvements to be incorporated as part of this project include wider, decorative sidewalks and pedestrian-scale lighting; landscaping and street trees; and intersection improvements including updated traffic signals, high-visibility crosswalks, pedestrian curb ramps, and curb extensions (also known as bulb outs). This work is part of Phase II of the project, which is scheduled for completion in Fall 2021.

2.3 Existing Bicycle Facilities

Typical bicycle facilities include the following:

- Multi-Use Trails (Class I) – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically eight- to 10-feet wide excluding shoulders and are generally paved.
- Bike lanes (Class II) – These facilities provide a dedicated area for bicyclists within the paved street width using striping and appropriate signage. These facilities are typically five- to six-feet wide.
- Bike routes (Class III) – These facilities are along streets that do not provide sufficient width for dedicated bicycle lanes. Signage informs drivers to expect bicyclists.
- Separated Bikeway (Class IV) – These facilities provide a dedicated area for bicyclists within the paved street width through physically separation from vehicle traffic. Separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

There are limited bicycle facilities within the Project vicinity. Paseo Grande is a designated Class III bicycle facility with sharrows along both directions west of Paseo Largavista. While Hesperian Boulevard does not currently provide any bicycle facilities, Alameda County's Hesperian Boulevard Corridor Improvement Project identifies Class II bicycle facilities as a planned improvement on Hesperian Boulevard between Lewelling Boulevard and A Street. The current scheduled completion date for this improvement is in Fall 2021.

2.4 Existing Transit Service

AC Transit provides bus transit service within the site vicinity. The Bay Area Rapid Transit (BART) system provides rail transit.

AC Transit

Several AC Transit routes serve the area, with stops on Paseo Grande and Hesperian Boulevard within the vicinity of the Project site. The stops on Hesperian Boulevard provide a bench and shelter, while the stops on Paseo Grande provide only a bench and bus stop sign. AC Transit connects the study area to neighboring cities in the East Bay as well as to the Bay Fair BART Station. Lines 85, 93, and 97 currently service the Project site, connecting the site to Hayward, San Leandro, and Union City. All three lines provide service to BART. Additionally, AC Transit Line S provides service to San Francisco during weekday morning and evening peak periods. **Table 2** summarizes transit service near the Project site.

Alameda County's Hesperian Boulevard Corridor Improvement Project includes transit enhancements including bus shelters and transit signal prioritization at intersections.

Table 2: AC Transit Service Summary

Route	Description	Nearest Bus Stop	Weekdays		Weekends	
			Hours	Headways	Hours	Headways
Local Fixed Routes						
85	San Leandro BART, South Hayward BART, and Union Landing Shopping Center	Paseo Grande, just west of Hesperian Boulevard (NB); Hesperian Boulevard, just south of Paseo Grande (SB)	6:15 AM - 9:35 PM	60 minutes	6:55 AM to 7:55 PM	60 minutes
93	Hayward BART, Bay Fair BART, and Meekland Avenue	Paseo Grande, west of Hesperian Boulevard (WB); Paseo Grande just east of Hesperian Boulevard (EB)	5:30 AM - 8:20 PM	60 minutes	7:45 AM to 8:30 PM	60 minutes
97	Bay Fair BART to Union City BART	Hesperian Boulevard, just north of Paseo Grande (NB); Hesperian Boulevard, just south of Paseo Grande (SB)	5:55 AM - 11:55 PM	15 to 20 minutes	6:05 AM to 11:00 PM	30 minutes
Transbay Route						
S	Eden Shores, Hayward to Transbay Temporary Terminal, San Francisco	Paseo Grande, just west of Hesperian Boulevard (NB); Hesperian Boulevard, just south of Paseo Grande (SB)	5:10-7:25 AM (to SF) 4:15-7:00 PM (to Eden Shores Park)	30 minutes	N/A	N/A

Source: AC Transit, 2018.

BART

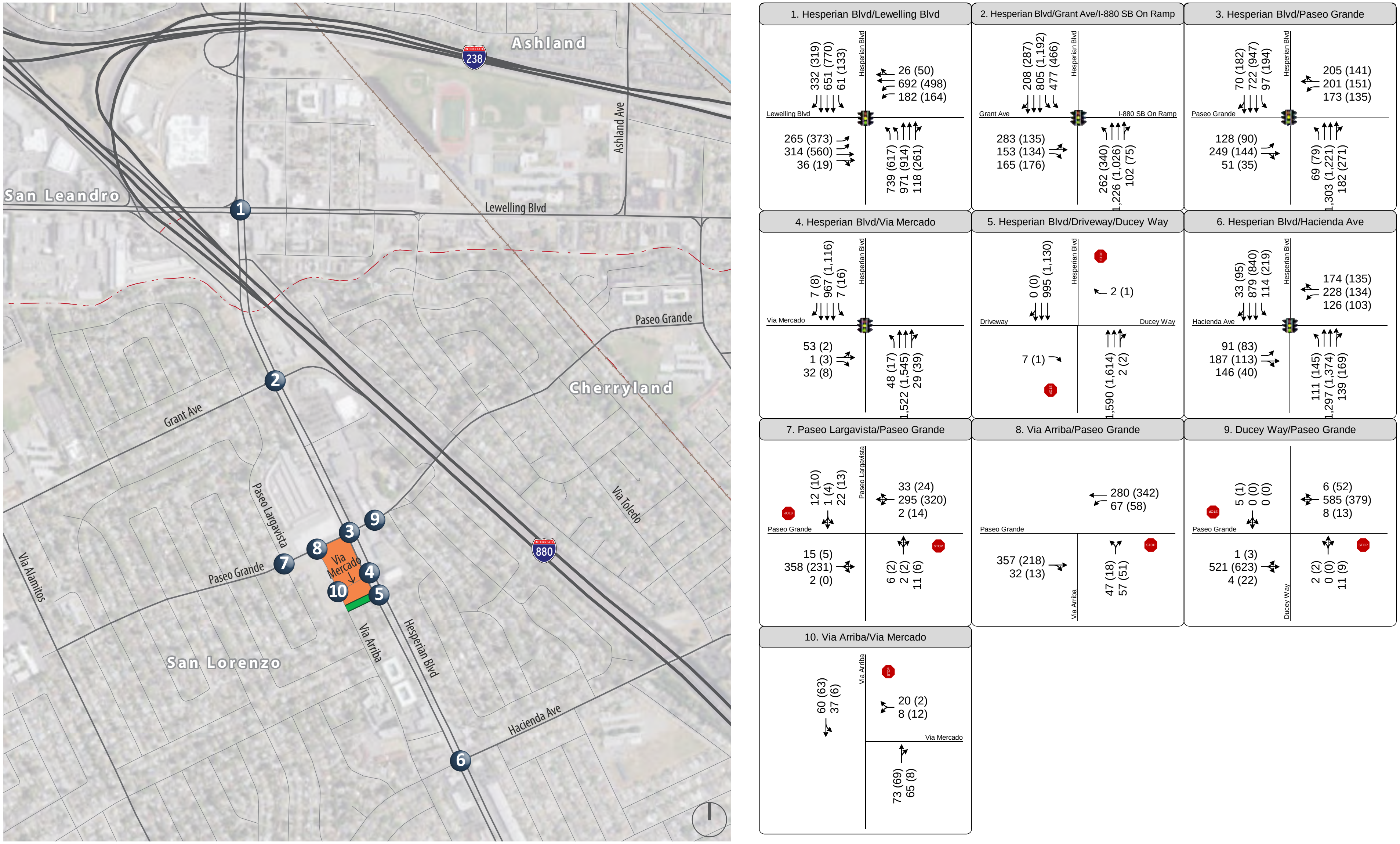
The Bay Area Rapid Transit (BART) system provides regional rail transit service connecting San Francisco, Alameda County, Contra Costa County, and parts of San Mateo County. The nearest BART station to the Project site is the Bay Fair BART Station, which is approximately one and a half miles north of the site. Direct connections to San Francisco, destinations on the Richmond and Fremont lines, and the Dublin/Pleasanton line are available from the Bay Fair BART Station. Between the hours of 6:00 AM and 6:00 PM, trains operate on less than ten-minute headways to/from San Francisco, switching to fifteen-minute headways outside of these hours.

2.5 Existing Vehicle Counts

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak-period intersection turning movement counts, including separate counts of pedestrians and bicyclists, were collected at all existing study intersections. All intersection data were collected on Tuesday, March 27, 2018, a typical weekday with local schools in session and with moderate weather and no observed traffic incidents. For the study intersections, the single hour with the highest traffic volumes during the count periods was identified. The AM peak hour in the study area is generally from 7:30 to 8:30 AM and the PM peak hour is generally from 5:00 to 6:00 PM. Peak hour intersection volumes are summarized on **Figure 3** along with existing lane configuration and traffic control. The raw traffic counts for existing conditions are provided in **Appendix A**.

2.6 Existing Intersection Operations

The traffic volumes, intersection lane configurations, and traffic controls presented on Figure 3 form the basis for the existing intersection LOS analysis. **Table 3** summarizes intersection operations under Existing Conditions at the ten study intersections. All study intersections currently operate at LOS C or better during the AM and PM peak hours, with the exception of the Hesperian Boulevard/Lewelling Boulevard intersection, which operates at LOS D during the AM peak period. All study intersections currently meet the LOS D standard established in the *Eden Area General Plan*. Intersection analysis worksheets are provided in **Appendix B**.



XX (YY) AM (PM) Peak Hour Traffic Volumes

🚦 Signalized Intersection

🛑 Stop Sign

🟧 Project Site

\# Study Intersection

🟩 Proposed Relocation of Via Mercado

Figure 3

Existing Conditions
Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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Table 3: Existing Conditions Intersection Peak Hour Levels of Service[1]

Intersection	Control	Peak Hour	Existing Conditions	
			Delay	LOS
1. Hesperian Blvd/Lewelling Blvd	Signal	AM PM	39 33	D C
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	25 23	C C
3. Hesperian Blvd/Paseo Grande	Signal	AM PM	20 11	B B
4. Hesperian Blvd/Via Mercado	Signal	AM PM	8 1	A A
5. Hesperian Blvd/Ducey Way	SSSC	AM PM	0 (20) 0 (19)	A (C) A (C)
6. Hesperian Blvd/Hacienda Ave	Signal	AM PM	30 26	C C
7. Paseo Largavista/Paseo Grande	SSSC	AM PM	1 (17) 1 (13)	A (C) A (B)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (17) 2 (12)	A (C) A (B)
9. Ducey Way/Paseo Grande	SSSC	AM PM	0 (15) 0 (16)	A (B) A (C)
10. Via Arriba/Via Mercado	SSSC	AM PM	2 (10) 1 (9)	A (A) A (A)

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop-controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.
2. Signal = signalized intersection; SSSC= side-street stop-controlled intersection.

Source: Fehr & Peers, 2018.

Intersection Peak Hour Signal Warrant Analysis

The peak hour volume traffic signal warrant (Warrant 3B) for urban conditions, found in the MUTCD was evaluated for the unsignalized study intersections. As shown in **Table 4**, none of the unsignalized study intersections meet the peak hour volume traffic signal warrant under Existing conditions. Detailed signal warrant calculations are provided in **Appendix C**.

Table 4: Existing Intersection Peak Hour Signal Warrant Analysis

Intersection	Control	Peak Hour Signal Warrant Met?
5. Hesperian Blvd/Ducey Way	SSSC	No
7. Paseo Largavista/Paseo Grande	SSSC	No
8. Via Arriba/Paseo Grande	SSSC	No
9. Ducey Way/Paseo Grande	SSSC	No
10. Via Arriba/Via Mercado	SSSC	No

Notes:
1. SSSC= side-street stop-controlled intersection

Source: Fehr & Peers, 2018.

3. PROJECT CHARACTERISTICS

This chapter provides an overview of the proposed Project components and addresses the Project's trip generation, distribution, and assignment characteristics, allowing for an evaluation of Project impacts on the surrounding roadway network. The amount of traffic associated with the Project was estimated using a three-step process:

1. **Trip Generation** – The *amount* of vehicle traffic entering/exiting the Project site was estimated.
2. **Trip Distribution** – The *direction* trips would use to approach and depart the site was projected.
3. **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

3.1 Project Description

The Project would consist of:

- 163 multi-family dwelling units
- 2,000-square foot coffee shop
- 9,520 square feet of additional retail/commercial space

The Project site plan is shown on Figure 2.

3.2 Project Trip Generation

This Project site is located on the west side of Hesperian Boulevard, a primary commercial and transit corridor for San Lorenzo. The site is adjacent to retail/commercial developments and about a mile and a half from the Bay Fair BART Station and as a result, travel-mode choices (e.g. auto, bike, pedestrian, and transit) are substantial. The following trip generation methodology discusses the measures taken to ensure trip generation considers the study area context.

Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual* (Tenth Edition) was used as a starting point to estimate the vehicle trip generation. The *Trip Generation Manual* (Tenth Edition) methodology is primarily based on data collected at suburban, single-use, freestanding sites. These defining characteristics limit their applicability to mixed-use development projects, such as the proposed Project. The land use mix, design features, and setting of the Project would include characteristics that influence travel behavior differently from typical single-use suburban developments. Thus, traditional data and methodologies, such as ITE suburban rates alone, would not accurately estimate the Project's vehicle trip generation. In response to the limitations in the ITE methodology, American Community Survey (ACS) 2016 data was used to understand mode choice for the census tracts surrounding the Project site.

Trip generation for the proposed apartments were estimated using the ITE land use category "Multi-family Housing (Mid-Rise)" (land use code 221), which includes multi-family apartment complexes that have three to 10 levels (floors). The 2,000-square foot coffee shop was estimated using the ITE land use category "Coffee/Donut Shop without Drive-Through Window" (land use code 936) and the additional 9,520 square feet of retail/commercial use was estimated using the ITE land use category "Shopping Center" (land use code 820). Exact uses of the additional retail/commercial space of the Project have not been determined; this analysis assumes that the retail/commercial space would be a shopping center.

ACS data shows that about 13-percent of the surrounding employed residents either walk, bike, or take transit to work. In addition, the MainStreet trip generation tool that is based on the ITE *Trip Generation Handbook* (Third Edition) and mixed-used development (MXD) methodologies was checked to determine mode split adjustments. MXD is a methodology developed to understand the trip generation characteristics at mixed-use sites, sponsored by the U.S. Environmental Protection Agency. The tool calculated mode shifts of 18-percent and 14-percent during the AM and PM peak hours. To maintain a conservative analysis, a 13-percent adjustment was applied to the vehicle trip generation to address site-specific mode split and travel characteristics. **Appendix D** presents the ACS Journey to Work data for the census tracts surrounding the Project site.

Approximately three percent of trips are expected to be internal trips on a daily basis and during the AM and PM peak hours, meaning that a patron of the coffee shop would also be a resident, or visiting another retail/commercial space. The internalization reduction is based on the MainStreet trip generation tool.

Pass-by trips are trips attracted to a site from adjacent roadways as an intermediate stop on the way to a final destination. Pass-by trips alter travel patterns in the immediate study area, but do not add new vehicle trips to the roadway network, and should therefore be excluded from trip generation estimates. Since ITE does not provide pass-by rates for the "Coffee/ Donut Shop without Drive-Through Window" land use category, the pass-by rates for the proposed coffee shop were estimated based on data collected at two Starbucks without drive-through windows in Fountain Valley, California.[1] The study concluded that the average AM and PM peak hour pass-by rates were 55 and 21 percent, respectively. Pass-by rates for the proposed additional commercial space were estimated based on data provided in ITE's *Trip Generation Handbook* (Third Edition). The PM peak hour pass-by rate for the "Shopping Center" land use is 34 percent. No pass-by is assumed for the AM peak hour, and the daily pass-by is assumed to be 17 percent, half the PM peak hour rate.

Table 5 summarizes the trip generation for the proposed Project. As shown in Table 5, the Project is estimated to generate 1,890 daily, 134 AM peak hour, and 129 PM peak hour net-new automobile trips.

Table 5: Automobile Trip Generation Estimate

Land Use	Size[1]		Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Apartments[2]	163	DU	890	15	41	56	43	28	71
Coffee Shop without Drive-Through[3]	2.0	KSF	1,870	104	99	203	37	36	73
Shopping Center[4]	9.5	KSF	360	6	3	9	18	19	37
Subtotal Net Raw Project Trips			***3,120***	***125***	***143***	***268***	***98***	***83***	***181***
Walk/Bike/Transit Reduction (13%) – Apartments[5]			*-120*	*-4*	*-3*	*-7*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Coffee Shop[5]			*-240*	*-13*	*-13*	*-26*	*-5*	*-4*	*-9*
Walk/Bike/Transit Reduction (13%) - Shopping Center[5]			*-50*	*-1*	*0*	*-1*	*-3*	*-2*	*-5*
Internalization Reduction (3%) – Apartments[6]			*-20*	*-1*	*0*	*-1*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Coffee Shop[6]			*-50*	*-3*	*-2*	*-5*	*-1*	*-1*	*-2*
Internalization Reduction (3%) - Shopping Center[6]			*-10*	*0*	*0*	*0*	*-1*	*0*	*-1*
Net External Trips (Total Driveway Volumes)			***2,630***	***103***	***125***	***228***	***82***	***71***	***153***
Pass-by Adjustment (44% Daily/55% AM/21% PM) - Coffee Shop[7]			*-690*	*-47*	*-47*	*-94*	*-7*	*-7*	*-14*
Pass-by Adjustment (17% Daily/0% AM/34% PM) - Shopping Center[8]			*-50*	*0*	*0*	*0*	*-5*	*-5*	*-10*
Total Net-New External Vehicle Trips			***1,890***	***56***	***78***	***134***	***70***	***59***	***129***

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[1] Documentation can be found here: https://www.scribd.com/document/34431881/Trip-Generation-Analysis

Notes:

1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE *Trip Generation* (Tenth Edition) land use category 221 (Multi-Family Mid-Rise - Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 5.45*X-1.75
   AM Peak Hour: Ln(T)=0.98Ln(X)-0.98 (26% in, 74% out)
   PM Peak Hour: Ln(T) = 0.96Ln(X)-0.63 (61% in, 39% out)
3. ITE *Trip Generation* (Tenth Edition) land use category 936 (Coffee/Donut Shop without Drive-Through Window- Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 9.22*(AM Peak Hour Trip Generation)
   No daily rate is provided. The ratio between daily trips and AM peak hour trips for land use 937–Coffee/Donut Shop with Drive-Through Window was applied.
   AM Peak Hour: T = 101.14*(X) (51% in, 49% out)
   PM Peak Hour: T = 36.31*(X) (50% in, 50% out)
4. ITE *Trip Generation* (Tenth Edition) land use category 820 (Shopping Center- Adj. Streets, 7-9 AM, 4-6 PM, General Urban/Suburban):
   Daily: T = 37.8*(X)
   AM Peak Hour: T = 0.94*(X) (62% in, 38% out)
   PM Peak Hour: T = 3.81*(X) (48% in, 52% out)
5. The 13-percent adjustment is based on census data for the surrounding areas that indicates that about 13% of employed residents walk, bike, or take transit to work.
6. Fehr & Peers' in-house tool, MainStreet, was applied to determine the percent internalization for the site.
7. Coffee shop pass-by rates are based on data collected at two Starbucks locations without drive-through in Fountain Valley, California. The pass-by rates applied are the average of two sites'. observed rates. (www.scribd.com/document/34431881/Trip-Generation-Analysis, accessed in April, 2018).
8. The shopping center peak hour pass-by rates are based on ITE *Trip Generation Handbook* (Third Edition) data. The AM peak hour pass-by rate is assumed to be zero and the daily rate is assumed to be half of the PM rate.

Source: Fehr & Peers, 2018.

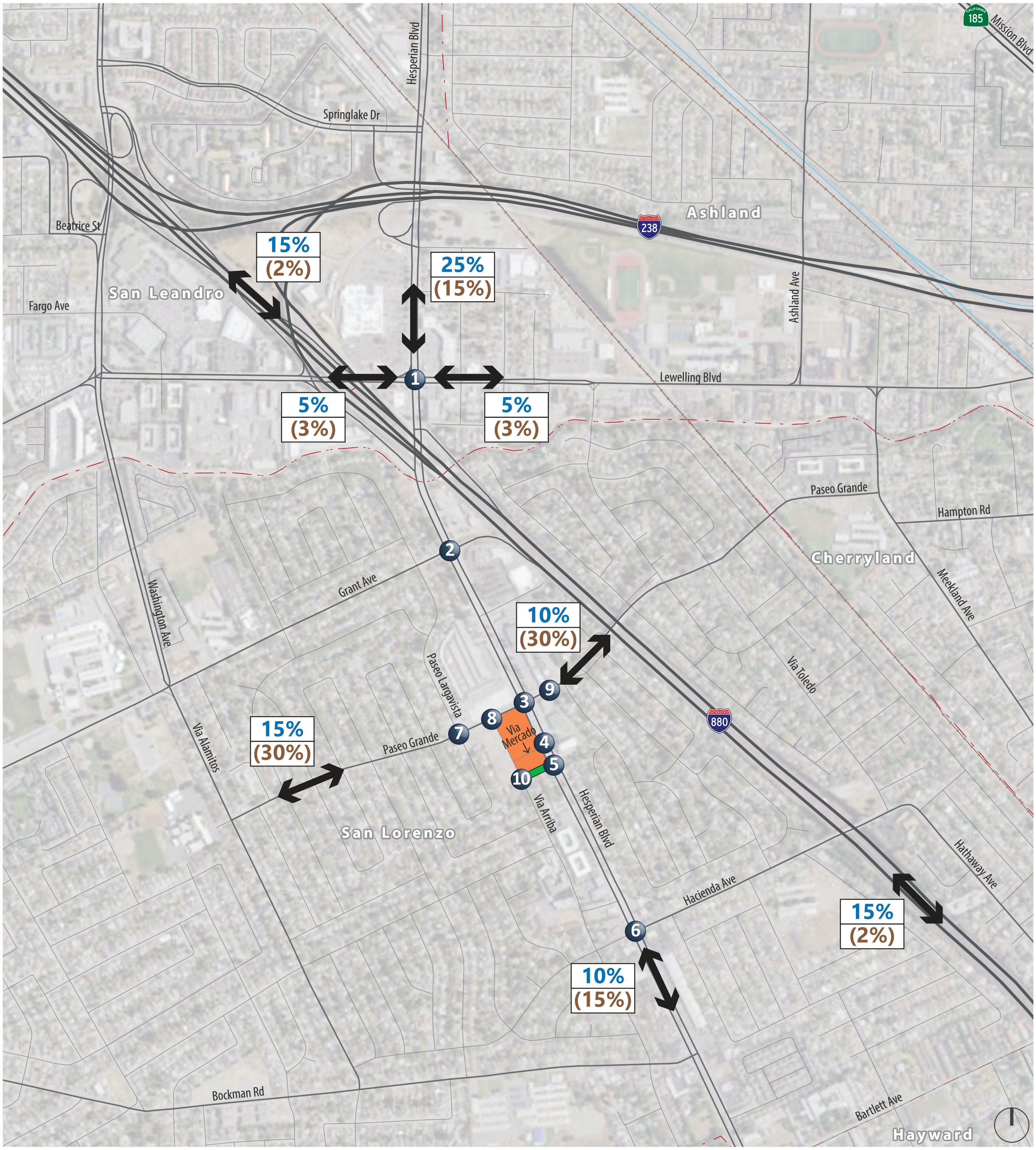
3.3 Trip Distribution and Assignment

Project trip distribution percentages were assigned as summarized in **Table 6**, as well as shown on **Figure 4**. The trip distribution percentages are based on existing travel patterns and data from the Alameda CTC Countywide Travel Demand Model. The net-new external Project trips were then assigned to the roadway network based on the directions of approach and departure for the AM peak hour and PM peak hour, as presented on **Figure 5**.

Table 6: Project Trip Distribution

Roadway	Residential	Retail/Commercial
I-880 to/from the North	15%	2%
I-880 to/from the South	15%	2%
Paseo Grande to/from the West	15%	30%
Hesperian Boulevard to/from the North	25%	15%
Paseo Grande to/from the East	10%	30%
Hesperian Boulevard to/from the South	10%	15%
Lewelling Boulevard to/from the East	5%	3%
Lewelling Boulevard to/from the West	5%	3%

Source: Fehr & Peers, 2018.



LEGEND

🟧 Project Site

● Study Intersection

🟩 Proposed Relocation of Via Mercado

X% (Y%) Residential Trip Distribution / Retail Trip Distribution

Figure 4

Project Trip Distribution

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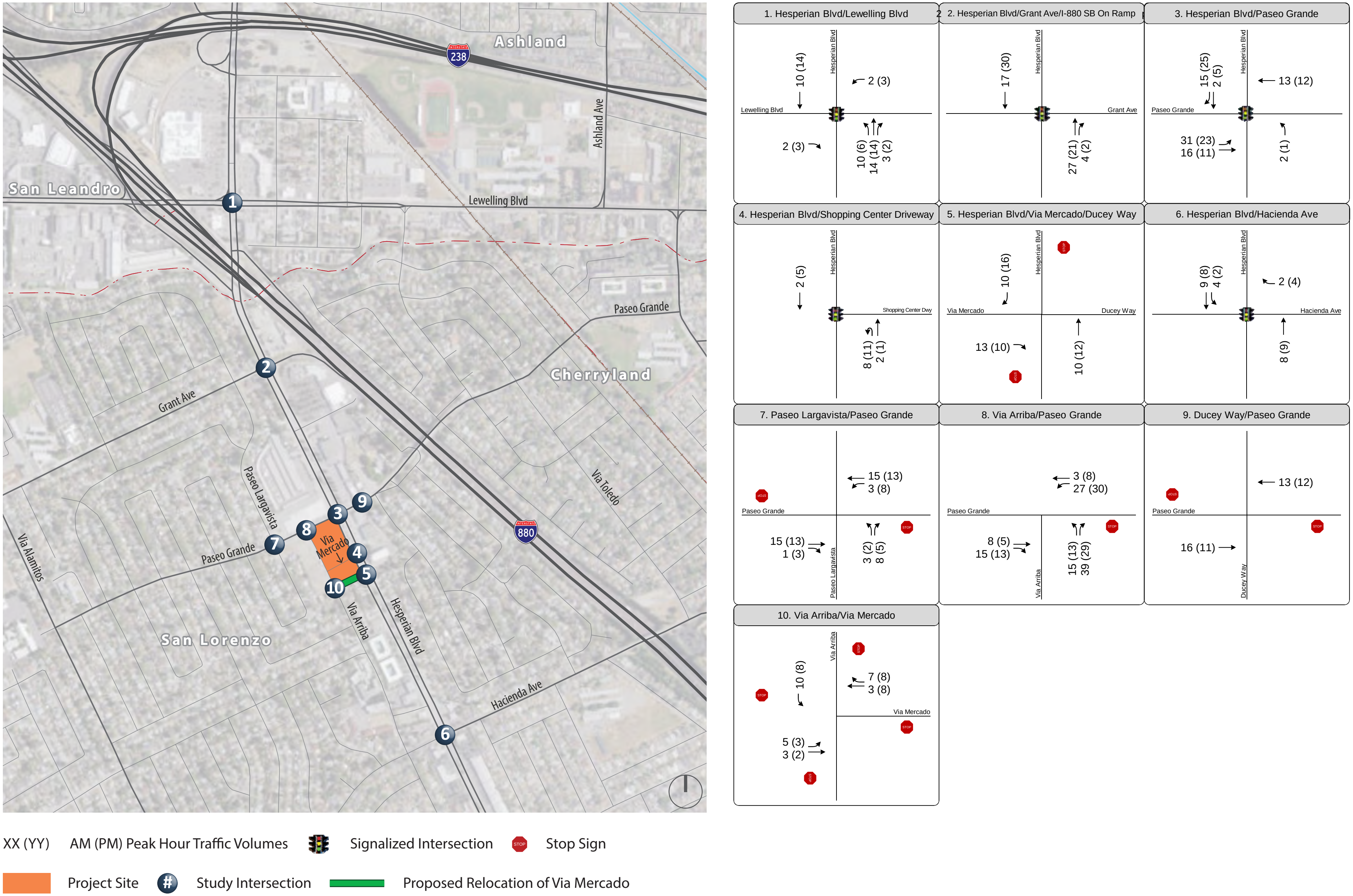

Figure 5

Net-New Project Trip Assignment

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4. EXISTING WITH PROJECT CONDITIONS

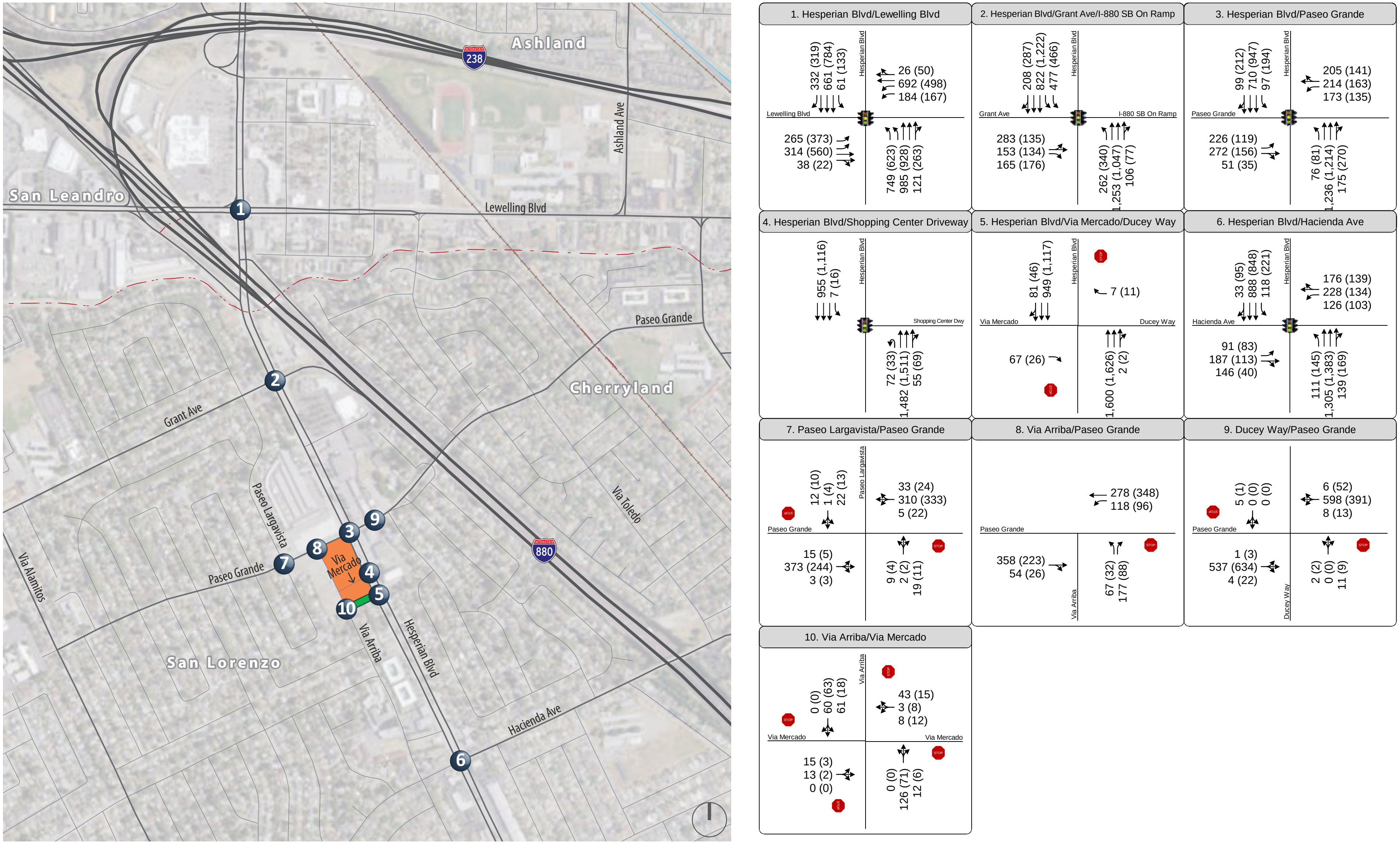
This chapter addresses Existing with Project traffic conditions and discusses the Project's vehicular impacts.

4.1 Existing with Project Volumes and Geometry

The net-new Project trip assignment shown on Figure 5 was added to the Existing conditions peak hour traffic volumes from Figure 3 and pass-by trips were applied at the Project driveways to estimate the Existing with Project peak hour traffic volumes, as shown on **Figure 6**. The Project proposes the following changes to roadway geometry and traffic control, which are also assumed as part of the Existing with Project analysis:

- Modify the existing Hesperian Boulevard/Via Mercado intersection (study intersection #4) to eliminate the Via Mercado connection, but maintain the existing traffic signal to provide access to the existing shopping center driveway. Maintain the northbound left-turn lane to allow U-Turn movements.
- Relocate Via Mercado approximately 150 feet south, to align with Ducey Way (study intersection #5) and the proposed southern end of the Project site. The new intersection would be unsignalized with side-street stop control and right-turn in/right-turn out only access.
- Modify the stop-controlled northbound approach of the existing Via Arriba/Paseo Grande intersection (study intersection #8) to provide a left-turn lane and a separate right-turn lane.

The Existing with Project conditions analysis assumes the same signal timings as Existing conditions, with the exception of the timings at the existing Hesperian Boulevard/Shopping Center Driveway intersection (study intersection #4), which is assumed to be optimized as part of the Project.



XX (YY) AM (PM) Peak Hour Traffic Volumes 🚦 Signalized Intersection 🛑 Stop Sign

🟧 Project Site # Study Intersection 🟩 Proposed Relocation of Via Mercado

Figure 6

Existing with Project Conditions
Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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4.2 Existing with Project Intersection Operations

Existing with Project traffic conditions were evaluated using the same methods described in Chapter 1. The Existing with Project analysis results are presented in **Table 7**, based on the vehicle volumes presented on Figure 6. Table 7 also includes the operations results for Existing conditions for reference. Detailed intersection LOS calculation worksheets are presented in Appendix B. As shown in Table 7, all study intersections are expected to operate at LOS D or better during the AM and PM peak hours under Existing and Existing with Project conditions.

Table 7: Existing with Project Intersection Peak Hour Levels of Service[1]

Intersection	Control[2]	Peak Hour	Existing Conditions		Existing with Project Conditions	
			Delay	LOS	Delay	LOS
1. Hesperian Blvd/Lewelling Blvd	Signal	AM PM	39 33	D C	40 34	D C
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	25 23	C C	25 23	C C
3. Hesperian Blvd/ Paseo Grande	Signal	AM PM	20 11	B B	23 19	C B
4. Hesperian Blvd/Shopping Center Driveway[3]	Signal	AM PM	8 1	A A	2 2	A A
5. Hesperian Blvd/ Ducey Way/Via Mercado[4]	SSSC	AM PM	0 (20) 0 (19)	A (C) A (C)	0 (21) 0 (20)	A (C) A (C)
6. Hesperian Blvd/ Hacienda Ave	Signal	AM PM	30 26	C C	33 27	C C
7. Paseo Largavista/ Paseo Grande	SSSC	AM PM	1 (17) 1 (13)	A (C) A (B)	2 (18) 1 (14)	A (C) A (B)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (17) 2 (12)	A (C) A (B)	5 (26) 3 (19)	A (D) A (C)
9. Ducey Way/Paseo Grande	SSSC	AM PM	0 (15) 0 (16)	A (B) A (C)	0 (15) 0 (16)	A (B) A (C)
10. Via Arriba/Via Mercado	SSSC/ AWSC[5]	AM PM	2 (10) 1 (9)	A (A) A (A)	8 8	A A

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop-controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.

2. Signal = signalized intersection; SSSC = side-street stop-controlled intersection; AWSC = all-way stop-controlled intersection.
3. The Via Mercado connection would be eliminated at this intersection (#4) as part of the Project.
4. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
5. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2018.

Intersection Peak Hour Signal Warrant Analysis

The peak hour volume traffic signal warrant (Warrant 3B) for urban conditions, found in the MUTCD, was evaluated for the unsignalized study intersections. As shown in **Table 8**, none of the unsignalized study intersections meet the peak hour volume traffic signal warrant under Existing with Project conditions. Detailed signal warrant calculations are provided in Appendix C.

Table 8: Existing with Project Intersection Peak Hour Signal Warrant Analysis

Intersection	Control[1]	Peak Hour Signal Warrant Met? (Existing Conditions)	Peak Hour Signal Warrant Met? (Existing with Project Conditions)
5. Hesperian Blvd/Ducey Way/Via Mercado[2]	SSSC	No	No
7. Paseo Largavista/Paseo Grande	SSSC	No	No
8. Via Arriba/Paseo Grande	SSSC	No	No
9. Ducey Way/Paseo Grande	SSSC	No	No
10. Via Arriba/Via Mercado	SSSC/ AWSC[3]	No	No

Notes:

1. SSSC= side-street stop-controlled intersection, AWSC = all-way stop-controlled.
2. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
3. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2018.

4.3 Existing with Project Impacts and Mitigation Measures

As shown in Table 7, the Project is expected to increase delay at study intersections, but the increases in delay would not trigger significant impacts based on the significance criteria described in Chapter 1.

5. CUMULATIVE CONDITIONS

This chapter discusses Cumulative (Year 2040) vehicle traffic conditions both without and with the Project. The future conditions analysis considers development within San Lorenzo and adjacent areas, consistent with the development assumptions incorporated into the Alameda CTC Countywide Travel Demand Model.

5.1 Cumulative Forecasts

Cumulative (Year 2040) intersection turning movement forecasts were developed based on an annual growth factor derived from the Alameda CTC Countywide Travel Demand Model. An annual growth factor of 1.4 percent was applied to the Existing conditions intersection turning volumes. The annual growth factor was applied at all study intersections, with the exception of the Via Arriba/Via Mercado (#10) intersection, the westbound approach of the Hesperian Boulevard/Via Mercado (#4) intersection, and the Paseo Largavista approaches of the Paseo Largavista/Paseo Grande (#7) intersection. The annual growth factor was not applied to these locations because these locations are fully developed and therefore not expected to experience a significant amount of traffic growth. The Cumulative without Project forecasts are presented on **Figure 7**. The Project trip assignment shown on **Figure 5** was added to the peak hour traffic volumes from Figure 7 and pass-by trips were applied to estimate the Cumulative with Project peak hour traffic volumes, as shown on **Figure 8**.

5.2 Cumulative Roadway Assumptions

The changes to roadway geometries and traffic controls assumed under Existing with Project conditions are also assumed under Cumulative with Project conditions. Alameda County is currently in the design phase of the Hesperian Boulevard Corridor Improvement Project; however, this Project does not include extensive changes to roadway geometry. The corridor project does include signal modifications; therefore, Cumulative without and with Project analysis assumes the traffic signal timings would be optimized. The Cumulative without Project intersection lane configurations and traffic controls are shown on Figure 7, the Cumulative with Project intersection lane configurations and traffic controls are shown on Figure 8.

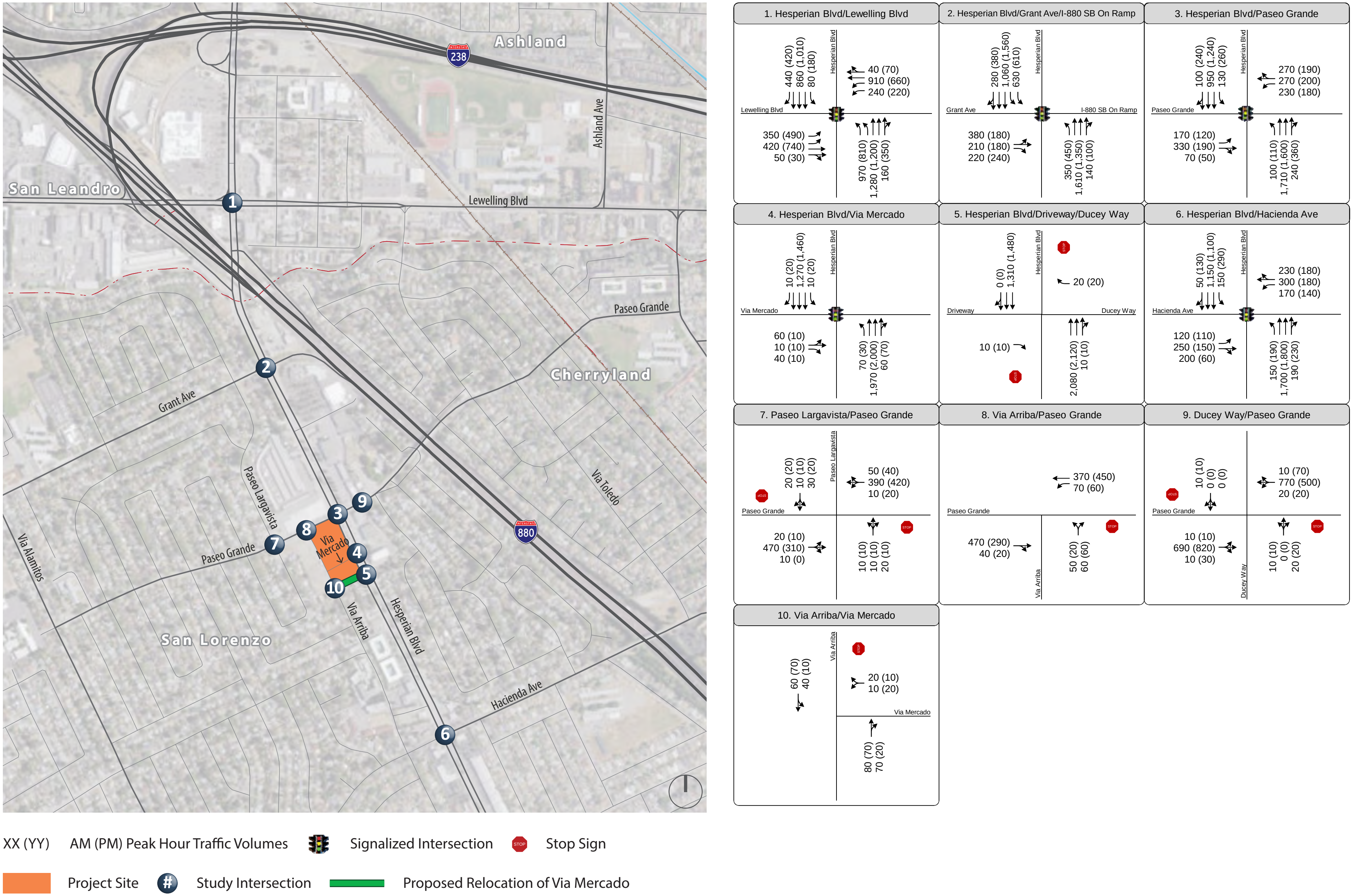

Figure 7

Cumulative (Year 2040) without Project Conditions
Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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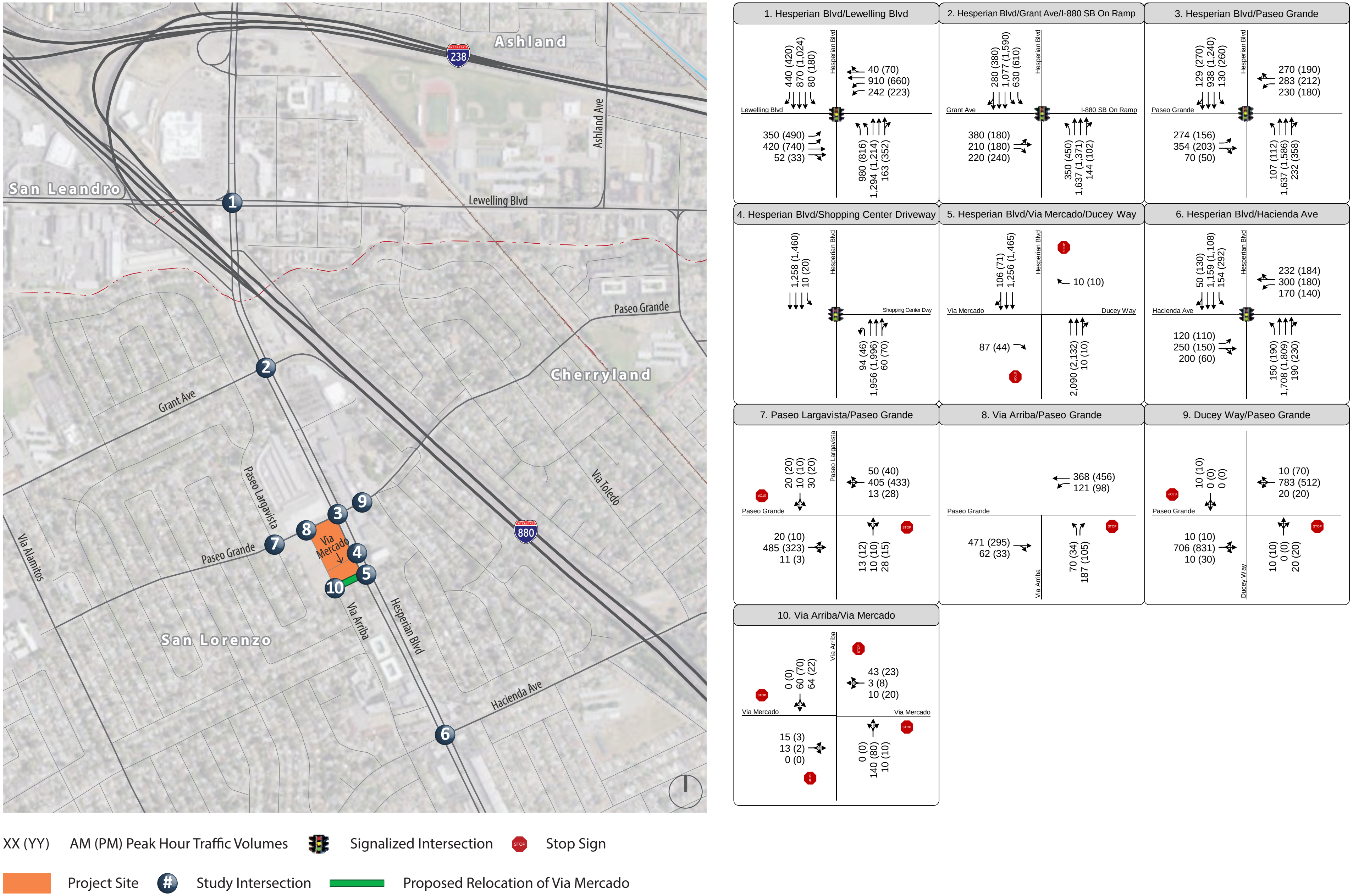

Figure 8

Cumulative (Year 2040) with Project Conditions
Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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5.3 Cumulative Conditions Intersection Operations

Cumulative without and with Project Conditions were evaluated using the same methods described in Chapter 1. The intersection analysis results are presented in **Table 9**, based on the vehicle volumes presented on Figure 7 and Figure 8. Detailed intersection LOS calculation worksheets are presented in **Appendix E**.

As shown in Table 9, all signalized study intersections are projected to operate at an overall acceptable LOS E or better at intersections on Hesperian Boulevard, or at LOS D or better at intersections along non-CMP roadways under Cumulative without and with Project conditions, except for the following signalized intersection:

- Hesperian Boulevard/Lewelling Boulevard (#1) would operate at LOS F during the AM peak hour under Cumulative without and with Project conditions

Unsignalized study intersections are generally expected to continue to operate at similar LOS with the addition of Project traffic, except at the unsignalized Via Arriba/Paseo Grande intersection (#8) where the Project is expected to degrade intersection LOS from C to E during the AM peak under Cumulative with Project Conditions.

Table 9: Cumulative Conditions Intersection Peak Hour Levels of Service[1]

Intersection	Control[2]	Peak Hour	Cumulative without Project Conditions		Cumulative with Project Conditions	
			Delay	LOS	Delay	LOS
1. Hesperian Blvd/ Lewelling Blvd	Signal	AM PM	101 71	F E	103 73	F E
2. Hesperian Blvd/Grant Ave/I-880 SB On-Ramp	Signal	AM PM	46 40	D D	48 42	D D
3. Hesperian Blvd/ Paseo Grande	Signal	AM PM	40 20	D C	54 28	D C
4. Hesperian Blvd/Shopping Center Driveway[3]	Signal	AM PM	5 2	A A	2 4	A A
5. Hesperian Blvd/ Ducey Way/Via Mercado[4]	SSSC	AM PM	0 (31) 0 (29)	A (D) A (D)	1 (30) 0 (28)	A (D) A (D)
6. Hesperian Blvd/Hacienda Ave	Signal	AM PM	57 56	E E	65 60	E E
7. Paseo Largavista/ Paseo Grande	SSSC	AM PM	3 (30) 2 (17)	A (D) A (C)	3 (33) 2 (18)	A (D) A (C)
8. Via Arriba/Paseo Grande	SSSC	AM PM	3 (23) 2 (14)	A (C) A (B)	6 (42) 3 (24)	A (E) A (C)
9. Ducey Way/Paseo Grande	SSSC	AM PM	1 (33) 1 (31)	A (D) A (D)	1 (34) 1 (31)	A (D) A (D)
10. Via Arriba/Via Mercado	SSSC/ AWSC[5]	AM PM	2 (10) 2 (10)	A (B) A (A)	8 8	A A

Notes:

1. Analysis results present delay (seconds per vehicle) and LOS based on delay thresholds published in the HCM (Transportation Research Board, 2010). For side-street stop-controlled intersections, average delay is listed first, followed by the delay for the worst movement in parentheses. Average delay is listed for signalized and all-way stop control intersections.
2. Signal = signalized intersection; SSSC = side-street stop-controlled intersection; AWSC = all-way stop-controlled intersection.
3. The Via Mercado connection would be eliminated at this intersection (#4) as part of the Project.
4. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
5. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2018.

Intersection Peak Hour Signal Warrant Analysis

The peak hour volume traffic signal warrant (Warrant 3B) for urban conditions, found in the MUTCD, was evaluated for the unsignalized study intersections. As shown in **Table 10**, none of the unsignalized study intersections meet the peak hour volume traffic signal warrant under Cumulative without and with Project Conditions. Detailed signal warrant calculations are provided in **Appendix F**.

Table 10: Cumulative Intersection Peak Hour Signal Warrant Analysis

Intersection		Control[1]	Peak Hour Signal Warrant Met? (Cumulative without Project Conditions)	Peak Hour Signal Warrant Met? (Cumulative with Project Conditions)
5.	Hesperian Blvd/Ducey Way/Via Mercado[2]	SSSC	No	No
7.	Paseo Largavista/Paseo Grande	SSSC	No	No
8.	Via Arriba/Paseo Grande	SSSC	No	No
9.	Ducey Way/Paseo Grande	SSSC	No	No
10.	Via Arriba/Via Mercado	SSSC/ AWSC[3]	No	No

Notes:

1. SSSC = side-street stop-controlled intersection; AWSC = all-way stop-controlled intersection.
2. As part of the Project, Via Mercado would be relocated 150 feet to the south to align with the Hesperian Boulevard/Ducey Way intersection (#5).
3. As part of the Project, the intersection of Via Arriba with the relocated Via Mercado will be all-way stop-controlled.

Source: Fehr & Peers, 2018.

5.4 Congestion Management Program Analysis

The Alameda County CMP requires the Near-Term (2020) and Cumulative Year (2040) assessment of development-driven impacts to regional roadways. Because the Project would generate more than 100 "net-new" PM peak hour trips, Alameda CTC requires the use of the Countywide Travel Demand Model to assess the impacts on regional roadways in the Project vicinity. The CMP roadways near the Project include I-880 and Hesperian Boulevard.

The Alameda CTC Countywide Travel Demand Model used in this analysis is a regional travel demand model that uses socioeconomic data and roadway and transit network assumptions to forecast traffic volumes and transit ridership using a four-step modeling process that includes trip generation, trip distribution, mode split, and trip assignment. This process considers changes in travel patterns due to future growth and balances trip productions and attractions. This version of the Countywide Travel Demand Model is based on Association of Bay Area Governments (ABAG) Projections 2013 land uses for year 2020 and 2040.

For the purposes of this CMP analysis, the Project is assumed to not be included in the Alameda CTC Countywide Travel Demand Model to present a more conservative analysis. The "constrained" traffic forecasts for the 2020 and 2040 scenarios were extracted from the Alameda CTC Countywide Travel Demand Model for the CMP roadway segments from that model and used as the without Project forecasts. Vehicle trips generated by the proposed Project were added to the without Project forecasts to estimate the with Project forecasts.[2]

The CMP segments were assessed using a volume-to-capacity (v/c) ratio methodology (Transportation Research Board, 1985). For freeway segments, a per-lane capacity of 2,000 vehicles-per-hour (vph) was used, consistent with the latest CMP documents. For arterials, a per-lane capacity of 800 vph was used. Roadway segments with a v/c ratio greater than 1.00 signify LOS F. The with Project results were compared to the baseline results for years 2020 and 2040. **Appendix G** provides the 2020 and 2040 peak-hour volumes, v/c ratios, and the corresponding LOS for without and with Project conditions.

The proposed Project would contribute to 2020 and 2040 increases in traffic congestion on CMP roadways. However, the Project would not cause a CMP roadway segment to degrade from LOS E or better to LOS F or increase the v/c ratio by more than 0.03 for roadway segments that would operate at LOS F without the Project.

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[2] The Cumulative Year (2040) Forecasts assumed in the CMP evaluation are not the same as the forecasts used in the analysis summarized in Table 9. The main difference is the approach for estimating forecasts; the CMP evaluation assumes unadjusted 2040 forecasts from the off-the-shelf Alameda CTC model. Cumulative Year (2040) forecasts summarized in Figure 7 were estimated by applying annual growth rates (obtained from the 2010 and 2040 Alameda CTC model outputs) to the existing year (2018) roadway peak hour counts.

5.5 Cumulative with Project Impacts and Mitigation Measures

Based on the following significance criteria, also presented in Chapter 1, the Project impacts on intersection operations and CMP roadway segments are expected to be *less than significant.*

- *Cause signalized intersection LOS on CMP roadway to degrade from LOS E or better to LOS F.*

  As shown in Table 10, while the Project is expected to increase delay at signalized study intersections on Hesperian Boulevard, it is not expected to degrade intersections to LOS F at locations that would operate at LOS E or better under Cumulative without Project conditions.

- *Cause unsignalized intersection LOS on CMP roadway to degrade from LOS E or better to LOS F and meet the MUTCD Peak Hour Signal Warrant.*

  As shown in Table 10, the Project would not degrade LOS at the unsignalized intersection of Hesperian Boulevard/Ducey Way/Via Mercado (#5) to an unacceptable level.

- *Cause (a) unsignalized intersection LOS on non-CMP roadway to degrade from LOS D or better to LOS E or F and meet the MUTCD Peak Hour Signal Warrant; or (b) the LOS to degrade from LOS E to LOS F and meet the MUTCD Peak Hour Signal Warrant.*

  As shown in Table 10, while the Via Arriba/Paseo Grand intersection (#8) would degrade from LOS C to LOS E under Cumulative with Project AM peak hour conditions, the intersection is not expected to meet the MUTCD peak hour signal warrant, therefore the impact is considered less than significant.

- *Cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase more than 0.03 along a roadway segment that would operate at LOS F without the Project.*

  The proposed Project would contribute to 2020 and 2040 increases in traffic congestion on CMP roadways. However, the Project would not cause a CMP roadway segment to degrade from LOS E or better to LOS F or increase the v/c ratio by more than 0.03 for roadway segments that would operate at LOS F without the Project.

6. SITE PLAN REVIEW

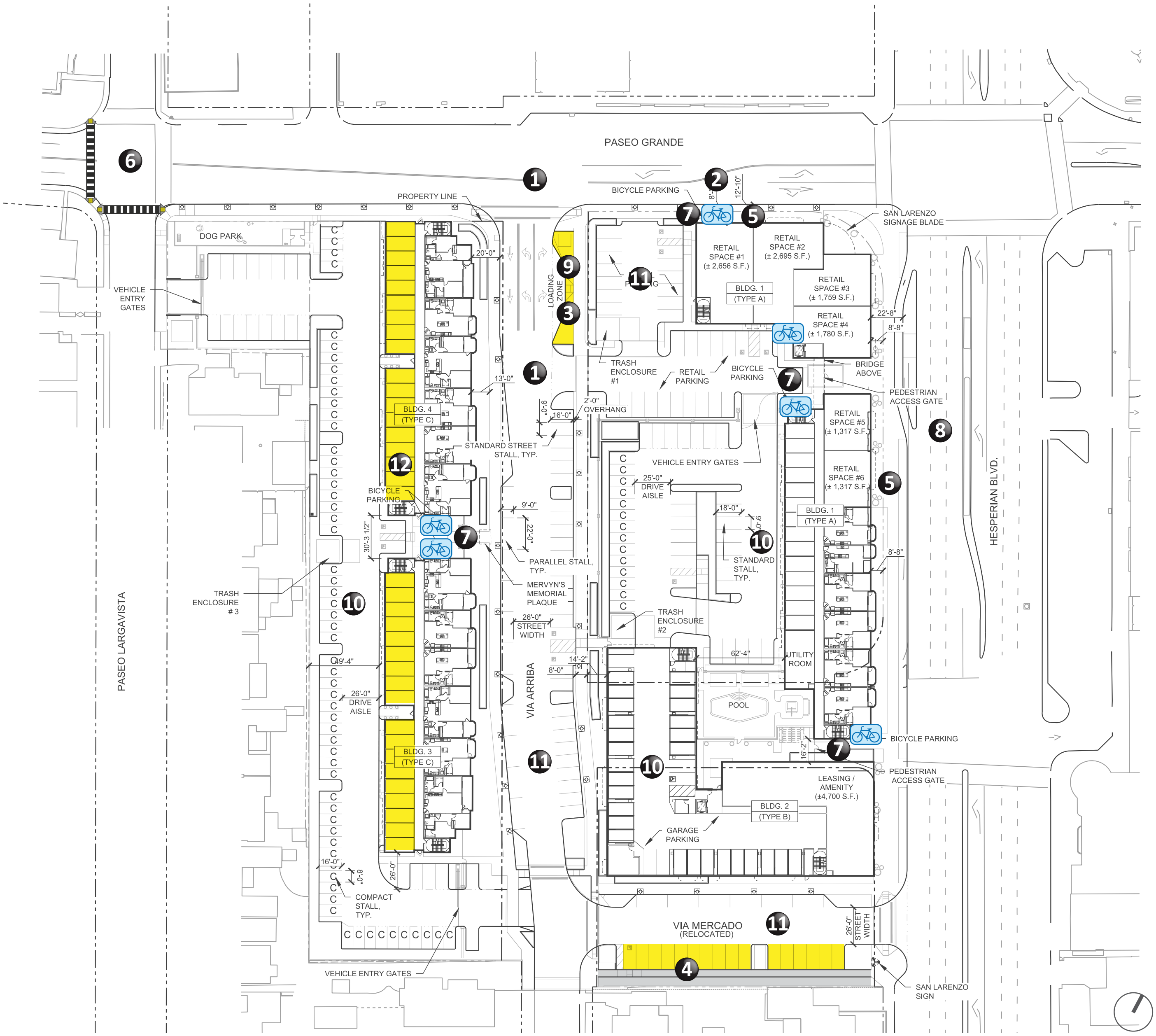
This chapter evaluates site access and circulation for all modes of travel, reviews parking requirements, and analyzes sight distance for the Project driveways. This review is based on the site plan presented on Figure 2. Site plan recommendations are described below and shown on **Figure 9**.

6.1 Vehicular Access and Circulation

The proposed Project would provide four vehicular access points:

- On Hesperian Boulevard at a relocated Via Mercado (side-street stop controlled, right-turn in/right-turn out only access)
- On Paseo Largavista just south of Paseo Grande (side-street stop controlled, full access)
- On Paseo Grande at Via Arriba (side-street stop controlled, full access)
- On Via Arriba at Via Mercado (all-way stop controlled, full access)

Adequate sight distance should be provided at all four Project driveways to minimize conflicts between vehicles entering and exiting the driveways and vehicles on the adjacent street. According to the *Caltrans Highway Design Manual*, for streets with a posted speed limit of 25 mph (e.g. Paseo Largavista, Paseo Grande, and Via Arriba), a minimum corner sight distance of 275 feet should be provided for vehicles exiting the Project driveways. For streets with a posted speed limit of 35 mph (e.g., Hesperian Boulevard), a minimum stopping sight distance of 385 feet should be provided. Based on the Project site plan (Figure 2), all Project driveways provide adequate sight distance except for the Via Mercado/Via Arriba intersection (#10), which provides a corner sight distance less than 275 feet at the eastbound approach due to the provision of angled on-street parking proposed along northbound Via Arriba. However, the sight distance impact at the Via Mercado/Via Arriba intersection (#10) would be mitigated with the all-way stop control proposed by the Project.



Site Plan Source: Architecture Design Collaborative, 1/21/19

Recommendations:

1. Provide "Keep Clear" pavement striping
2. Extend the EB left-turn lane at Hesperian Boulevard/Paseo Grande and the WB left-turn lane at Via Arriba/Paseo Grande to 200 feet
3. Re-design loading zone to be no less than 10-feet in width and 60-feet in length
4. Provide 8-foot sidewalk width and parking wheel stops along the south side of Via Mercado
5. Provide pedestrian-scale lighting along all sidewalks
6. Provide marked crosswalks and ADA-compliant directional curb ramps
7. Provide 9 short-term and 41 long-term bicycle parking spaces bicycle lanes on Hesperian Blvd
8. Ensure that site improvements would not preclude planned Class II bicycle lanes on Hesperian Blvd
9. Project Applicant should participate in AC Transit's EasyPass program in lieu of operating private shuttle service
10. Unbundle parking costs from housing costs for the off-street parking spaces designated for residential uses only
11. Enforce time limits for the shared commercial/residential parking lot and on-street parking spaces on Via Arriba and Via Mercado during business hours
12. Limit private garage use for vehicle storage only

Figure 9

Project Site Plan Recommendations

Regarding vehicular access, peak hour intersection analysis results indicate that eastbound Paseo Grande queues at the Hesperian Boulevard intersection (#3) may potentially block access to the Via Arriba/Paseo Grande intersection (#8) during peak hours. In addition, northbound Via Arriba queues at the Paseo Grande intersection (#8) may potentially block access to the commercial and residential driveway on Via Arriba during peak hours.

Consultant Recommendation 1:

> Provide "Keep Clear" pavement striping on eastbound Paseo Grande at the Via Arriba intersection (#8) and on northbound Via Arriba at the commercial/ residential driveway. The pavement striping would provide a queuing gap along eastbound Paseo Grande and northbound Via Arriba to minimize the occurrence of vehicles blocking left-turn movements at either intersection.

Consultant Recommendation 2:

> Extend the existing eastbound left-turn lane at the Hesperian Boulevard/Paseo Grande intersection (study intersection #3) and the existing westbound left-turn lane at the Via Arriba/Paseo Grande intersection (study intersection #8) to provide 200 feet of queue storage capacity.

On-Site Circulation

The proposed Project would provide angled (90 degrees) on-street parking on one side and parallel on-street parking on the other side of Via Mercado and Via Arriba. Off-street parking would be provided via uncovered parking stalls (all of which would be 90-degree stalls with two-way circulation aisles), individual private garages, and an on-site parking garage, which includes mechanical parking lifts proposed to manage a subset of the off-street parking supply. In total, 60 on-street parking spaces would be provided along both sides of Via Arriba and Via Mercado within the Project site, available to the public but most likely to be used by residents and visitors of the Project. Off-street parking would include 124 surface parking spaces reserved exclusively for the residential units, 59 spaces in a parking garage reserved exclusively for the residential units, 33 surface parking spaces to be shared by residential and commercial uses, and 50 spaces in private garages reserved exclusively for residential units. All off-street parking would be accessible to residents of the Project, with 33 surface parking spaces accessible to retail/commercial customers and employees. Parking demand management recommendations for the Project are provided in Section 6.5 below.

Alameda County's *Residential Design Standards and Guidelines* (2014) specifies ***Drive Aisle Dimensions***, which are dependent on the angle of parking adjacent to the aisle. For 90-degree angled parking, 25-foot drive aisles are required. The Project site plan (shown on Figure 2) indicates that all parking lot drive aisles with 90-degree parking provide 25-foot widths, meeting the *Residential Design Standards and Guidelines* requirements. The Alameda County Fire Department requires a minimum width of 26 feet for local streets. Via Arriba and Via Mercado would provide 26-foot clear widths, meeting the Alameda County Fire Department requirements.

The proposed 90-degree angled on-street parking can potentially result in vehicles crossing the roadway centerline and temporarily blocking both directions of Via Arriba and Via Mercado while vehicles maneuver into or out of the parking stalls. However, Alameda County Public Works and Fire Department staff directed the Project team to provide 90-degree angled parking on one side of Via Arriba and Via Mercado to enable access to the on-street parking spaces from both directions of travel and so fire trucks could more easily access adjacent building structures. For this reason, the current Project site plan provides 90-degree angled parking on northbound Via Arriba and eastbound Via Mercado; parallel parking spaces are proposed along southbound Via Arriba and westbound Via Mercado.

An auto-turn analysis was used to confirm emergency vehicle access at the site access driveways of Hesperian Boulevard (study intersection #5) and Via Arriba (study intersections #8 and #10). Fire trucks driving southbound on Hesperian Boulevard turning right onto Via Mercado would cross over the centerline on Via Mercado. Fire trucks driving eastbound on Paseo Grande turning right onto Via Arriba would also cross over the centerline on Via Arriba. Single-unit trucks (or ambulances) driving southbound on Hesperian Boulevard and eastbound on Paseo Grande could make the right-turn onto Via Mercado and Via Arriba, respectively, without encroaching past the centerline. Fire trucks nor single-unit trucks are expected to encroach on the proposed sidewalks at any of the Project site access driveways. **Appendix H** presents the auto-turn analyses.

The *Residential Design Standards and Guidelines* specify the following requirements for ***Parking Stall Dimensions*** based on their angle:

- Standard 90-degree angled parking spaces must provide a minimum 9-foot stall width and 18-foot stall length; compact parking spaces must provide a minimum 8-foot stall width and 16-foot stall length.
- Parallel parking spaces must provide a 9-foot stall width and 22-foot stall length.

- Enclosed parking spaces must provide a minimum 9-foot stall width and 20-foot stall length.

The Project would meet the minimum dimension requirements for standard and compact stall dimensions at all surface parking lots, in addition to the on-street parking proposed on Via Arriba and Via Mercado. The 90-degree angled parking stalls along northbound Via Arriba provide a 9-foot width and 16-foot stall length; however, the sidewalk accommodates a 2-foot vehicle overhang, extending the effective parking stall length to 18-feet. The enclosed parking proposed for Building C also meets the minimum dimension requirements for enclosed parking spaces. About 23 percent of the total on-street and off-street parking supply proposed by the Project is designated as compact; the *San Lorenzo Village Center Specific Plan* (Specific Plan, Alameda County Planning Department, July 2004) allows up to 25 percent of the parking supply to be designated as compact. All 74 compact parking spaces would be provided within the off-street surface parking lots reserved exclusively for the residential units.

The *Residential Design Standards and Guidelines* addresses ***Dead End Drive Aisles*** in Guideline G-6, "Design vehicular circulation to allow through movement between adjacent parking areas." The residential parking garage in Building B, the residential surface parking near the proposed dog park, and the shared commercial/residential parking lot all provide dead end drive aisles. Although dead-end drive aisles are provided in the residential parking garage and surface parking lot, only residents are expected to use these drive aisles, therefore, it is not necessary to eliminate the dead-end drive aisles. A turn around area is also proposed at the dead-end drive aisle on the shared commercial/residential parking lot to allow vehicles to make a three-point maneuver out of the parking lot if all 33 spaces are utilized. Parking demand management recommendations for the shared commercial/residential parking lot are provided in Section 6.5 below.

Truck Access

The *San Lorenzo Village Center Specific Plan* requires a minimum of one off-street loading space for single commercial uses exceeding 10,000 square feet of floor area; the Specific Plan does not require off-street loading spaces for residential uses or if single commercial uses have a floor area less than 10,000 square feet. Although the Project proposes more than 10,000 square feet of retail/commercial uses, the proposed floor area is expected to be utilized by multiple businesses; therefore, the floor area for individual uses is expected to be less than 10,000 square feet for each use.

The Project site plan does not currently provide off-street loading spaces for retail/commercial uses or residential uses. Although not required by the Specific Plan, providing a minimum of one off-street or on-street loading space for retail/commercial uses is recommended. Not providing off-street loading zones within the residential uses is less of a concern as moving trucks will likely access available on-street or off-street parking for loading operations.

The Project site plan does identify an on-street loading space on northbound Via Arriba just south of Paseo Grande. The proposed loading space is 9-feet wide and 30-feet in length. The Project site plan does not specify if the loading space would be designated for commercial loading, passenger loading, or both. The proposed loading zone can only accommodate one passenger vehicle or one delivery truck less than 30 feet in length at a time. Although the proposed loading is within 40 feet of the Via Arriba/Paseo Grande intersection (#8), loading operations are not expected to occur frequently during the AM and PM peak hours, therefore the location of the loading zone is not expected to impact traffic operations at the adjacent intersection. Section 17.52.820 of the Alameda County Municipal Code specifies that every required loading space shall be not less than 10-feet in width and 60-feet in length. Although loading spaces are not required for the Project, the proposed loading zone should be re-designed, if feasible, to meet the minimum loading space dimension requirements specified in the Alameda County Municipal Code without impacting the sight distance at adjacent intersections.

Consultant Recommendation 3:

> Re-design the proposed loading zone on northbound Via Arriba just south of Paseo Grande to be not less than 10-feet in width and 60-feet in length, if feasible. Re-designing the proposed loading zone should not impact the sight distance at adjacent intersections. Furthermore, designate the loading zone for commercial loading with up to a 20-minute limit for commercial loading activities and a 3-minute limit for passenger loading, enforced 24 hours a day, seven days a week,

6.2 Pedestrian Access and Circulation

Sidewalks, crosswalks, and pedestrian-scale lighting facilitate pedestrian access and circulation.

Sidewalks should be an adequate width to provide a comfortable and safe environment for pedestrians. The *San Lorenzo Village Center Specific Plan* guidelines suggest that all interior street sidewalks should have a minimum width of 8-feet. Along Hesperian Boulevard, sidewalk widths should be a minimum of 12-feet with a landscape buffer along the Project site frontage. The Project proposes a minimum sidewalk width of 8-feet with 4-foot wide tree planters spaced more than 30-feet apart along the Project frontage on Paseo Grande, both sides of Via Arriba, and on the north side of Via Mercado; however, the Project would provide a sidewalk width of 5-feet without tree planters along the south side of Via Mercado. Furthermore, the Project site plan does not show any wheel stops proposed for the 90-degree angled parking on the south side of Via Mercado, which would result in about a 2-foot parking overhang onto the sidewalk, reducing the effective sidewalk width to 3-feet when vehicles utilize the on-street parking spaces on Via Mercado.

The proposed site plan shows Hesperian Boulevard with a 8-foot to 17-foot width, including a landscaped buffer. The sidewalk width on the west side of Hesperian Boulevard adjacent to the proposed transit island is 8-feet, which is less than the suggested 12-foot minimum. Although this segment of the sidewalk width is less than the suggested minimum, the reduced sidewalk width was necessary to accommodate a Class 2 bicycle lane and transit island along southbound Hesperian Boulevard; the bicycle and transit improvements are also consistent with the planned improvements proposed as part of the Hesperian Boulevard Corridor Improvement Project. There are no proposed walkways along the internal drive-aisles, except between the Americans with Disabilities Act (ADA) parking spaces and the closest Project pedestrian access point.

Consultant Recommendation 4:

> Provide a minimum sidewalk width of 8-feet along the south side of Via Mercado, if feasible. In addition, provide wheel stops at each on-street parking stall on the south side of Via Mercado to prevent the vehicle parking overhang along the proposed sidewalk.

Pedestrian-Scale Lighting enhances pedestrian visibility and safety at night. The proposed Project site plan does not specify the type of proposed lighting.

Consultant Recommendation 5:

> Provide pedestrian-scale lighting along all sidewalks such as the Project frontage on Hesperian Boulevard and Paseo Grande, and within the Project site on Via Arriba and Via Mercado.

Marked Crosswalks provide safe and accessible pedestrian access by increasing visibility for oncoming motorists and by directing pedestrians along designated paths. The proposed Project site plan shows marked crosswalks with ADA accessible directional curb ramps at each of the site access intersections; however, crossing improvements are not proposed at the existing Paseo Largavista/Paseo Grande intersection (#7).

Consultant Recommendation 6:

> Provide marked crosswalks across the west and south approaches and ADA-compliant directional curb ramps at southeast corner of the Paseo Largavista/Paseo Grande intersection (#7).

6.3 Bicycle Access and Circulation

Bicycle Parking is required for both retail/commercial and residential uses by the *Residential Design Standards and Guidelines*. Required short-term parking for residential uses are one space per 25 units, and two percent of the required auto parking for retail/commercial uses. Long-term bicycle parking for multi-family residential uses are one space for every four units. Long-term bicycle parking is not required for the proposed retail/commercial space. As a result, the Project should provide a minimum of 9 short-term and 41 long-term bicycle parking spaces.

Short-term bicycle spaces should be located within 50-feet of the primary building entrance and visible from the entrance. Long-term bicycle parking must be enclosed and located on-site. Maintain a minimum 5-foot clearance on sidewalks adjacent to bicycle parking. The Project site plan shows the proposed location of bicycle parking but does not specify the quantity provided or whether it would be short-term or long-term parking.

Consultant Recommendation 7:

> Provide a minimum of 9 short-term and 41 long-term bicycle parking spaces. Ensure location and dimension of bicycle parking is in line with those provided in the *Residential Design Standards and Guidelines*.

Planned Bicycle Facilities along Hesperian Boulevard include Class II bicycle lanes based on Alameda County's *Bicycle and Pedestrian Master Plan for Unincorporated Areas* (2012). Alameda County's upcoming Hesperian Boulevard Corridor Improvement Project will implement Class II bicycle lanes along both directions of Hesperian Boulevard between Lewelling Boulevard and A Street; construction is anticipated to be completed by late 2021.

Consultant Recommendation 8:

> Ensure that proposed site improvements along the Project frontage on Hesperian Boulevard would not preclude the implementation of the Class II bicycle lanes planned as part of the Hesperian Boulevard Corridor Improvement Project.

6.4 Transit Access and Ridership

AC Transit currently provides transit service at one bus stop on the Project site frontage in the southbound direction on Hesperian Boulevard, just south of Paseo Grande; the existing stop has a bench and shelter. Alameda County staff are also considering implementing a transit island at the existing bus stop on the Project site frontage as part of the upcoming Hesperian Boulevard Corridor Improvement Project. The transit island would provide a buffer between the future Class II bicycle lane and the bus stop on southbound Hesperian Boulevard. The Project site plan shown on Figure 2 includes the provision of the planned far-side transit island along southbound Hesperian Boulevard at Paseo Grande. The Project applicant will continue to coordinate with Alameda County and AC Transit staff to ensure that the proposed site improvements along the Project frontage on Hesperian Boulevard do not preclude the bus stop improvements planned as part of the Hesperian Boulevard Corridor Improvement Project.

Potential Private Shuttle Service

The Project applicant has indicated interest in providing private shuttle service for Project residents and employees between the Project site and the Bay Fair BART Station during the weekday AM and PM peak periods. The shuttle would be provided as an amenity to Project residents and employees, free of charge. Although the operating details for the shuttle are not currently available, if implemented, the Project applicant would operate a single shuttle during the weekday AM and PM peak periods with about 30-minute headways. The Project applicant is also considering designating the proposed loading zone on northbound Via Arriba just south of Paseo Grande as the shuttle stop.

In general, implementing private shuttle service with connections to major transit centers can be an effective strategy for reducing the automobile commute mode share and increasing transit ridership of residents and employees of a mixed-use development. However, the Project site is currently served by high-quality transit service along Hesperian Boulevard. As shown in Table 2, AC Transit currently operates Line 97 along Hesperian Boulevard, with the nearest stops located at the Hesperian Boulevard/Paseo Grande intersection (#3). Line 97 operates with 15-minute headways during the weekday AM and PM peak periods with connections to the Bay Fair BART Station to the north and the Union City BART Station to the south.

AC Transit, in partnership with Alameda County, the City of San Leandro, the City of Hayward and Union City, recently implemented the Line 97 Improvement Project; the improvements include the installation of a transit signal priority (TSP) system at all signalized intersections along the route to reduce transit delays in addition to a variety of bus stop improvements. Since the Project site is currently served by high-quality transit service, implementing a private shuttle with connections to the Bay Fair BART Station is not expected to substantially increase transit ridership among Project residents and employees. Implementing a private shuttle service is however expected to decrease the number of Project residents and employees that would otherwise use AC Transit to commute between the Project site and the Bay Fair BART Station. In lieu of implementing private shuttle service, the Project Applicant should consider participating in AC Transit's EasyPass program, by which the Project applicant and on-site employers, can purchase annual bus passes for residents and employees in bulk at a discount. The passes allow unlimited rides on all AC Transit buses.

Consultant Recommendation 9:

> In lieu of implementing private shuttle service, the Project Applicant should consider participating in AC Transit's EasyPass program, by which the Project applicant and on-site employers, can purchase annual bus passes for residents and employees in bulk at a discount. If the Project applicant prefers to implement the private shuttle service, the Project applicant should coordinate with Alameda County and AC Transit staff to ensure that shuttle operations do not impact AC Transit bus stop operations adjacent to the Project site and at the Bay Fair BART Station. Furthermore, if the Project applicant designates the proposed loading zone on northbound Via Arriba just south of Paseo Grande as the shuttle stop, the proposed loading zone should prohibit commercial and passenger loading operations during the weekday AM and PM peak periods, when the shuttle is in operation.

6.5 Parking Supply and Demand Analysis

Fehr & Peers conducted an analysis to determine the amount of parking required for the Project site uses, 163 dwelling units of multi-family apartments, a 2,000 square-foot coffee shop, and 9,520 square-feet of retail/commercial uses. The *San Lorenzo Village Center*

Specific Plan requires that mixed-used developments provide parking based on applying basic parking ratios for each use or based on a parking demand study, whichever is greater. The Urban Land Institute (ULI) created a shared parking methodology to estimate peak parking demand for mixed-use developments. This section covers the Project parking demand determined by a shared parking analysis and the parking required for the Project by the Specific Plan.

Shared Parking

The *San Lorenzo Village Center Specific Plan* encourages providing shared-use (non-exclusive) parking areas that can serve residents, guests, commercial patrons, employees, and other users during different times of day[3]. In response to the Specific Plan goals, the Project would provide a total of 93 shared parking spaces (60 on-street and 33 off-street parking spaces) to be used by residents, guests, commercial patrons, and employees of the Project. About 29 percent of the Project parking supply would be designated as shared-use, the remaining 71 percent of the parking supply (233 off-street parking spaces) are designated for residential use only.

A key challenge for urban mixed-use developments is right-sizing the parking. Providing too much parking adds to the cost of development and encourages driving; providing inadequate parking can cause user frustration and limit market viability, or cause parking spillover on surrounding residential streets. Slightly less than one-third of the proposed Project parking supply would be shared among residential and commercial uses; therefore, the ULI shared parking methodology was applied to determine the minimum parking supply needed to accommodate the peak parking demand for the residential and commercial uses combined. The shared parking analysis accounts for the parking demand for residents, guests, commercial patrons, and employees, considering that the peak parking demand generated by residential and commercial uses occur during different hours of the day. For example, the peak parking demand for residents is typically after 9:00 PM, which is when commercial businesses are closed. Similarly, many residents depart for work between 7:00 and 9:00 AM, however most businesses open after 9:00 AM. The ULI shared parking methodology and results are summarized below; the shared parking

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[3] Circulation Goal 5, Objective 5-C of the *San Lorenzo Village Center Specific Plan* (page 15, Alameda County Planning Department, July 2004) states: “Provide shared-use (non-exclusive) parking areas that can serve a variety of users during different times of the day.” Parking Policy 2.1 (page 35) also states: “Encourage common parking areas as opposed to exclusive use parking, especially during evening and other non-peak hours.”

demand analysis results were also used to inform the minimum parking required per the Specific Plan.

Shared Parking Methodology

The ULI sponsored a national study in 1984 that established a basic methodology for analyzing parking demand in mixed-use developments and developed averages for parking rates by land use. In 2004, Fehr & Peers was involved in a ULI sponsored update of this study[4]. The analysis presented in this memorandum utilizes the data from the updated *Shared Parking, Second Edition* report, as well as data from the International Council of Shopping Centers (ICSC).

In the shared parking methodology, the base-parking rate and daily, hourly, and seasonal patterns for each land use are established. Then, the unique travel characteristics of the Project establish the overall parking demand. Further adjustments occur for non-auto modes of travel in the area.

Shared Parking Parameters

A number of characteristics regarding a particular development establish the number of spaces needed under shared parking conditions. The most important of these characteristics are the mix and size of land uses proposed by a project. The remaining parking-related factors to determine peak parking demand by hour are:

- *Parking Ratio* – The ULI model uses the most recently updated parking ratios for each land use. National study of parking occupancy data from across the United States establish these ratios.
- *Mode Split/Walk-In* – Trips taken by active transportation and transit modes by visitors, employees, and residents affects the overall parking demand. The daily weekday and weekend walking, biking, and transit trips reduction applied to the Project's retail/commercial trip generation and parking demand is 13 percent based on the ACS journey-to-work data for the study area. Resident parking reductions are zero because residents may still own and park a car even if they use transit for some of their trips. Mode split reductions were not applied to the residential guest parking demand estimates.

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[4] *Shared Parking, Second Edition*, Urban Land Institute, Washington, D.C., 2004

- *Auto Occupancy* – The shared parking analysis uses national averages for auto occupancy for all land uses.
- *Captive Market* – The shared parking analysis allows for reductions based on the percentage of captive trips, or trips made internal to the project site. The captive market for the proposed Project is assumed to be three percent based on MXD and ITE methodologies.
- *Seasonal Variations* – The shared parking analysis summarized in this report includes the month-to-month variations in parking demand for land uses.
- *Peak Hour Adjustments* – The shared parking analysis adjusts each land use's peak hour parking demand by a peak hour factor to ensure the parking demand reflects the total project site's peak demand, rather than individual land uses.
- *Parking Circulation Factor* – The parking supply should be at least five percent greater than the maximum estimated demand to minimize drivers circulating through the parking aisles looking for a parking space.

Table 11 provides a summary of the shared parking inputs for each land use and user as well as the base and adjusted rates as recommended by ULI.

Table 11: Shared Parking Analysis Inputs and Rates

Land Use	Weekday Parking Demand Rate				Weekend Parking Demand Rate			
	Base Rate[1]	Auto Trips (%)	Non-Captive Trips (%)[2]	Project Rate[3]	Base Rate[1]	Auto Trips (%)	Non-Captive Trips (%)[2]	Project Rate[3]
Retail/Commercial (Customer)	2.9	87%[4]	97%	2.45	3.2	87%[4]	97%	2.70
Retail/Commercial (Employee)	0.7	87%[4]	97%	0.59	0.8	87%[4]	97%	0.68
Residential (Resident)	1.5	100%[5]	97%	1.46	1.5	100%[5]	97%	1.46
Residential (Guest)	0.15	100%[6]	97%	0.15	0.15	100%[6]	97%	0.15

Notes:

1. ULI recommended parking rates per 1,000 square-feet of retail/commercial space, or per dwelling unit for residential uses for the yearly peak period (December evenings).
2. Three percent of trips are assumed to be captive trips based on MXD and ITE methodologies.
3. Project Rate = Base Rate*Auto Trip %*Non-Captive Trips %
4. Weekday and Weekend Trip Reductions are based on ACS data that shows 13 percent of work trips are walk, bike, or transit trips:
   Auto Trips (%) = 100% - % Daily Walk/Bike/Transit Trips
5. Mode split reductions were not applied to resident parking. While residents may use active transportation or transit modes of travel for a percentage of their trips, they may still own and park a car.
6. Mode split reductions were not applied to residential guests.

Sources: *Shared Parking, Second Edition*; Fehr and Peers, 2018.

Shared Parking Results

Table 12 summarizes the results of the shared parking analysis. As shown on Table 12, the proposed off-street parking alone will not meet the estimated peak demand, resulting in a deficit of 47 parking spaces during weekday peak parking demand hour and 49 parking spaces during weekend peak parking demand hour. By adding the on-street parking, the proposed total parking supply results in a 29 and 27 parking surplus during the weekday and weekend peak parking demand hours, respectively. Note, the parking demand results summarized in Table 12 are for the yearly peak period, which is a typical evening in December. **Appendix I** presents the shared parking analysis results, including average demand per month and hour.

Table 12: Shared Parking Peak Hour Demand Results

Land Use	User	Weekday Estimated Parking Demand	Weekend Estimated Parking Demand
Retail/Commercial	Customer	21	23
Retail/Commercial	Employee	6	6
Residential	Resident	231	231
Residential	Guest	23	23
	Total Peak Hour Parking Demand	*281*	*283*
	Total Peak Hour Parking Demand Plus 5% Circulation Factor	*298*	*300*
	Proposed Off-Street Parking Supply	266	266
	Proposed Off-Street Parking Deficit	***-32***	***-34***
	Proposed On-Street Parking Supply	60	60
	Total Off-Street and On-Street Parking Supply	326	326
	Proposed Off-Street and On-Street Parking Surplus	***28***	***26***

Notes:

1. These results are for the yearly peak period, this Project is expected to have the highest parking demand during a typical December evening. The parking demand study estimates a peak hour shared parking demand of 268 spaces (243 spaces for residents and 25 spaces for guests) for the residential uses, and 32 spaces (25 spaces for shopping center customers and 7 spaces for employees) for the commercial uses.
2. Estimated parking demand is based on the square-feet of retail/commercial space and number of dwelling units for residential land use, as well as the adjusted Project parking demand rates provided in Table 11.

Sources: *Shared Parking, Second Edition*; Fehr and Peers, 2019.

Parking Required Per Specific Plan

The *San Lorenzo Village Center Specific Plan* defines parking regulations by establishing basic ratios for required auto parking spaces or requiring a parking demand study to establish parking supply for various land uses. **Table 13** summarizes the minimum parking requirement for the proposed Project using the Specific Plan requirements for residential and commercial uses. As shown in Table 12 and Table 13, the Project is estimated to generate a peak shared parking demand of 300 spaces for the following uses during a weekend evening peak hour in the month of December:

- A parking demand of 243 spaces generated by residents
- A parking demand of 25 spaces generated by guests
- A parking demand of 25 spaces generated by commercial patrons
- A parking demand of 7 spaces generated by commercial employees

The Specific Plan establishes a parking requirement for residents of two parking spaces per dwelling unit, or as determined by a parking demand study, whichever is greater. The Specific Plan also specifies that the parking supply for residential guests and commercial uses be determined based on a parking demand study. As previously mentioned, slightly less than one-third of the proposed Project parking supply would be designated as shared-use among residential and commercial uses; thus, the parking demand analysis considers the demand for residential and commercial uses combined. Therefore, the Specific Plan minimum parking requirement is based on the greater of the two parking spaces per dwelling unit or the shared parking demand results for residential and commercial uses combined. As shown in Table 13, the parking requirement is greater using the basic ratio compared to the peak hour shared parking demand estimate, therefore the minimum parking requirement for the Project is 326 spaces. The total off-street and on-street parking supply proposed by the Project meets the minimum parking requirement.

Table 13: Specific Plan Parking Requirements

Land Use	Size	Unit	Required Parking
Parking Required by Applying Basic Ratio			
Apartments	163	Dwelling Units	326 Spaces
Shared Parking Demand Study Results			
Apartments	163	Dwelling Units	268 Spaces (243 spaces for residents, 25 spaces for guests)
Shopping Center	11,520	Square Feet	32 Spaces (25 spaces for customers, 7 spaces for employees)
Peak Hour Shared Parking Demand Estimate			300 Spaces
Parking Required by Specific Plan			
Minimum Parking Requirement Based on Specific Plan[1]			*326 Spaces*
Proposed Off-Street Parking Supply			266 Spaces
Off-Street Parking Supply Deficit			***-60 Spaces***
Proposed Off-Street and On-Street Parking Supply			326 Spaces
Off-Street and On-Street Parking Supply Surplus or Deficit			***0 Spaces***

Notes:

1. The required parking using the ratio of two spaces per dwelling unit is greater than peak hour parking demand estimate as determined by a shared parking demand study; therefore, the parking requirement for all uses based on the *San Lorenzo Village Center Specific Plan* is 326 spaces. The 326 spaces include 93 shared residential and commercial spaces, per the Specific Plan.

Sources: *San Lorenzo Village Center Specific Plan*; Fehr & Peers, 2019.

Parking Demand Management

This section describes recommended parking demand management strategies that can be implemented by the Project applicant in effort to reduce parking demand and better manage the proposed parking supply.

Consultant Recommendation 10:

> Unbundle parking costs from housing costs for the off-street parking spaces designated for residential uses only. This would result in residents paying one price for the residential unit and a separate price for parking, should they opt for a space. The price of a parking space can be adjusted so that resident parking demand matches the building’s parking supply.

Consultant Recommendation 11:

Enforce time limits for the shared commercial/residential parking lot and on-street parking spaces on Via Arriba and Via Mercado during business hours to encourage turnover of parking spaces to provide short-term parking for visitors and encourage residents to park within the assigned residential parking lots and garages. In addition, require retail/commercial employees to park on-street to maximize the parking supply available to customers within the shared commercial/residential parking lot.

Consultant Recommendation 12:

Limit private garage use for vehicle storage only to ensure that residents always have space in their garage to park their vehicle.

Consultant Recommendation 13:

Site management should provide residents and employees information about transportation options. This information can be posted at central locations and be updated as necessary. This information can include:

- *Transit Routes* – Promote the use of transit by providing user-focused maps. These maps provide residents and employees with wayfinding to nearby transit stops and transit-accessible destinations and are particularly useful for those without access to portable mapping applications.

- *Transit Fare Discounts* – Provide information about local discounted fare options offered by BART and AC Transit, including discounts for youth, elderly, and persons with disabilities.

- *Ridesharing* – Provide residents and employees with phone numbers and contact information for ride sharing options including Uber, Lyft, and local taxi cab services.

- *Carpooling* – Provide residents and employees with phone numbers and contact information for carpool matching services such as the Metropolitan Transportation Commission’s 511 RideMatching.

- *Guaranteed Ride Home* – Encourage residents to register for the Alameda County Guaranteed Ride Home (GRH) program operated by Alameda CTC. GRH programs encourage the use of alternative modes of transportation by offering free rides home if an illness or crisis occurs, if a resident is required to work unscheduled overtime, if a carpool or vanpool is unexpectedly unavailable, or if a bicycle problem arises. The GRH program is free to commuters who work in Alameda County and participants can use the program up to six times in a calendar year and no more than two times in any one calendar month. GRH programs are also be available for Project residents that work outside of Alameda County.

  - *Walking and Biking Events* – Provide information about local biking and walking events, as events are planned.

6.6 Other Thresholds

Based on the following significance criteria, also presented in Chapter 1, the Project impacts are expected to be *less than significant*.

- *Would the Project substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with County design standards or incompatible uses (e.g., farm equipment)?*

  The proposed Project would provide four primary access points, one on Hesperian Boulevard (study intersection #5), one on Paseo Largavista (study intersection #7), and two on Via Arriba (study intersections #8 and #10). The Project would also upgrade the pedestrian infrastructure along the Project frontage. The final design for the Project is expected to minimize potential conflicts between various modes and provide safe and efficient pedestrian, bicycle, and vehicle circulation within the site and between the Project and the surrounding circulation system. This is a less than significant impact, and no mitigation measures are required.

- Would the Project fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bicycle routes, pedestrian facilities, etc.)*?*

  The proposed Project would be consistent with adopted policies, plans and programs supporting alternative transportation; this is a *less than significant* impact.

- 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*?*

  The Hayward Airport and Oakland International Airport are the closest to the Project site and are located about two and seven miles from the site, respectively.

The proposed building heights are not expected to interfere with current flight patterns of either airport or other nearby airports. Therefore, the Project would not result in change in air traffic patterns. The Project would result in a *less than significant* impact on air traffic patterns.

6.7 Conclusion

The Project is not expected to cause significant impacts to the transportation system surrounding the Project site. Project site access and circulation can also be improved if consultant recommendations are implemented by the Project.

Appendix A: Count Data

Prepared by National Data & Surveying Services

Hesperian Blvd & Lewelling Blvd

Peak Hour Turning Movement Count

ID: 18-08120-001
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Hesperian Blvd

SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	332	651	61	0	1258
NOON	0	0	0	0	0
PM	319	770	133	0	1335
Lanes	1	3	1	0	

Lewelling Blvd

EASTBOUND

		AM	NOON	PM
⇦		1767	0	1436
↶	0	4	0	2
↰	2	261	0	371
→	2	314	0	560
↴	0	36	0	19

CONTROL

Signalized

	AM	NOON	PM
TEV	4387	0	4678
PHF	0.94		0.98

WESTBOUND

Lewelling Blvd

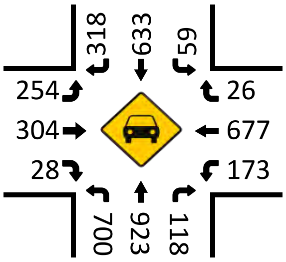
		PM	NOON	AM
↰	0	50	0	26
←	2	498	0	692
↲	2	157	0	181
↶	0	7	0	1
⇨		961	0	494

	⇩	↶	↰	↑	↱
Lanes		0	2	3	0
PM	946	0	617	914	261
NOON	0	0	0	0	0
AM	868	0	739	971	118

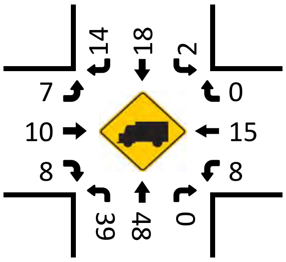
NORTHBOUND

Hesperian Blvd

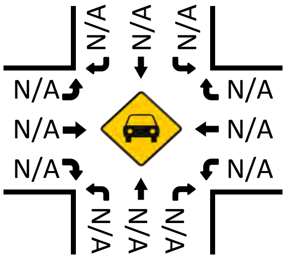
Cars (AM)



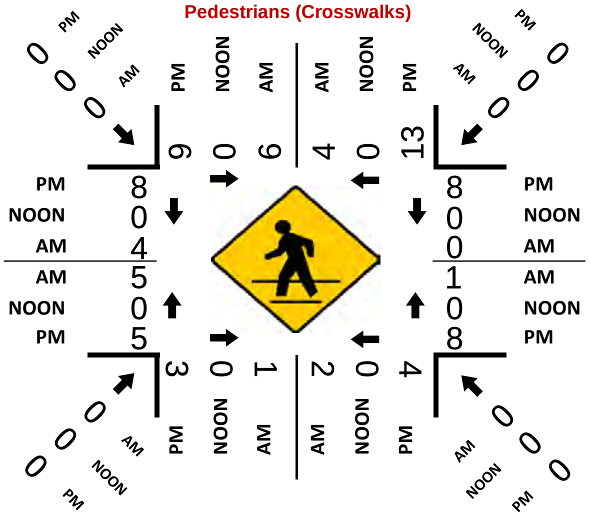
HT (AM)



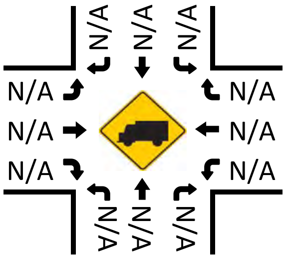
Cars (NOON)



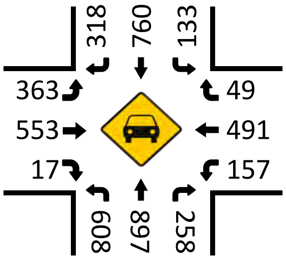
Pedestrians (Crosswalks)



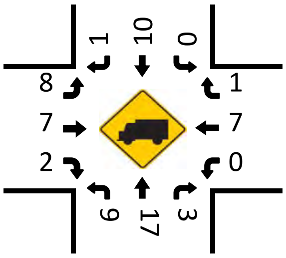
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

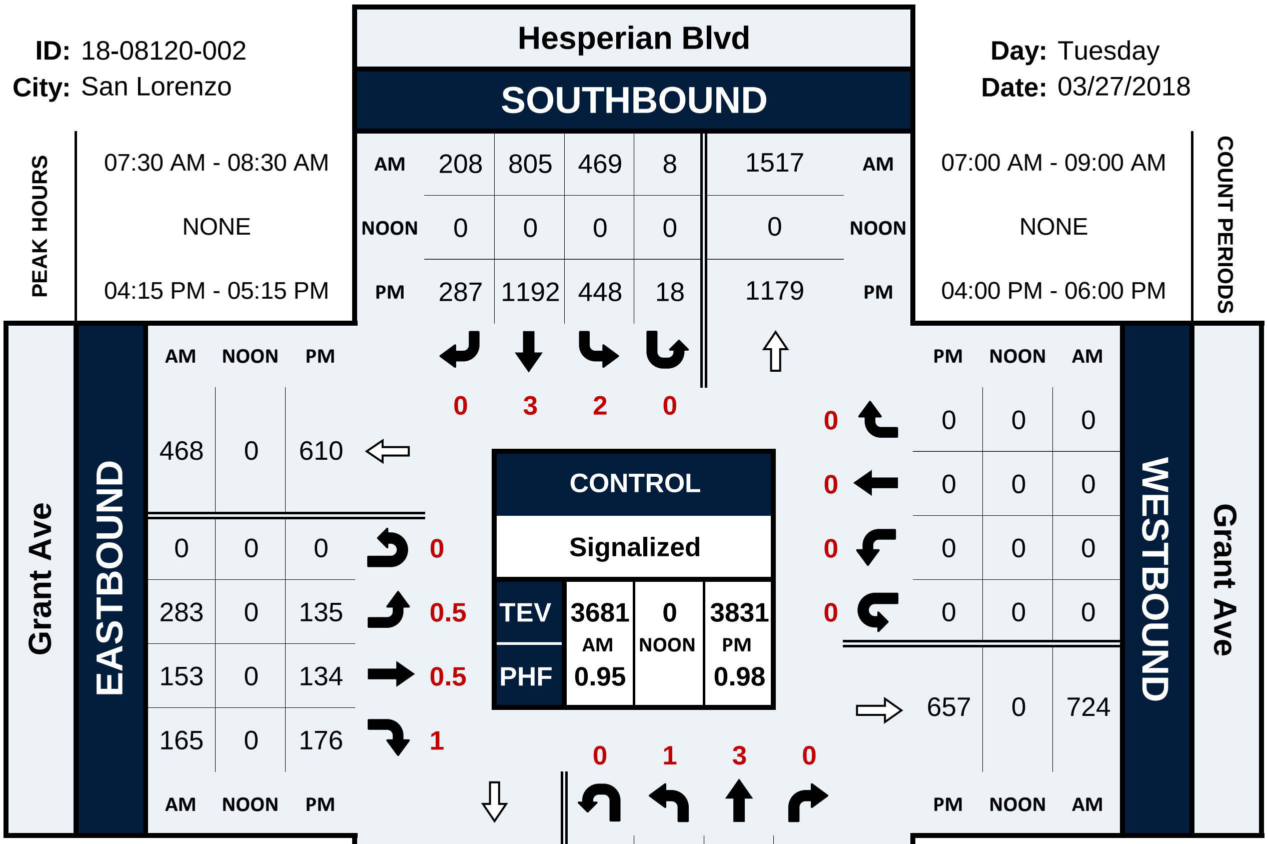
Hesperian Blvd & Grant Ave

Peak Hour Turning Movement Count

ID: 18-08120-002
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:15 PM - 05:15 PM	04:00 PM - 06:00 PM



Hesperian Blvd – SOUTHBOUND

AM	208	805	469	8	1517
NOON	0	0	0	0	0
PM	287	1192	448	18	1179
	0	3	2	0	

Grant Ave – EASTBOUND

	AM	NOON	PM	
	468	0	610	
	0	0	0	0
	283	0	135	0.5
	153	0	134	0.5
	165	0	176	1

CONTROL

Signalized

	AM	NOON	PM
TEV	3681	0	3831
PHF	0.95		0.98

WESTBOUND – Grant Ave

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	657	0	724

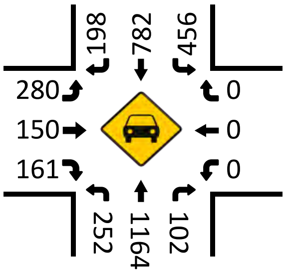
NORTHBOUND – Hesperian Blvd

		0	1	3	0
PM	1385	17	323	1026	75
NOON	0	0	0	0	0
AM	972	2	260	1226	102

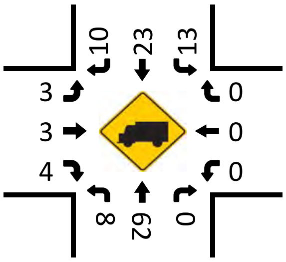
NORTHBOUND

Hesperian Blvd

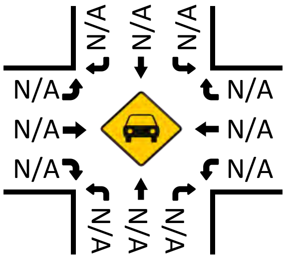
Cars (AM)



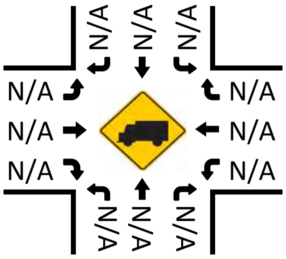
HT (AM)



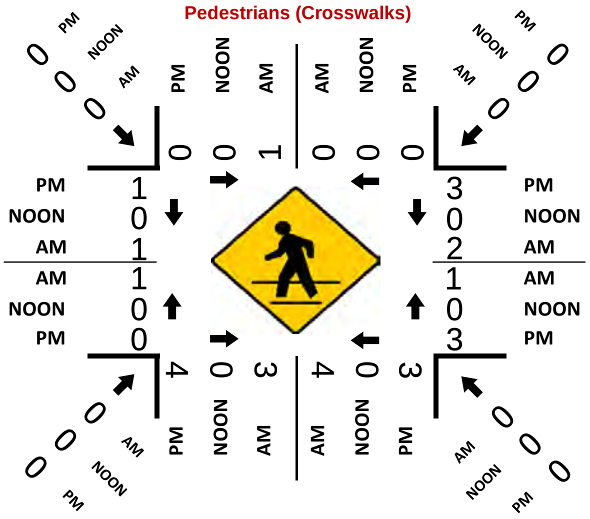
Cars (NOON)



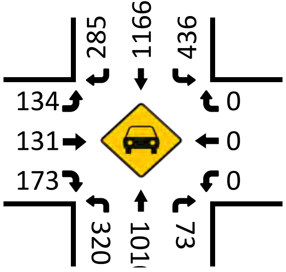
HT (NOON)



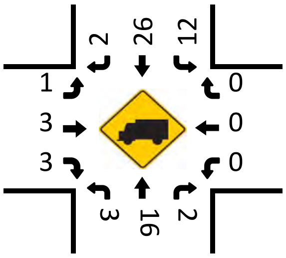
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Hesperian Blvd & Via Rodriguez

Peak Hour Turning Movement Count

ID: 18-08120-003
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Hesperian Blvd
SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	70	722	93	4	1639
NOON	0	0	0	0	0
PM	182	947	188	6	1458
	0	3	1	0	

Via Rodriguez
EASTBOUND

	AM	NOON	PM	
⇦	340	0	402	
↶	1	0	0	0
↱	127	0	90	1
→	249	0	144	0.5
↴	51	0	35	0.5

Via Rodriguez
WESTBOUND

		PM	NOON	AM
0.5	↰	141	0	205
0.5	←	151	0	201
1	↲	135	0	173
0	↶	0	0	0
	⇨	603	0	524

CONTROL

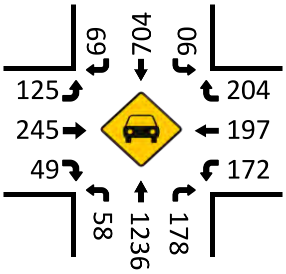
Signalized

	AM	NOON	PM
TEV	3450	0	3590
PHF	0.93		0.95

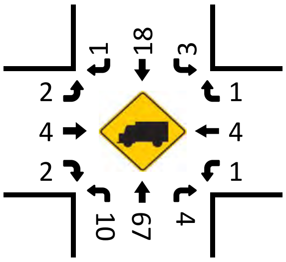
NORTHBOUND
Hesperian Blvd

		0	1	3	0
	⇩	↶	↰	↑	↱
PM	1127	10	69	1221	271
NOON	0	0	0	0	0
AM	947	1	68	1303	182

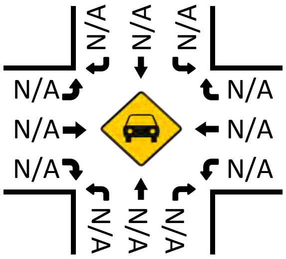
Cars (AM)



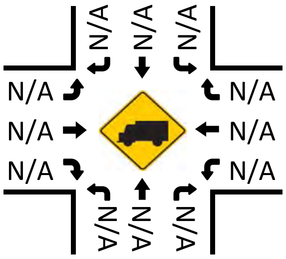
HT (AM)



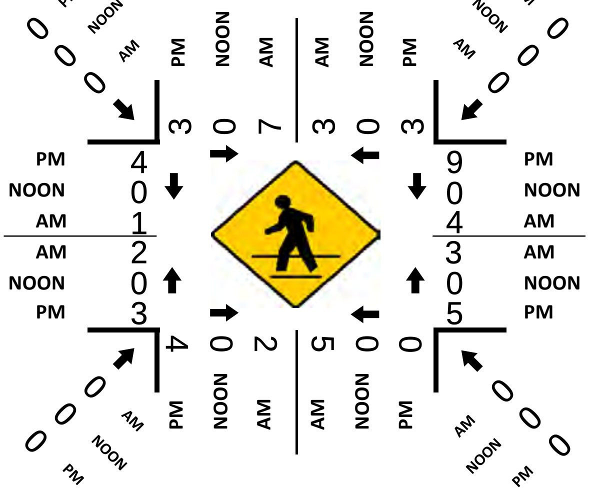
Cars (NOON)



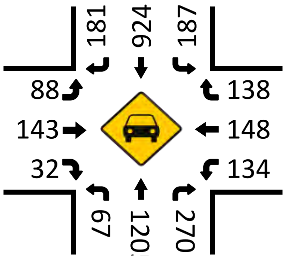
HT (NOON)



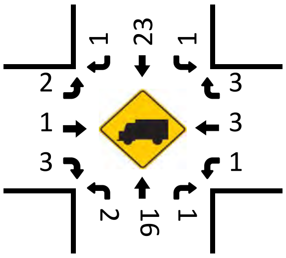
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Hesperian Blvd & Via Mercado

Peak Hour Turning Movement Count

ID: 18-08120-004
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Hesperian Blvd
SOUTHBOUND

AM	7	967	5	2	1577
NOON	0	0	0	0	0
PM	8	1116	11	5	1552
	1	3	1	0	

Via Mercado
EASTBOUND

AM	NOON	PM	
45	0	16	
0	0	0	0
53	0	2	0.5
1	0	3	0.5
32	0	8	1
AM	NOON	PM	

Via Mercado
WESTBOUND

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	53	0	35
	PM	NOON	AM

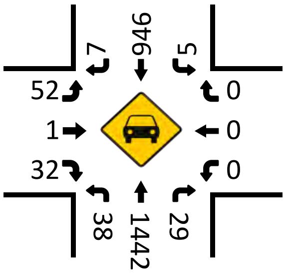
CONTROL
Signalized

TEV	2666	0	2754
	AM	NOON	PM
PHF	0.92		0.97

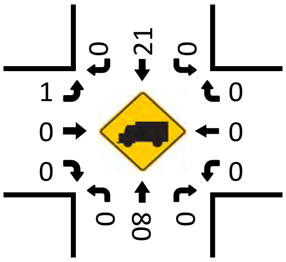
NORTHBOUND
Hesperian Blvd

		0	1	3	0
PM	1133	9	8	1545	39
NOON	0	0	0	0	0
AM	1009	10	38	1522	29

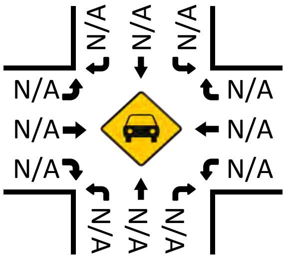
Cars (AM)



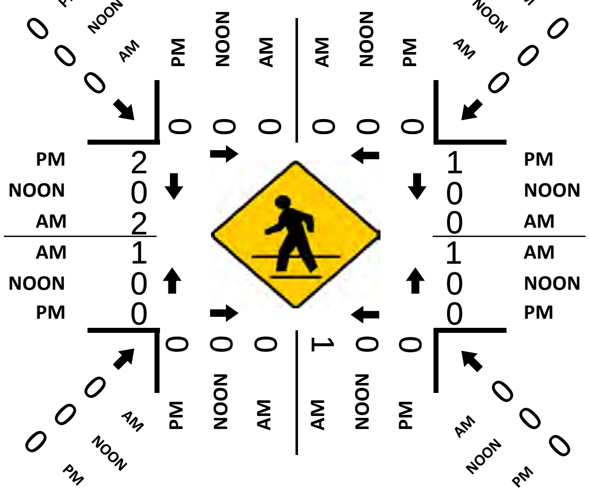
HT (AM)



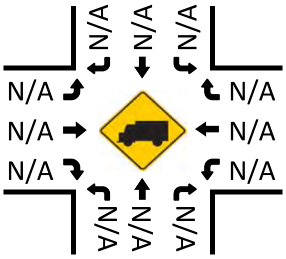
Cars (NOON)



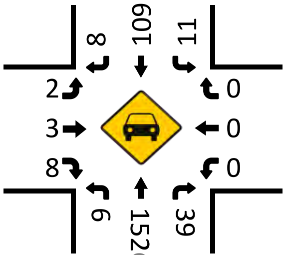
Pedestrians (Crosswalks)



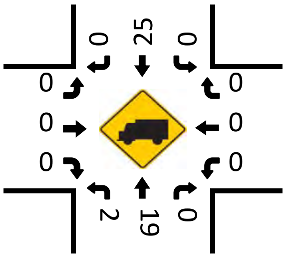
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

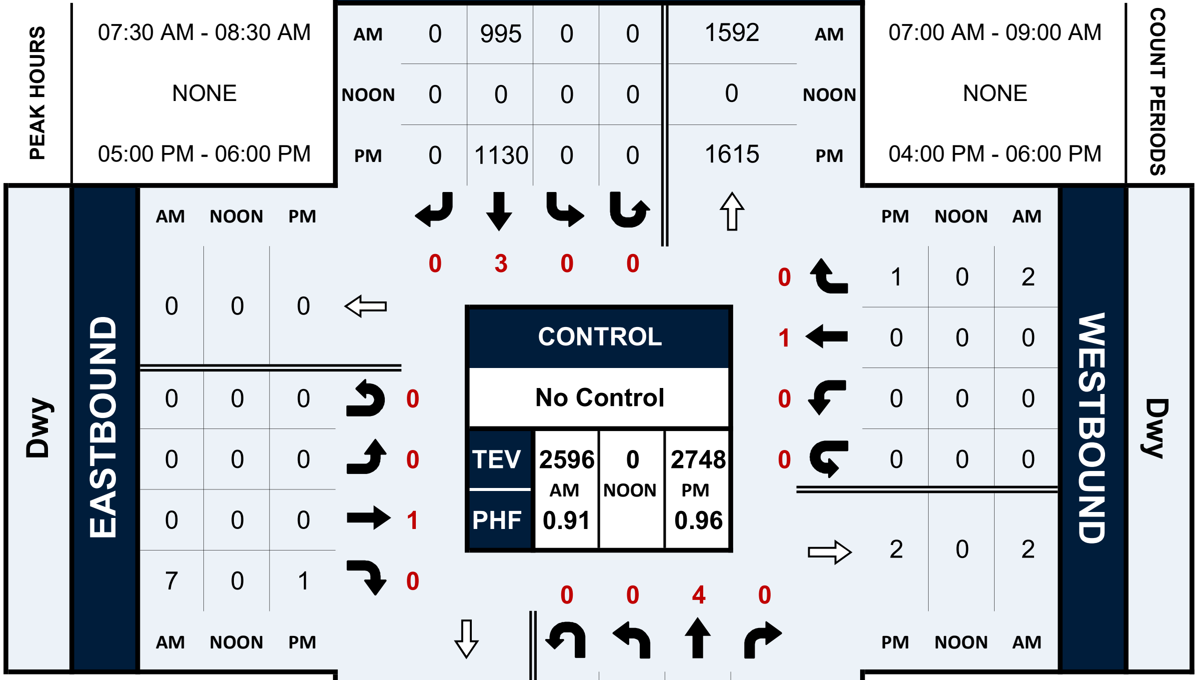
Hesperian Blvd & Dwy

Peak Hour Turning Movement Count

ID: 18-08120-005
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
05:00 PM - 06:00 PM	PM	04:00 PM - 06:00 PM



Hesperian Blvd SOUTHBOUND

	↲	↓	↳	↶	⇧	
AM	0	995	0	0	1592	AM
NOON	0	0	0	0	0	NOON
PM	0	1130	0	0	1615	PM
	0	3	0	0		

Dwy EASTBOUND

	AM	NOON	PM	
⇦	0	0	0	
↶	0	0	0	0
↱	0	0	0	0
→	0	0	0	1
↴	7	0	1	0

Dwy WESTBOUND

		PM	NOON	AM
0	↰	1	0	2
1	←	0	0	0
0	↙	0	0	0
0	↶	0	0	0
	⇨	2	0	2

CONTROL

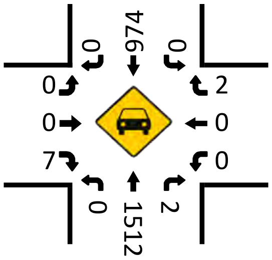
No Control

	AM	NOON	PM
TEV	2596	0	2748
PHF	0.91		0.96

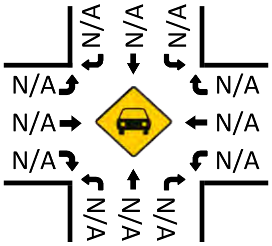
Hesperian Blvd NORTHBOUND

	⇩	↶	↰	↑	↱	
		0	0	4	0	
PM	1131	0	0	1614	2	PM
NOON	0	0	0	0	0	NOON
AM	1002	0	0	1590	2	AM

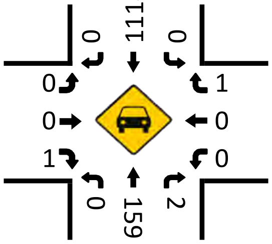
Cars (AM)



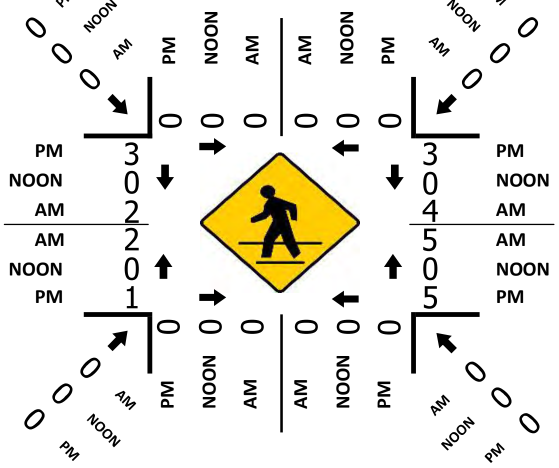
Cars (NOON)



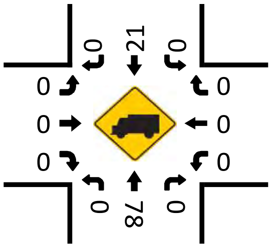
Cars (PM)



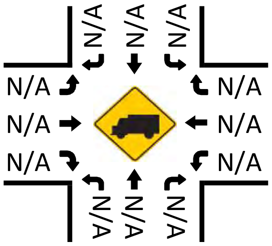
Pedestrians (Crosswalks)



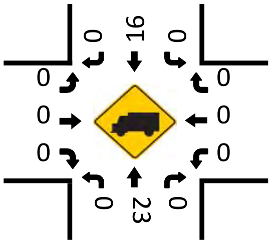
HT (AM)



HT (NOON)



HT (PM)



Prepared by National Data & Surveying Services

Hesperian Blvd & Hacienda Ave

Peak Hour Turning Movement Count

ID: 18-08120-006
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

PEAK HOURS
07:30 AM - 08:30 AM
NONE
05:00 PM - 06:00 PM

COUNT PERIODS
07:00 AM - 09:00 AM
NONE
04:00 PM - 06:00 PM

Hesperian Blvd
SOUTHBOUND

	↲	↓	↳	↶	⇧	
AM	33	879	90	24	1586	**AM**
NOON	0	0	0	0	0	**NOON**
PM	95	840	170	49	1641	**PM**
	0	3	1	0		

Hacienda Ave
EASTBOUND

	AM	**NOON**	**PM**		
⇦	351	0	346		
↶	0	0	0	0	
↱	91	0	83	1	
→	187	0	113	0.5	
↴	146	0	40	0.5	
	AM	**NOON**	**PM**		

CONTROL

Signalized

TEV	3515	0	3450
	AM	NOON	PM
PHF	0.88		0.96

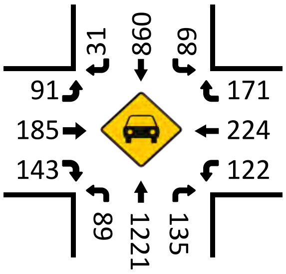
Hacienda Ave
WESTBOUND

		PM	**NOON**	**AM**
0.5	↰	135	0	174
0.5	←	134	0	228
1	↲	103	0	126
0	↷	0	0	0
	⇨	452	0	416
		PM	**NOON**	**AM**

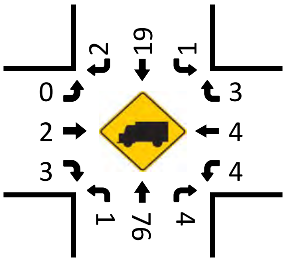
NORTHBOUND
Hesperian Blvd

	⇩	↶	↰	↑	↱	
		0	1	3	0	
PM	1011	28	117	1374	169	**PM**
NOON	0	0	0	0	0	**NOON**
AM	1162	11	90	1297	139	**AM**

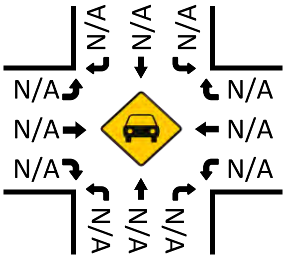
Cars (AM)



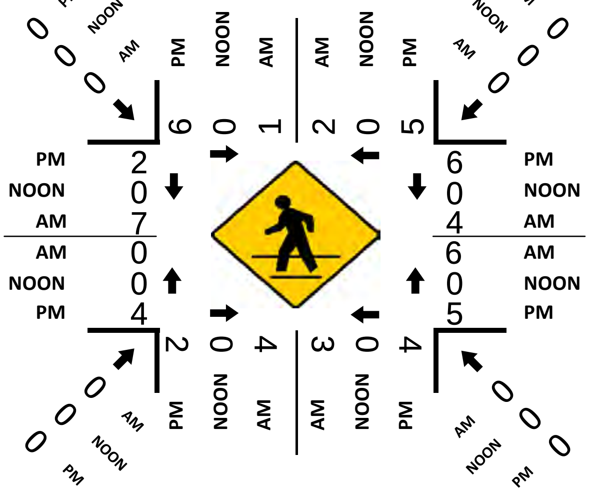
HT (AM)



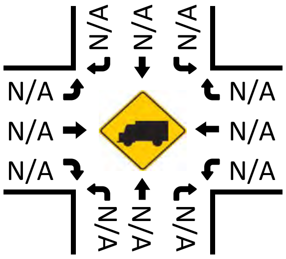
Cars (NOON)



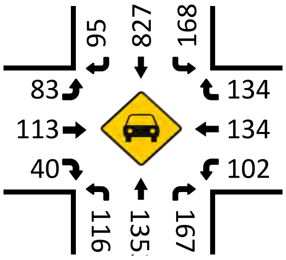
Pedestrians (Crosswalks)



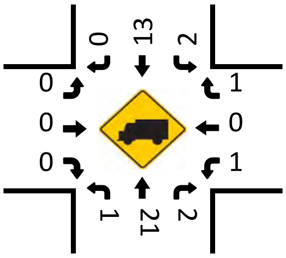
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Paseo Largavista & Paseo Grande

Peak Hour Turning Movement Count

ID: 18-08120-007
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

Paseo Largavista — SOUTHBOUND

	↲	↓	↳	U-turn	⇧
AM	12	1	22	0	50
NOON	0	0	0	0	0
PM	10	4	12	1	32
Lanes	0	1	0	0	

Paseo Grande — EASTBOUND

	AM	NOON	PM	Lanes
⇦	313	0	332	
U-turn	0	0	0	0
Left	15	0	5	0
→	358	0	231	1
Right	2	0	0	0

Paseo Grande — WESTBOUND

	Lanes	PM	NOON	AM
Right	0	24	0	33
←	1	320	0	295
Left	0	14	0	2
U-turn	0	0	0	0
⇨		249	0	391

Paseo Largavista — NORTHBOUND

	⇩	U-turn	Left	↑	Right
Lanes		0	0	1	0
PM	18	0	2	2	6
NOON	0	0	0	0	0
AM	5	0	6	2	11

CONTROL

2-Way Stop(N B/SB)

	AM	NOON	PM
TEV	759	0	631
PHF	0.87		0.97

Cars (AM)

	Right	Thru	Left
SB	12	0	22
EB	2	351	15
WB	29	285	2
NB	10	1	6

HT (AM)

	Right	Thru	Left
SB	0	1	0
EB	0	7	0
WB	4	10	0
NB	1	1	0

Cars (NOON)

	Right	Thru	Left
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

HT (NOON)

	Right	Thru	Left
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

Cars (PM)

	Right	Thru	Left
SB	10	4	12
EB	0	228	5
WB	24	314	14
NB	5	1	1

HT (PM)

	Right	Thru	Left
SB	0	0	0
EB	0	3	0
WB	0	6	0
NB	1	1	1

Pedestrians (Crosswalks)

	AM	NOON	PM
North leg →	7	0	1
North leg ←	4	0	3
West leg ↓	0	0	0
West leg ↑	1	0	0
East leg ↓	2	0	0
East leg ↑	2	0	0
South leg →	4	0	4
South leg ←	1	0	2
NW corner	0	0	0
NE corner	0	0	0
SW corner	0	0	0
SE corner	0	0	0

Prepared by National Data & Surveying Services

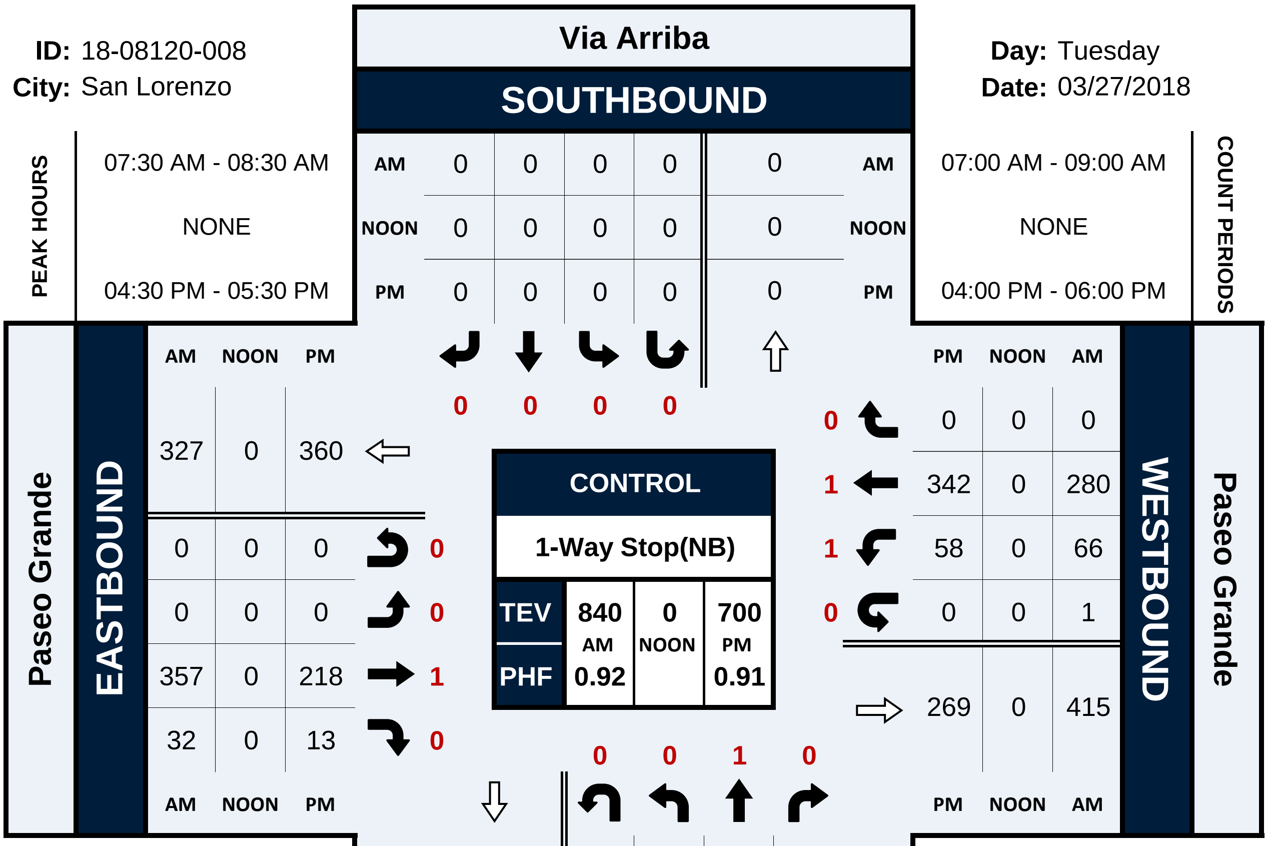
Via Arriba & Paseo Grande

Peak Hour Turning Movement Count

ID: 18-08120-008
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM



Southbound (Via Arriba)

					Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
Lanes	0	0	0	0	

Eastbound (Paseo Grande)

	AM	NOON	PM	Lanes
Departing	327	0	360	
U-turn	0	0	0	0
Left	0	0	0	0
Through	357	0	218	1
Right	32	0	13	0

Westbound (Paseo Grande)

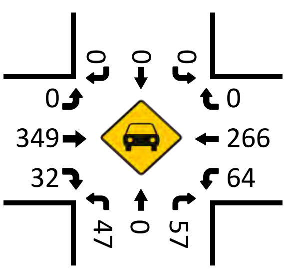
Lanes		PM	NOON	AM
0	Right	0	0	0
1	Through	342	0	280
1	Left	58	0	66
0	U-turn	0	0	1
	Departing	269	0	415

Northbound (Via Arriba)

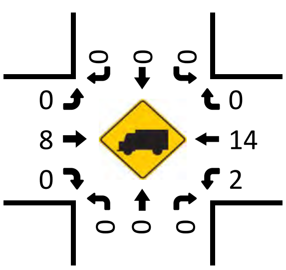
	Departing	U-turn	Left	Through	Right
Lanes		0	0	1	0
PM	71	0	18	0	51
NOON	0	0	0	0	0
AM	98	0	47	0	57

	AM	NOON	PM
TEV	840	0	700
PHF	0.92		0.91

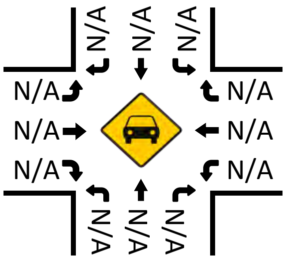
Cars (AM)



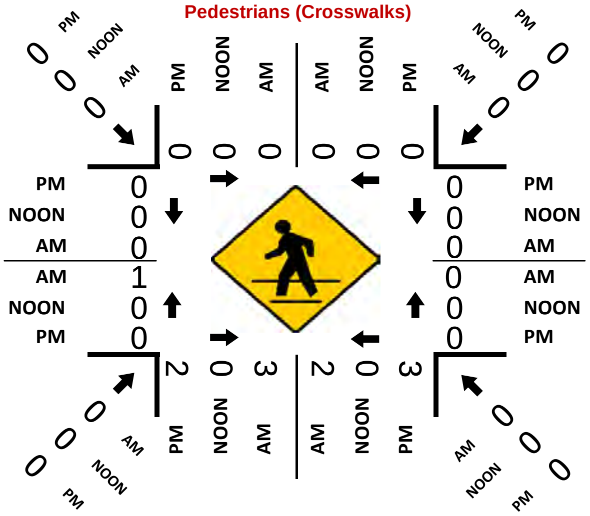
HT (AM)



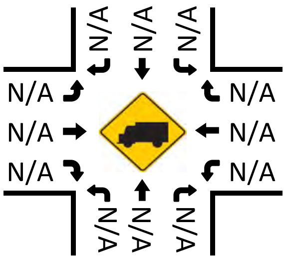
Cars (NOON)



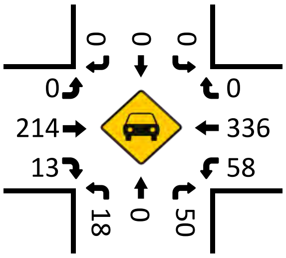
Pedestrians (Crosswalks)



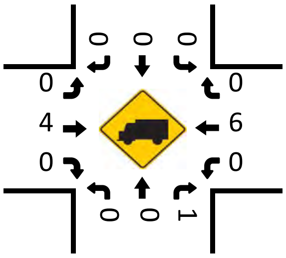
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

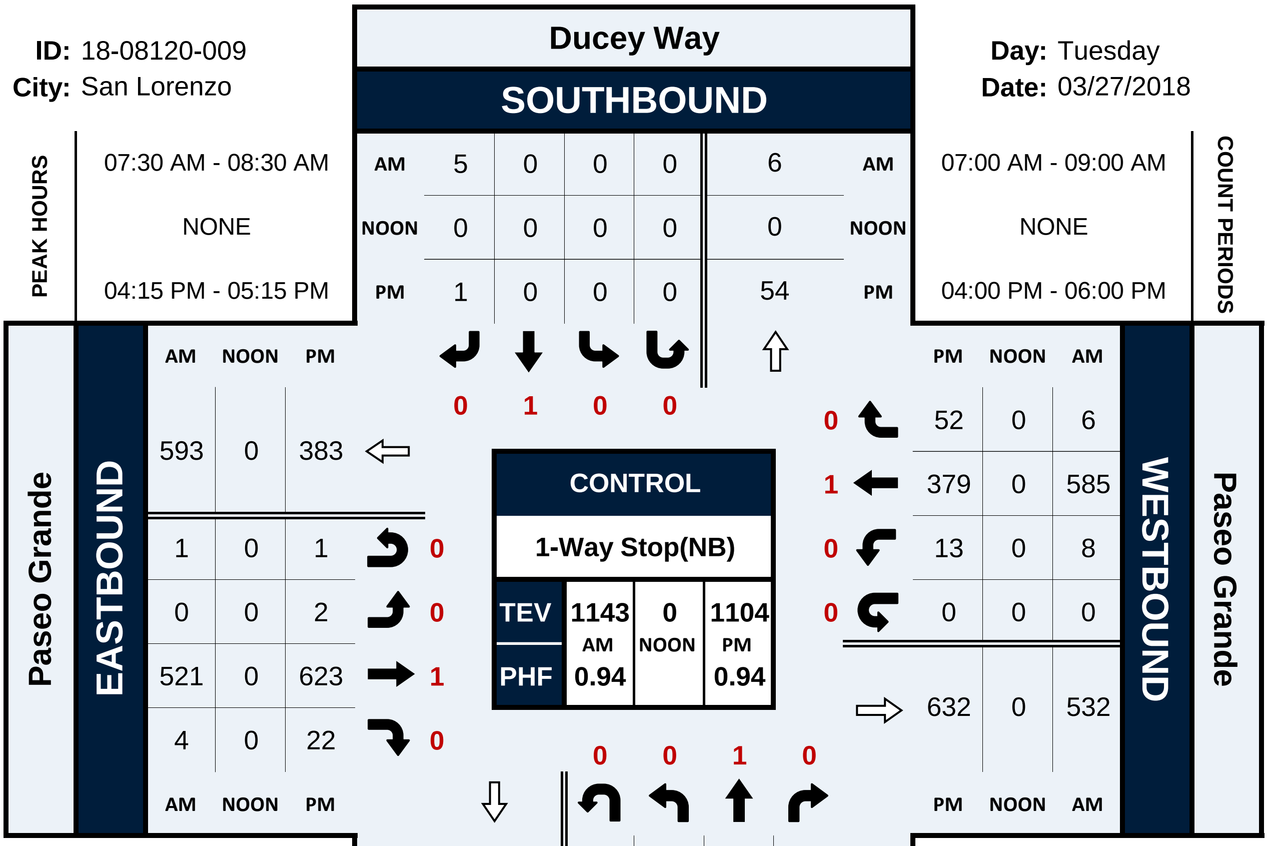
Ducey Way & Paseo Grande

Peak Hour Turning Movement Count

ID: 18-08120-009
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	04:00 PM - 06:00 PM



Ducey Way

SOUTHBOUND

AM	5	0	0	0	6	AM
NOON	0	0	0	0	0	NOON
PM	1	0	0	0	54	PM
	0	1	0	0		

Paseo Grande

EASTBOUND

AM	NOON	PM	
593	0	383	
1	0	1	0
0	0	2	0
521	0	623	1
4	0	22	0
AM	NOON	PM	

CONTROL

1-Way Stop(NB)

	AM	NOON	PM
TEV	1143	0	1104
PHF	0.94		0.94

WESTBOUND

Paseo Grande

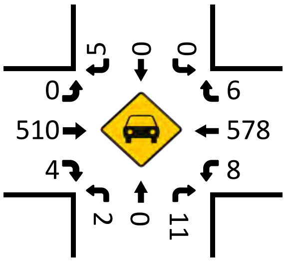
	PM	NOON	AM
0	52	0	6
1	379	0	585
0	13	0	8
0	0	0	0
	632	0	532
	PM	NOON	AM

		0	0	1	0	
PM	35	0	2	0	9	PM
NOON	0	0	0	0	0	NOON
AM	12	0	2	0	11	AM

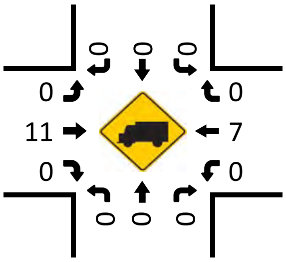
NORTHBOUND

Ducey Way

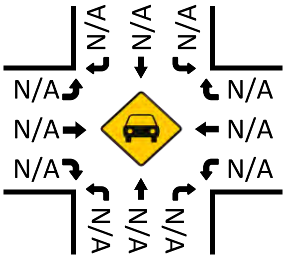
Cars (AM)



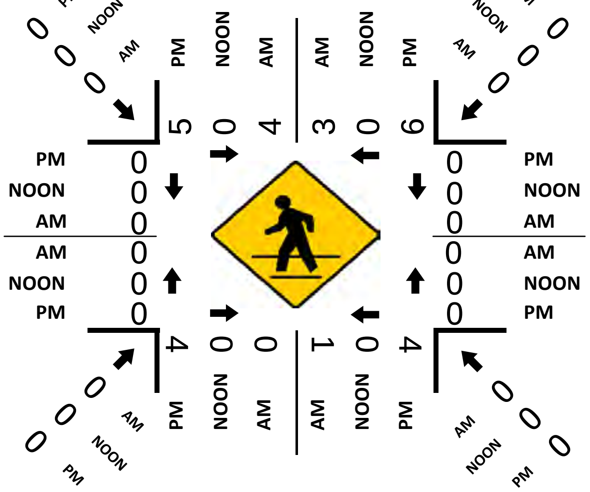
HT (AM)



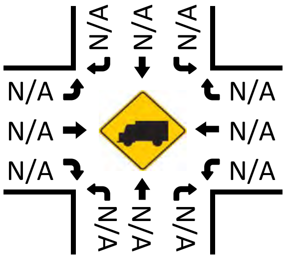
Cars (NOON)



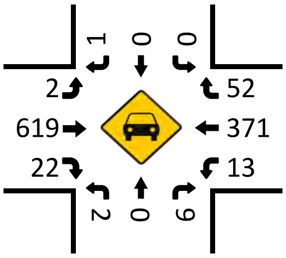
Pedestrians (Crosswalks)



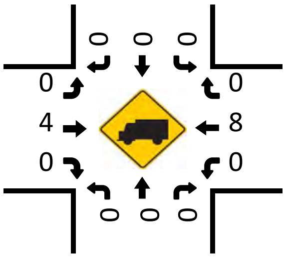
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Via Arriba & Via Mercado

Peak Hour Turning Movement Count

ID: 18-08120-010
City: San Lorenzo

Day: Tuesday
Date: 03/27/2018

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Via Arriba — SOUTHBOUND

	↲	↓	↳	⮌	⇧
AM	0	60	37	0	93
NOON	0	0	0	0	0
PM	0	63	6	0	71
	0	1	0	0	

Via Mercado — EASTBOUND

	AM	NOON	PM	
⇦	0	0	0	
⮌	0	0	0	0
↱	0	0	0	0
→	0	0	0	0
↴	0	0	0	0

Via Mercado — WESTBOUND

		PM	NOON	AM
↰	0	2	0	20
←	1	0	0	0
↙	0	12	0	8
⮍	0	0	0	0
⇨		14	0	102

Via Arriba — NORTHBOUND

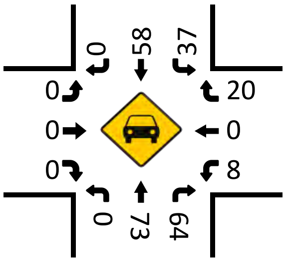
	⇩	⮍	↰	↑	↱
		0	0	1	0
PM	75	0	0	69	8
NOON	0	0	0	0	0
AM	68	0	0	73	65

CONTROL

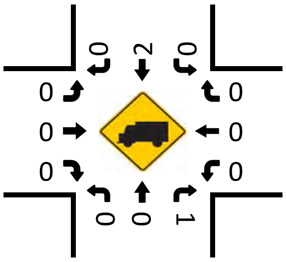
1-Way Stop(WB)

	AM	NOON	PM
TEV	263	0	160
PHF	0.68		0.91

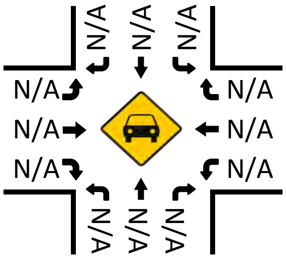
Cars (AM)



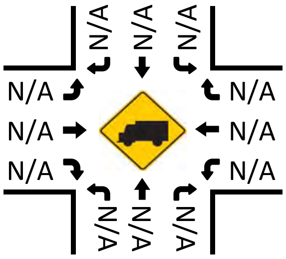
HT (AM)



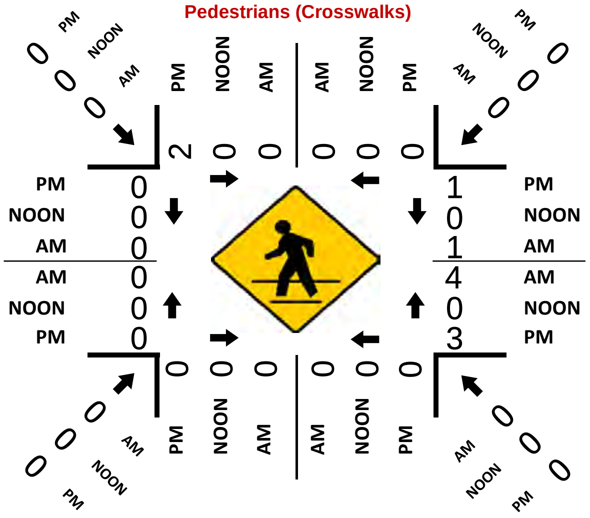
Cars (NOON)



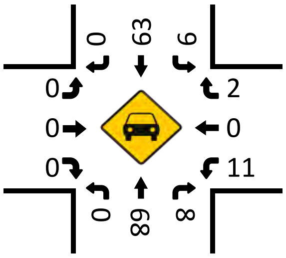
HT (NOON)



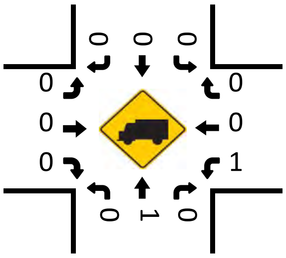
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Appendix B: Existing without and with Project Conditions Intersection Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	265	314	36	182	692	26	739	971	118	61	651	332
Future Volume (veh/h)	265	314	36	182	692	26	739	971	118	61	651	332
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	282	334	31	194	736	26	786	1033	116	65	693	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	369	985	91	273	933	33	759	1727	194	83	1010	314
Arrive On Green	0.11	0.31	0.31	0.08	0.27	0.27	0.22	0.38	0.38	0.05	0.20	0.00
Sat Flow, veh/h	3375	3208	296	3375	3417	121	3375	4551	510	1740	4988	1553
Grp Volume(v), veh/h	282	180	185	194	374	388	786	754	395	65	693	0
Grp Sat Flow(s),veh/h/ln	1688	1736	1769	1688	1736	1802	1688	1663	1736	1740	1663	1553
Q Serve(g_s), s	7.2	7.1	7.2	5.0	17.7	17.8	20.0	16.2	16.2	3.3	11.4	0.0
Cycle Q Clear(g_c), s	7.2	7.1	7.2	5.0	17.7	17.8	20.0	16.2	16.2	3.3	11.4	0.0
Prop In Lane	1.00		0.17	1.00		0.07	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	369	533	543	273	474	492	759	1262	659	83	1010	314
V/C Ratio(X)	0.76	0.34	0.34	0.71	0.79	0.79	1.04	0.60	0.60	0.78	0.69	0.00
Avail Cap(c_a), veh/h	1291	878	895	759	664	689	759	1262	659	431	1739	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.5	23.8	23.8	39.8	29.9	29.9	34.5	22.1	22.2	41.9	32.8	0.0
Incr Delay (d2), s/veh	1.2	0.1	0.1	1.3	2.7	2.6	42.1	0.5	1.1	5.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.4	3.5	2.4	8.9	9.2	13.7	7.5	8.0	1.7	5.3	0.0
LnGrp Delay(d),s/veh	39.7	23.9	24.0	41.1	32.6	32.6	76.5	22.7	23.2	47.6	33.1	0.0
LnGrp LOS	D	C	C	D	C	C	F	C	C	D	C	
Approach Vol, veh/h		647			956			1935			758	
Approach Delay, s/veh		30.8			34.3			44.7			34.4	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	28.4	24.1	22.1	11.3	31.4	8.4	37.8
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	9.2	19.8	22.0	13.4	7.0	9.2	5.3	18.2
Green Ext Time (p_c), s	0.5	4.2	0.0	3.6	0.3	5.1	0.1	6.9

Intersection Summary			
HCM 2010 Ctrl Delay			38.5
HCM 2010 LOS			D

2: Hesperian Blvd & Grant Ave/I-880 SB On Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	283	153	165	0	0	0	262	1226	102	477	805	208
Future Volume (veh/h)	283	153	165	0	0	0	262	1226	102	477	805	208
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	298	161	54				276	1291	99	502	847	178
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				3	3	3	3	3	3
Cap, veh/h	332	179	446				305	1966	151	590	1734	362
Arrive On Green	0.29	0.29	0.29				0.35	0.83	0.83	0.17	0.42	0.42
Sat Flow, veh/h	1160	627	1556				1757	4765	365	3408	4156	867
Grp Volume(v), veh/h	459	0	54				276	910	480	502	683	342
Grp Sat Flow(s),veh/h/ln	1787	0	1556				1757	1679	1773	1704	1679	1665
Q Serve(g_s), s	24.7	0.0	2.6				15.0	10.3	10.3	14.3	14.9	15.1
Cycle Q Clear(g_c), s	24.7	0.0	2.6				15.0	10.3	10.3	14.3	14.9	15.1
Prop In Lane	0.65		1.00				1.00		0.21	1.00		0.52
Lane Grp Cap(c), veh/h	511	0	446				305	1385	732	590	1401	695
V/C Ratio(X)	0.90	0.00	0.12				0.91	0.66	0.66	0.85	0.49	0.49
Avail Cap(c_a), veh/h	616	0	537				462	1385	732	879	1401	695
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.64	0.64	0.64	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	26.4				31.9	6.0	6.0	40.1	21.3	21.4
Incr Delay (d2), s/veh	13.6	0.0	0.1				9.5	1.6	3.0	4.5	1.2	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	0.0	2.6				8.0	4.6	5.1	7.1	7.1	7.4
LnGrp Delay(d),s/veh	47.9	0.0	26.5				41.4	7.6	9.0	44.6	22.5	23.9
LnGrp LOS	D		C				D	A	A	D	C	C
Approach Vol, veh/h		513						1666			1527	
Approach Delay, s/veh		45.6						13.6			30.1	
Approach LOS		D						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	21.5	45.4		33.1	21.1	45.8		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 26	26.9		34.5	26.3	26.9		
Max Q Clear Time (g_c+I1), s	16.3	12.3		26.7	17.0	17.1		
Green Ext Time (p_c), s	1.0	10.8		1.7	0.4	7.9		

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	128	249	51	173	201	205	69	1303	182	97	722	70
Future Volume (veh/h)	128	249	51	173	201	205	69	1303	182	97	722	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	138	268	46	186	216	0	74	1401	181	104	776	65
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	309	459	79	230	553	0	96	2281	295	134	2494	208
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.11	1.00	1.00	0.03	0.17	0.17
Sat Flow, veh/h	1142	1529	262	1046	1845	0	1757	4512	583	1757	4727	394
Grp Volume(v), veh/h	138	0	314	186	216	0	74	1042	540	104	550	291
Grp Sat Flow(s),veh/h/ln	1142	0	1791	1046	1845	0	1757	1679	1737	1757	1679	1764
Q Serve(g_s), s	10.9	0.0	14.9	15.1	9.3	0.0	4.1	0.0	0.0	5.9	14.3	14.4
Cycle Q Clear(g_c), s	20.2	0.0	14.9	30.0	9.3	0.0	4.1	0.0	0.0	5.9	14.3	14.4
Prop In Lane	1.00		0.15	1.00		0.00	1.00		0.34	1.00		0.22
Lane Grp Cap(c), veh/h	309	0	537	230	553	0	96	1697	878	134	1771	930
V/C Ratio(X)	0.45	0.00	0.58	0.81	0.39	0.00	0.77	0.61	0.61	0.77	0.31	0.31
Avail Cap(c_a), veh/h	309	0	537	230	553	0	462	1697	878	462	1771	930
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.91	0.91	0.91	0.83	0.83	0.83
Uniform Delay (d), s/veh	35.7	0.0	29.7	43.6	27.7	0.0	44.0	0.0	0.0	47.9	25.4	25.5
Incr Delay (d2), s/veh	1.4	0.0	2.0	19.7	0.6	0.0	11.4	1.5	2.9	7.6	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	7.6	6.4	4.8	0.0	2.3	0.4	0.7	3.2	6.8	7.2
LnGrp Delay(d),s/veh	37.2	0.0	31.7	63.3	28.4	0.0	55.3	1.5	2.9	55.5	25.8	26.2
LnGrp LOS	D		C	E	C		E	A	A	E	C	C
Approach Vol, veh/h		452			402			1656			945	
Approach Delay, s/veh		33.4			44.5			4.4			29.2	
Approach LOS		C			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.4	54.6		34.0	9.1	56.9		34.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		30.0
Max Q Clear Time (g_c+I1), s	7.9	2.0		22.2	6.1	16.4		32.0
Green Ext Time (p_c), s	0.2	21.0		3.8	0.1	12.5		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		19.6
HCM 2010 LOS		B

Notes

4: Hesperian Blvd & Via Mercado

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	53	1	32	0	0	0	48	1522	29	7	967	7
Future Volume (veh/h)	53	1	32	0	0	0	48	1522	29	7	967	7
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1827				1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	58	1	1				52	1654	31	8	1051	0
Adj No. of Lanes	0	1	1				1	3	0	1	3	1
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4				4	4	4	4	4	4
Cap, veh/h	84	1	76				67	4159	78	14	3964	1234
Arrive On Green	0.05	0.05	0.05				0.03	0.55	0.55	0.02	1.00	0.00
Sat Flow, veh/h	1712	30	1543				1740	5041	94	1740	4988	1553
Grp Volume(v), veh/h	59	0	1				52	1091	594	8	1051	0
Grp Sat Flow(s),veh/h/ln	1741	0	1543				1740	1663	1810	1740	1663	1553
Q Serve(g_s), s	3.3	0.0	0.1				3.0	18.8	18.8	0.5	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.1				3.0	18.8	18.8	0.5	0.0	0.0
Prop In Lane	0.98		1.00				1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	85	0	76				67	2743	1494	14	3964	1234
V/C Ratio(X)	0.69	0.00	0.01				0.78	0.40	0.40	0.58	0.27	0.00
Avail Cap(c_a), veh/h	522	0	463				458	2743	1494	458	3964	1234
HCM Platoon Ratio	1.00	1.00	1.00				0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	1.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	46.8	0.0	45.3				48.3	8.1	8.1	49.0	0.0	0.0
Incr Delay (d2), s/veh	9.6	0.0	0.1				7.1	0.4	0.8	11.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.1				1.6	8.8	9.8	0.3	0.1	0.0
LnGrp Delay(d),s/veh	56.4	0.0	45.3				55.4	8.5	8.9	61.0	0.1	0.0
LnGrp LOS	E		D				E	A	A	E	A	
Approach Vol, veh/h		60						1737			1059	
Approach Delay, s/veh		56.2						10.1			0.6	
Approach LOS		E						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	7.5	83.6		8.9	4.5	86.6		
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		
Max Q Clear Time (g_c+I1), s	5.0	2.0		5.3	2.5	20.8		
Green Ext Time (p_c), s	0.0	28.5		0.3	0.0	10.9		

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	7	0	0	2	0	1590	2	0	995	0
Future Vol, veh/h	0	0	7	0	0	2	0	1590	2	0	995	0
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	0	0	8	0	0	2	0	1747	2	0	1093	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	551	-	-	884	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.18	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.94	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	405	0	0	245	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	403	-	-	243	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	20	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	403	243	-	-
HCM Lane V/C Ratio	-	-	0.019	0.009	-	-
HCM Control Delay (s)	-	-	14.1	20	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-	-

HCM 2010 Signalized Intersection Summary
6: Hesperian Blvd & Hacienda Ave

Village Green Apartments
Existing Conditions AM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	91	187	146	126	228	174	111	1297	139	114	879	33
Future Volume (veh/h)	91	187	146	126	228	174	111	1297	139	114	879	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	103	212	134	143	259	166	126	1474	148	130	999	35
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	124	304	192	184	302	194	156	2324	233	162	2510	88
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.09	0.50	0.50	0.06	0.34	0.34
Sat Flow, veh/h	947	1049	663	1017	1043	668	1757	4648	466	1757	4990	175
Grp Volume(v), veh/h	103	0	346	143	0	425	126	1065	557	130	672	362
Grp Sat Flow(s),veh/h/ln	947	0	1712	1017	0	1711	1757	1679	1757	1757	1679	1808
Q Serve(g_s), s	5.5	0.0	18.0	11.0	0.0	23.5	7.0	23.2	23.2	7.3	15.3	15.3
Cycle Q Clear(g_c), s	29.0	0.0	18.0	29.0	0.0	23.5	7.0	23.2	23.2	7.3	15.3	15.3
Prop In Lane	1.00		0.39	1.00		0.39	1.00		0.27	1.00		0.10
Lane Grp Cap(c), veh/h	124	0	496	184	0	496	156	1679	878	162	1689	909
V/C Ratio(X)	0.83	0.00	0.70	0.78	0.00	0.86	0.81	0.63	0.63	0.80	0.40	0.40
Avail Cap(c_a), veh/h	124	0	496	184	0	496	515	1679	878	515	1689	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	31.6	45.7	0.0	33.5	44.7	18.3	18.3	46.0	21.6	21.6
Incr Delay (d2), s/veh	35.0	0.0	4.2	18.1	0.0	13.6	3.7	1.8	3.5	3.5	0.7	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	9.0	4.9	0.0	13.0	3.6	11.1	12.0	3.7	7.2	8.0
LnGrp Delay(d),s/veh	83.6	0.0	35.8	63.7	0.0	47.1	48.4	20.1	21.8	49.6	22.3	22.9
LnGrp LOS	F		D	E		D	D	C	C	D	C	C
Approach Vol, veh/h		449			568			1748			1164	
Approach Delay, s/veh		46.8			51.3			22.7			25.5	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.9	54.1		33.0	12.6	54.4		33.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	29.3	29.9		29.0	29.3	29.9		29.0
Max Q Clear Time (g_c+I1), s	9.3	25.2		31.0	9.0	17.3		31.0
Green Ext Time (p_c), s	0.1	4.2		0.0	0.1	10.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	15	358	2	2	295	33	6	2	11	22	1	12
Future Vol, veh/h	15	358	2	2	295	33	6	2	11	22	1	12
Conflicting Peds, #/hr	11	0	5	5	0	11	1	0	4	4	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	411	2	2	339	38	7	2	13	25	1	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	388	0	0	419	0	0	823	845	422	833	827	370
Stage 1	-	-	-	-	-	-	452	452	-	374	374	-
Stage 2	-	-	-	-	-	-	371	393	-	459	453	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1165	-	-	1135	-	-	291	298	630	287	306	673
Stage 1	-	-	-	-	-	-	585	569	-	645	616	-
Stage 2	-	-	-	-	-	-	647	604	-	580	568	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1131	-	-	278	287	625	271	295	665
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	287	-	271	295	-
Stage 1	-	-	-	-	-	-	571	556	-	626	608	-
Stage 2	-	-	-	-	-	-	631	596	-	553	555	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	14.2	17
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	412	1164	-	-	1131	-	-	341
HCM Lane V/C Ratio	0.053	0.015	-	-	0.002	-	-	0.118
HCM Control Delay (s)	14.2	8.1	0	-	8.2	0	-	17
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Traffic Vol, veh/h	357	32	67	280	47	57
Future Vol, veh/h	357	32	67	280	47	57
Conflicting Peds, #/hr	0	5	5	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	388	35	73	304	51	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	428	0	861	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	451	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1126	-	325	639
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1126	-	302	636
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	598	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1126	-
HCM Lane V/C Ratio	0.267	-	-	0.065	-
HCM Control Delay (s)	16.5	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	521	4	8	585	6	2	0	11	0	0	5
Future Vol, veh/h	1	521	4	8	585	6	2	0	11	0	0	5
Conflicting Peds, #/hr	7	0	1	1	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	554	4	9	622	6	2	0	12	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	636	0	0	560	0	0	1205	1213	557	1214	1212	633
Stage 1	-	-	-	-	-	-	560	560	-	650	650	-
Stage 2	-	-	-	-	-	-	645	653	-	564	562	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	947	-	-	1011	-	-	161	182	530	158	182	480
Stage 1	-	-	-	-	-	-	513	511	-	458	465	-
Stage 2	-	-	-	-	-	-	461	464	-	510	510	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	947	-	-	1011	-	-	157	178	529	152	178	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	178	-	152	178	-
Stage 1	-	-	-	-	-	-	511	509	-	454	455	-
Stage 2	-	-	-	-	-	-	449	454	-	498	508	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	14.6	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	388	947	-	-	1011	-	-	477
HCM Lane V/C Ratio	0.036	0.001	-	-	0.008	-	-	0.011
HCM Control Delay (s)	14.6	8.8	0	-	8.6	0	-	12.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Traffic Vol, veh/h	8	20	73	65	37	60
Future Vol, veh/h	8	20	73	65	37	60
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	12	29	107	96	54	88

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	357	160	0	0	208	0
Stage 1	160	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	643	888	-	-	1369	-
Stage 1	871	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	614	884	-	-	1369	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	785	1369	-
HCM Lane V/C Ratio	-	-	0.052	0.04	-
HCM Control Delay (s)	-	-	9.8	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

	↰	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	265	314	38	184	692	26	749	985	121	61	661	332
Future Volume (veh/h)	265	314	38	184	692	26	749	985	121	61	661	332
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	282	334	33	196	736	26	797	1048	119	65	703	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	369	977	96	275	933	33	758	1727	196	84	1014	316
Arrive On Green	0.11	0.31	0.31	0.08	0.27	0.27	0.22	0.38	0.38	0.05	0.20	0.00
Sat Flow, veh/h	3375	3188	313	3375	3417	121	3375	4545	515	1740	4988	1553
Grp Volume(v), veh/h	282	181	186	196	374	388	797	766	401	65	703	0
Grp Sat Flow(s),veh/h/ln	1688	1736	1765	1688	1736	1802	1688	1663	1736	1740	1663	1553
Q Serve(g_s), s	7.2	7.2	7.3	5.0	17.8	17.8	20.0	16.5	16.6	3.3	11.6	0.0
Cycle Q Clear(g_c), s	7.2	7.2	7.3	5.0	17.8	17.8	20.0	16.5	16.6	3.3	11.6	0.0
Prop In Lane	1.00		0.18	1.00		0.07	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	369	532	541	275	474	492	758	1263	659	84	1014	316
V/C Ratio(X)	0.76	0.34	0.34	0.71	0.79	0.79	1.05	0.61	0.61	0.78	0.69	0.00
Avail Cap(c_a), veh/h	1289	877	892	758	663	688	758	1263	659	430	1736	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.5	23.9	23.9	39.9	30.0	30.0	34.5	22.2	22.3	41.9	32.9	0.0
Incr Delay (d2), s/veh	1.3	0.1	0.1	1.3	2.7	2.6	47.0	0.6	1.2	5.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.4	3.5	2.4	8.9	9.2	14.2	7.7	8.1	1.7	5.4	0.0
LnGrp Delay(d),s/veh	39.8	24.1	24.1	41.2	32.7	32.6	81.5	22.9	23.4	47.7	33.2	0.0
LnGrp LOS	D	C	C	D	C	C	F	C	C	D	C	
Approach Vol, veh/h		649			958			1964			768	
Approach Delay, s/veh		30.9			34.4			46.8			34.4	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	28.4	24.1	22.2	11.4	31.4	8.4	37.9
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	9.2	19.8	22.0	13.6	7.0	9.3	5.3	18.6
Green Ext Time (p_c), s	0.5	4.2	0.0	3.5	0.3	5.1	0.1	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	283	153	165	0	0	0	262	1253	106	477	822	208
Future Volume (veh/h)	283	153	165	0	0	0	262	1253	106	477	822	208
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	298	161	54				276	1319	104	502	865	178
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				3	3	3	3	3	3
Cap, veh/h	332	179	446				305	1961	155	590	1741	356
Arrive On Green	0.29	0.29	0.29				0.35	0.83	0.83	0.17	0.42	0.42
Sat Flow, veh/h	1160	627	1556				1757	4754	375	3408	4172	853
Grp Volume(v), veh/h	459	0	54				276	931	492	502	695	348
Grp Sat Flow(s),veh/h/ln	1787	0	1556				1757	1679	1771	1704	1679	1668
Q Serve(g_s), s	24.7	0.0	2.6				15.0	10.9	10.9	14.3	15.2	15.4
Cycle Q Clear(g_c), s	24.7	0.0	2.6				15.0	10.9	10.9	14.3	15.2	15.4
Prop In Lane	0.65		1.00				1.00		0.21	1.00		0.51
Lane Grp Cap(c), veh/h	511	0	446				305	1385	731	590	1401	696
V/C Ratio(X)	0.90	0.00	0.12				0.91	0.67	0.67	0.85	0.50	0.50
Avail Cap(c_a), veh/h	616	0	537				462	1385	731	879	1401	696
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.35	0.35	0.35	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	26.4				31.9	6.1	6.1	40.1	21.4	21.5
Incr Delay (d2), s/veh	13.6	0.0	0.1				5.7	0.9	1.8	4.5	1.3	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	0.0	2.6				7.7	4.8	5.3	7.1	7.3	7.6
LnGrp Delay(d),s/veh	47.9	0.0	26.5				37.5	7.0	7.8	44.6	22.7	24.0
LnGrp LOS	D		C				D	A	A	D	C	C
Approach Vol, veh/h		513						1699			1545	
Approach Delay, s/veh		45.6						12.2			30.1	
Approach LOS		D						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	21.5	45.4		33.1	21.1	45.8		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 26	26.9		34.5	26.3	26.9		
Max Q Clear Time (g_c+I1), s	16.3	12.9		26.7	17.0	17.4		
Green Ext Time (p_c), s	1.0	10.7		1.7	0.4	7.7		

Intersection Summary			
HCM 2010 Ctrl Delay			24.1
HCM 2010 LOS			C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	226	272	51	173	214	205	76	1236	175	97	710	99
Future Volume (veh/h)	226	272	51	173	214	205	76	1236	175	97	710	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	243	292	46	186	230	0	82	1329	173	104	763	96
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	298	465	73	213	553	0	106	2278	297	134	2360	295
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.12	1.00	1.00	0.03	0.17	0.17
Sat Flow, veh/h	1128	1551	244	1023	1845	0	1757	4507	587	1757	4521	564
Grp Volume(v), veh/h	243	0	338	186	230	0	82	990	512	104	565	294
Grp Sat Flow(s),veh/h/ln	1128	0	1795	1023	1845	0	1757	1679	1736	1757	1679	1729
Q Serve(g_s), s	20.0	0.0	16.2	13.8	10.0	0.0	4.5	0.0	0.0	5.9	14.7	14.9
Cycle Q Clear(g_c), s	30.0	0.0	16.2	30.0	10.0	0.0	4.5	0.0	0.0	5.9	14.7	14.9
Prop In Lane	1.00		0.14	1.00		0.00	1.00		0.34	1.00		0.33
Lane Grp Cap(c), veh/h	298	0	538	213	553	0	106	1697	878	134	1752	902
V/C Ratio(X)	0.82	0.00	0.63	0.87	0.42	0.00	0.78	0.58	0.58	0.77	0.32	0.33
Avail Cap(c_a), veh/h	298	0	538	213	553	0	462	1697	878	462	1752	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.95	0.95	0.95	0.82	0.82	0.82
Uniform Delay (d), s/veh	40.7	0.0	30.2	44.8	28.0	0.0	43.3	0.0	0.0	47.9	25.9	26.0
Incr Delay (d2), s/veh	16.6	0.0	2.7	31.2	0.7	0.0	11.0	1.4	2.7	7.6	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	8.5	7.0	5.2	0.0	2.5	0.3	0.7	3.2	7.0	7.4
LnGrp Delay(d),s/veh	57.3	0.0	32.9	76.0	28.7	0.0	54.3	1.4	2.7	55.4	26.3	26.8
LnGrp LOS	E		C	E	C		D	A	A	E	C	C
Approach Vol, veh/h		581			416			1584			963	
Approach Delay, s/veh		43.1			49.9			4.6			29.6	
Approach LOS		D			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.4	54.6		34.0	9.7	56.3		34.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		30.0
Max Q Clear Time (g_c+I1), s	7.9	2.0		32.0	6.5	16.9		32.0
Green Ext Time (p_c), s	0.2	20.4		0.0	0.2	12.0		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			23.0
HCM 2010 LOS			C

Notes

HCM 2010 Signalized Intersection Summary
4: Hesperian Blvd & Old Via Mercado

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations							↰	↑↑↑↱		↰	↑↑↑	
Traffic Volume (veh/h)	0	0	0	0	0	0	72	1482	55	7	955	0
Future Volume (veh/h)	0	0	0	0	0	0	72	1482	55	7	955	0
Number							1	6	16	5	2	12
Initial Q (Qb), veh							0	0	0	0	0	0
Ped-Bike Adj(A_pbT)							1.00		1.00	1.00		1.00
Parking Bus, Adj							1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln							1863	1863	1900	1863	1863	0
Adj Flow Rate, veh/h							78	1611	60	8	1038	0
Adj No. of Lanes							1	3	0	1	3	0
Peak Hour Factor							0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %							2	2	2	2	2	0
Cap, veh/h							101	4529	169	18	4339	0
Arrive On Green							0.11	1.00	1.00	0.02	1.00	0.00
Sat Flow, veh/h							1774	5032	187	1774	5253	0
Grp Volume(v), veh/h							78	1085	586	8	1038	0
Grp Sat Flow(s),veh/h/ln							1774	1695	1830	1774	1695	0
Q Serve(g_s), s							4.3	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s							4.3	0.0	0.0	0.4	0.0	0.0
Prop In Lane							1.00		0.10	1.00		0.00
Lane Grp Cap(c), veh/h							101	3051	1647	18	4339	0
V/C Ratio(X)							0.77	0.36	0.36	0.45	0.24	0.00
Avail Cap(c_a), veh/h							399	3051	1647	186	4339	0
HCM Platoon Ratio							2.00	2.00	2.00	2.00	2.00	1.00
Upstream Filter(I)							1.00	1.00	1.00	0.88	0.88	0.00
Uniform Delay (d), s/veh							43.7	0.0	0.0	48.7	0.0	0.0
Incr Delay (d2), s/veh							11.9	0.3	0.6	15.0	0.1	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							2.4	0.1	0.3	0.3	0.0	0.0
LnGrp Delay(d),s/veh							55.6	0.3	0.6	63.8	0.1	0.0
LnGrp LOS							E	A	A	E	A	
Approach Vol, veh/h								1749			1046	
Approach Delay, s/veh								2.9			0.6	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		
Phs Duration (G+Y+Rc), s	10.2	89.8			5.5	94.5		
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		
Max Green Setting (Gmax), s	22.5	68.5			10.5	80.5		
Max Q Clear Time (g_c+I1), s	6.3	2.0			2.4	2.0		
Green Ext Time (p_c), s	0.1	40.7			0.0	44.7		

Intersection Summary	
HCM 2010 Ctrl Delay	2.0
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	67	0	0	7	0	1600	2	0	949	81
Future Vol, veh/h	0	0	67	0	0	7	0	1600	2	0	949	81
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	14	14	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	0	0	74	0	0	8	0	1758	2	0	1043	89

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	575	-	-	894	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.18	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.94	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	391	0	0	241	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	388	-	-	238	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	20.6	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	388	238	-	-
HCM Lane V/C Ratio	-	-	0.19	0.032	-	-
HCM Control Delay (s)	-	-	16.4	20.6	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-	-

HCM 2010 Signalized Intersection Summary
6: Hesperian Blvd & Hacienda Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	91	187	146	126	228	176	111	1305	139	118	888	33
Future Volume (veh/h)	91	187	146	126	228	176	111	1305	139	118	888	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.98	1.00		0.96
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	103	212	134	143	259	168	126	1483	148	134	1009	35
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	121	303	192	183	300	194	156	2310	230	167	2510	87
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.09	0.50	0.50	0.03	0.17	0.17
Sat Flow, veh/h	944	1045	660	1015	1033	670	1757	4648	464	1757	4991	173
Grp Volume(v), veh/h	103	0	346	143	0	427	126	1071	560	134	678	366
Grp Sat Flow(s),veh/h/ln	944	0	1705	1015	0	1703	1757	1679	1754	1757	1679	1806
Q Serve(g_s), s	5.2	0.0	18.1	10.9	0.0	23.8	7.0	23.6	23.6	7.6	18.1	18.1
Cycle Q Clear(g_c), s	29.0	0.0	18.1	29.0	0.0	23.8	7.0	23.6	23.6	7.6	18.1	18.1
Prop In Lane	1.00		0.39	1.00		0.39	1.00		0.26	1.00		0.10
Lane Grp Cap(c), veh/h	121	0	495	183	0	494	156	1669	872	167	1689	908
V/C Ratio(X)	0.85	0.00	0.70	0.78	0.00	0.86	0.81	0.64	0.64	0.80	0.40	0.40
Avail Cap(c_a), veh/h	121	0	495	183	0	494	515	1669	872	515	1689	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	0.0	31.6	45.8	0.0	33.6	44.7	18.6	18.6	47.5	28.3	28.3
Incr Delay (d2), s/veh	39.8	0.0	4.3	18.8	0.0	14.5	3.7	1.9	3.6	3.4	0.7	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	9.1	4.9	0.0	13.1	3.6	11.3	12.2	3.9	8.6	9.4
LnGrp Delay(d),s/veh	88.5	0.0	36.0	64.5	0.0	48.2	48.4	20.5	22.2	50.9	29.0	29.6
LnGrp LOS	F		D	E		D	D	C	C	D	C	C
Approach Vol, veh/h		449			570			1757			1178	
Approach Delay, s/veh		48.0			52.3			23.0			31.7	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.2	53.8		33.0	12.6	54.4		33.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	29.3	29.9		29.0	29.3	29.9		29.0
Max Q Clear Time (g_c+I1), s	9.6	25.6		31.0	9.0	20.1		31.0
Green Ext Time (p_c), s	0.2	3.9		0.0	0.1	8.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

7: Paseo Largavista & Paseo Grande

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	15	373	3	5	310	33	9	2	19	22	1	12
Future Vol, veh/h	15	373	3	5	310	33	9	2	19	22	1	12
Conflicting Peds, #/hr	11	0	5	5	0	11	1	0	4	4	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	429	3	6	356	38	10	2	22	25	1	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	437	0	0	865	887	439	879	870	387
Stage 1	-	-	-	-	-	-	470	470	-	398	398	-
Stage 2	-	-	-	-	-	-	395	417	-	481	472	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1148	-	-	1117	-	-	273	282	616	267	289	659
Stage 1	-	-	-	-	-	-	572	558	-	626	601	-
Stage 2	-	-	-	-	-	-	628	590	-	564	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1147	-	-	1113	-	-	259	270	611	247	277	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	259	270	-	247	277	-
Stage 1	-	-	-	-	-	-	558	544	-	607	591	-
Stage 2	-	-	-	-	-	-	609	580	-	529	543	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	14.6	18.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	410	1147	-	-	1113	-	-	315
HCM Lane V/C Ratio	0.084	0.015	-	-	0.005	-	-	0.128
HCM Control Delay (s)	14.6	8.2	0	-	8.3	0	-	18.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰	↱
Traffic Vol, veh/h	358	54	118	278	67	177
Future Vol, veh/h	358	54	118	278	67	177
Conflicting Peds, #/hr	0	5	5	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	389	59	128	302	73	192

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	453	0	983	423
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	560	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1102	-	275	629
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1102	-	242	626
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	503	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	242	626	-	-	1102	-
HCM Lane V/C Ratio	0.301	0.307	-	-	0.116	-
HCM Control Delay (s)	26.2	13.3	-	-	8.7	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	1.3	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	1	537	4	8	598	6	2	0	11	0	0	5
Future Vol, veh/h	1	537	4	8	598	6	2	0	11	0	0	5
Conflicting Peds, #/hr	7	0	1	1	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	571	4	9	636	6	2	0	12	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	650	0	0	577	0	0	1236	1244	574	1244	1242	646
Stage 1	-	-	-	-	-	-	577	577	-	663	663	-
Stage 2	-	-	-	-	-	-	659	667	-	581	579	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	936	-	-	996	-	-	153	174	518	151	175	472
Stage 1	-	-	-	-	-	-	502	502	-	450	459	-
Stage 2	-	-	-	-	-	-	453	457	-	499	501	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	936	-	-	996	-	-	149	170	518	145	171	469
Mov Cap-2 Maneuver	-	-	-	-	-	-	149	170	-	145	171	-
Stage 1	-	-	-	-	-	-	501	501	-	446	450	-
Stage 2	-	-	-	-	-	-	442	448	-	487	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	15	12.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	375	936	-	-	996	-	-	469
HCM Lane V/C Ratio	0.037	0.001	-	-	0.009	-	-	0.011
HCM Control Delay (s)	15	8.9	0	-	8.6	0	-	12.8
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	15	13	0	8	3	43	0	126	12	61	60	0
Future Vol, veh/h	15	13	0	8	3	43	0	126	12	61	60	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	14	0	9	3	47	0	137	13	66	65	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	7.5	8.1	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	54%	15%	50%
Vol Thru, %	91%	46%	6%	50%
Vol Right, %	9%	0%	80%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	138	28	54	121
LT Vol	0	15	8	61
Through Vol	126	13	3	60
RT Vol	12	0	43	0
Lane Flow Rate	150	30	59	132
Geometry Grp	1	1	1	1
Degree of Util (X)	0.172	0.04	0.068	0.157
Departure Headway (Hd)	4.137	4.733	4.149	4.305
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	854	761	868	821
Service Time	2.23	2.736	2.15	2.397
HCM Lane V/C Ratio	0.176	0.039	0.068	0.161
HCM Control Delay	8.1	7.9	7.5	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.6

HCM 2010 Signalized Intersection Summary
1: Hesperian Blvd & Lewelling Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	373	560	19	164	498	50	617	914	261	133	770	319
Future Volume (veh/h)	373	560	19	164	498	50	617	914	261	133	770	319
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	381	571	17	167	508	45	630	933	233	136	786	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	472	1075	32	244	770	68	703	1437	358	169	1257	391
Arrive On Green	0.14	0.30	0.30	0.07	0.23	0.23	0.20	0.35	0.35	0.09	0.24	0.00
Sat Flow, veh/h	3476	3541	105	3476	3310	292	3476	4079	1015	1792	5136	1599
Grp Volume(v), veh/h	381	288	300	167	273	280	630	783	383	136	786	0
Grp Sat Flow(s),veh/h/ln	1738	1787	1860	1738	1787	1815	1738	1712	1670	1792	1712	1599
Q Serve(g_s), s	9.7	12.2	12.3	4.3	12.7	12.8	16.2	17.6	17.7	6.8	12.5	0.0
Cycle Q Clear(g_c), s	9.7	12.2	12.3	4.3	12.7	12.8	16.2	17.6	17.7	6.8	12.5	0.0
Prop In Lane	1.00		0.06	1.00		0.16	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	472	543	565	244	416	422	703	1206	589	169	1257	391
V/C Ratio(X)	0.81	0.53	0.53	0.68	0.66	0.66	0.90	0.65	0.65	0.80	0.63	0.00
Avail Cap(c_a), veh/h	1291	879	914	759	664	674	759	1206	589	431	1739	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.4	26.5	26.5	41.6	31.8	31.9	35.6	24.9	24.9	40.6	30.8	0.0
Incr Delay (d2), s/veh	1.3	0.3	0.3	1.3	0.7	0.7	12.1	1.0	2.0	3.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	6.0	6.3	2.1	6.3	6.4	9.0	8.4	8.4	3.5	5.9	0.0
LnGrp Delay(d),s/veh	39.6	26.8	26.8	42.8	32.5	32.5	47.7	25.9	26.9	43.9	31.0	0.0
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	
Approach Vol, veh/h		969			720			1796			922	
Approach Delay, s/veh		31.8			34.9			33.7			32.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	25.4	22.6	26.5	10.5	31.9	12.8	36.4
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	11.7	14.8	18.2	14.5	6.3	14.3	8.8	19.7
Green Ext Time (p_c), s	0.7	4.6	0.3	6.7	0.2	5.0	0.1	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↑↱		↰↰	↑↑↑↱	
Traffic Volume (veh/h)	135	134	176	0	0	0	340	1026	75	466	1192	287
Future Volume (veh/h)	135	134	176	0	0	0	340	1026	75	466	1192	287
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	138	137	33				347	1047	71	476	1216	261
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	169	168	287				373	2578	175	559	2032	436
Arrive On Green	0.19	0.19	0.19				0.42	1.00	1.00	0.16	0.49	0.49
Sat Flow, veh/h	912	905	1545				1774	4864	329	3442	4175	896
Grp Volume(v), veh/h	275	0	33				347	729	389	476	987	490
Grp Sat Flow(s),veh/h/ln	1817	0	1545				1774	1695	1803	1721	1695	1681
Q Serve(g_s), s	15.2	0.0	1.9				19.5	0.0	0.0	14.1	22.1	22.1
Cycle Q Clear(g_c), s	15.2	0.0	1.9				19.5	0.0	0.0	14.1	22.1	22.1
Prop In Lane	0.50		1.00				1.00		0.18	1.00		0.53
Lane Grp Cap(c), veh/h	338	0	287				373	1797	956	559	1650	818
V/C Ratio(X)	0.81	0.00	0.12				0.93	0.41	0.41	0.85	0.60	0.60
Avail Cap(c_a), veh/h	511	0	434				529	1797	956	813	1650	818
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.72	0.72	0.72	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	35.6				29.7	0.0	0.0	42.8	19.5	19.5
Incr Delay (d2), s/veh	5.0	0.0	0.1				13.5	0.5	0.9	5.2	1.6	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	1.7				10.7	0.1	0.2	7.1	10.7	10.9
LnGrp Delay(d),s/veh	46.0	0.0	35.7				43.1	0.5	0.9	48.0	21.1	22.7
LnGrp LOS	D		D				D	A	A	D	C	C
Approach Vol, veh/h		308						1465			1953	
Approach Delay, s/veh		44.9						10.7			28.1	
Approach LOS		D						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	21.2	59.8		24.0	25.8	55.2		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 25	37.9		29.5	31.3	31.9		
Max Q Clear Time (g_c+I1), s	16.1	2.0		17.2	21.5	24.1		
Green Ext Time (p_c), s	0.9	21.9		1.2	0.6	6.6		

Intersection Summary		
HCM 2010 Ctrl Delay		22.6
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	90	144	35	135	151	141	79	1221	271	194	947	182
Future Volume (veh/h)	90	144	35	135	151	141	79	1221	271	194	947	182
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	152	28	142	159	0	83	1285	259	204	997	174
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	380	70	266	464	0	107	2134	430	235	2510	437
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.00	0.12	1.00	1.00	0.27	1.00	1.00
Sat Flow, veh/h	1216	1525	281	1194	1863	0	1774	4218	850	1774	4339	755
Grp Volume(v), veh/h	95	0	180	142	159	0	83	1033	511	204	778	393
Grp Sat Flow(s),veh/h/ln	1216	0	1806	1194	1863	0	1774	1695	1677	1774	1695	1705
Q Serve(g_s), s	7.3	0.0	8.7	11.8	7.4	0.0	4.8	0.0	0.0	11.5	0.0	0.0
Cycle Q Clear(g_c), s	14.7	0.0	8.7	20.6	7.4	0.0	4.8	0.0	0.0	11.5	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	1.00		0.51	1.00		0.44
Lane Grp Cap(c), veh/h	286	0	450	266	464	0	107	1716	849	235	1961	986
V/C Ratio(X)	0.33	0.00	0.40	0.53	0.34	0.00	0.78	0.60	0.60	0.87	0.40	0.40
Avail Cap(c_a), veh/h	342	0	533	322	550	0	444	1716	849	444	1961	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.94	0.94	0.94	0.71	0.71	0.71
Uniform Delay (d), s/veh	38.4	0.0	32.9	41.5	32.4	0.0	45.5	0.0	0.0	37.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.8	2.3	0.6	0.0	10.8	1.5	3.0	6.9	0.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	4.5	4.1	3.9	0.0	2.6	0.4	0.7	6.1	0.1	0.2
LnGrp Delay(d),s/veh	39.4	0.0	33.7	43.8	33.0	0.0	56.3	1.5	3.0	44.6	0.4	0.9
LnGrp LOS	D		C	D	C		E	A	A	D	A	A
Approach Vol, veh/h		275			301			1627			1375	
Approach Delay, s/veh		35.7			38.1			4.8			7.1	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.6	57.2		30.1	10.0	64.8		30.1				
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0				
Max Green Setting (Gmax), s	26.3	35.9		31.0	26.3	35.9		31.0				
Max Q Clear Time (g_c+I1), s	13.5	2.0		16.7	6.8	2.0		22.6				
Green Ext Time (p_c), s	0.4	25.6		3.6	0.2	25.6		2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			10.8									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱				↰	↑↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	2	3	8	0	0	0	17	1545	39	16	1116	8
Future Volume (veh/h)	2	3	8	0	0	0	17	1545	39	16	1116	8
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	2	3	0				18	1593	39	16	1151	0
Adj No. of Lanes	0	1	1				1	3	0	1	3	1
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	3	4	6				28	4437	109	25	4415	1375
Arrive On Green	0.00	0.00	0.00				0.03	1.00	1.00	0.03	1.00	0.00
Sat Flow, veh/h	730	1096	1583				1774	5103	125	1774	5085	1583
Grp Volume(v), veh/h	5	0	0				18	1058	574	16	1151	0
Grp Sat Flow(s),veh/h/ln	1826	0	1583				1774	1695	1837	1774	1695	1583
Q Serve(g_s), s	0.3	0.0	0.0				1.1	0.0	0.0	0.9	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0				1.1	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.40		1.00				1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	6				28	2948	1598	25	4415	1375
V/C Ratio(X)	0.71	0.00	0.00				0.65	0.36	0.36	0.63	0.26	0.00
Avail Cap(c_a), veh/h	626	0	543				157	2948	1598	157	4415	1375
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00				1.00	1.00	1.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	52.2	0.0	0.0				50.6	0.0	0.0	50.7	0.0	0.0
Incr Delay (d2), s/veh	81.6	0.0	0.0				9.3	0.3	0.6	8.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0				0.6	0.1	0.3	0.5	0.1	0.0
LnGrp Delay(d),s/veh	133.9	0.0	0.0				59.8	0.3	0.6	59.3	0.1	0.0
LnGrp LOS	F						E	A	A	E	A	
Approach Vol, veh/h		5						1650			1167	
Approach Delay, s/veh		133.9						1.1			0.9	
Approach LOS		F						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	5.3	95.3		4.4	5.2	95.4		
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		
Max Green Setting (Gmax), s	9.3	47.9		36.0	9.3	47.9		
Max Q Clear Time (g_c+I1), s	3.1	2.0		2.3	2.9	2.0		
Green Ext Time (p_c), s	0.0	43.1		0.0	0.0	43.1		

Intersection Summary	
HCM 2010 Ctrl Delay	1.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	1	0	0	1	0	1614	2	0	1130	0
Future Vol, veh/h	0	0	1	0	0	1	0	1614	2	0	1130	0
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	8	8	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	1	0	0	1	0	1681	2	0	1177	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	593	-	-	850	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	387	0	0	263	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	386	-	-	261	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	18.8	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	386	261	-	-
HCM Lane V/C Ratio	-	-	0.003	0.004	-	-
HCM Control Delay (s)	-	-	14.4	18.8	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	83	113	40	103	134	135	145	1374	169	219	840	95
Future Volume (veh/h)	83	113	40	103	134	135	145	1374	169	219	840	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.96	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	86	118	26	107	140	97	151	1431	166	228	875	90
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	236	392	86	317	270	187	182	2227	258	260	2466	253
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.10	0.48	0.48	0.14	0.52	0.52
Sat Flow, veh/h	1142	1486	327	1240	1025	710	1792	4647	539	1792	4721	483
Grp Volume(v), veh/h	86	0	144	107	0	237	151	1054	543	228	634	331
Grp Sat Flow(s),veh/h/ln	1142	0	1813	1240	0	1734	1792	1712	1763	1792	1712	1780
Q Serve(g_s), s	7.3	0.0	6.7	7.9	0.0	12.2	8.7	24.3	24.3	13.1	11.4	11.5
Cycle Q Clear(g_c), s	19.5	0.0	6.7	14.6	0.0	12.2	8.7	24.3	24.3	13.1	11.4	11.5
Prop In Lane	1.00		0.18	1.00		0.41	1.00		0.31	1.00		0.27
Lane Grp Cap(c), veh/h	236	0	478	317	0	457	182	1640	844	260	1789	930
V/C Ratio(X)	0.36	0.00	0.30	0.34	0.00	0.52	0.83	0.64	0.64	0.88	0.35	0.36
Avail Cap(c_a), veh/h	338	0	639	427	0	611	346	1640	844	346	1789	930
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	30.9	36.8	0.0	33.0	46.3	20.6	20.6	44.0	14.7	14.7
Incr Delay (d2), s/veh	0.9	0.0	0.4	0.5	0.0	0.7	3.7	1.9	3.7	14.6	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	3.4	2.7	0.0	5.9	4.5	11.9	12.6	7.5	5.5	5.9
LnGrp Delay(d),s/veh	42.3	0.0	31.3	37.2	0.0	33.7	49.9	22.5	24.3	58.6	15.2	15.8
LnGrp LOS	D		C	D		C	D	C	C	E	B	B
Approach Vol, veh/h		230			344			1748			1193	
Approach Delay, s/veh		35.4			34.8			25.5			23.7	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.9	54.4		31.7	14.4	59.0		31.7
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	20.3	35.9		37.0	20.3	35.9		37.0
Max Q Clear Time (g_c+I1), s	15.1	26.3		21.5	10.7	13.5		16.6
Green Ext Time (p_c), s	0.2	7.9		2.5	0.1	15.8		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	26.4
HCM 2010 LOS	C

7: Paseo Largavista & Paseo Grande

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	231	0	14	320	24	2	2	6	13	4	10
Future Vol, veh/h	5	231	0	14	320	24	2	2	6	13	4	10
Conflicting Peds, #/hr	4	0	6	6	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	238	0	14	330	25	2	2	6	13	4	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	359	0	0	244	0	0	632	642	244	628	629	346
Stage 1	-	-	-	-	-	-	254	254	-	375	375	-
Stage 2	-	-	-	-	-	-	378	388	-	253	254	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1200	-	-	1322	-	-	393	392	795	395	399	697
Stage 1	-	-	-	-	-	-	750	697	-	646	617	-
Stage 2	-	-	-	-	-	-	644	609	-	751	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1322	-	-	377	381	790	383	388	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	381	-	383	388	-
Stage 1	-	-	-	-	-	-	742	690	-	640	607	-
Stage 2	-	-	-	-	-	-	622	599	-	739	690	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	11.7	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	551	1200	-	-	1322	-	-	460
HCM Lane V/C Ratio	0.019	0.004	-	-	0.011	-	-	0.061
HCM Control Delay (s)	11.7	8	0	-	7.8	0	-	13.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Traffic Vol, veh/h	218	13	58	342	18	51
Future Vol, veh/h	218	13	58	342	18	51
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	240	14	64	376	20	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	259	0	755	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	503	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1306	-	376	787
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1306	-	356	783
Mov Cap-2 Maneuver	-	-	-	-	356	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	577	-

Approach	EB		WB		NB
HCM Control Delay, s	0		1.1		11.9
HCM LOS					B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	596	-	-	1306	-
HCM Lane V/C Ratio	0.127	-	-	0.049	-
HCM Control Delay (s)	11.9	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	3	623	22	13	379	52	2	0	9	0	0	1
Future Vol, veh/h	3	623	22	13	379	52	2	0	9	0	0	1
Conflicting Peds, #/hr	11	0	8	8	0	11	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	3	663	23	14	403	55	2	0	10	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	470	0	0	694	0	0	1148	1186	682	1156	1171	442
Stage 1	-	-	-	-	-	-	689	689	-	470	470	-
Stage 2	-	-	-	-	-	-	459	497	-	686	701	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1097	-	-	906	-	-	177	189	452	174	193	618
Stage 1	-	-	-	-	-	-	437	448	-	576	562	-
Stage 2	-	-	-	-	-	-	584	546	-	439	442	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1097	-	-	906	-	-	172	181	449	165	185	612
Mov Cap-2 Maneuver	-	-	-	-	-	-	172	181	-	165	185	-
Stage 1	-	-	-	-	-	-	432	443	-	568	544	-
Stage 2	-	-	-	-	-	-	571	529	-	428	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	15.7	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	347	1097	-	-	906	-	-	612
HCM Lane V/C Ratio	0.034	0.003	-	-	0.015	-	-	0.002
HCM Control Delay (s)	15.7	8.3	0	-	9	0	-	10.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	12	2	69	8	6	63
Future Vol, veh/h	12	2	69	8	6	63
Conflicting Peds, #/hr	0	2	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	2	76	9	7	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	166	86	0	0	89	0
Stage 1	84	-	-	-	-	-
Stage 2	82	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	827	976	-	-	1513	-
Stage 1	942	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	820	970	-	-	1510	-
Mov Cap-2 Maneuver	820	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	939	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	839	1510	-
HCM Lane V/C Ratio	-	-	0.018	0.004	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	373	560	22	167	498	50	623	928	263	133	784	319
Future Volume (veh/h)	373	560	22	167	498	50	623	928	263	133	784	319
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	381	571	20	170	508	45	636	947	235	136	800	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	472	1064	37	247	769	68	707	1443	357	169	1255	391
Arrive On Green	0.14	0.30	0.30	0.07	0.23	0.23	0.20	0.35	0.35	0.09	0.24	0.00
Sat Flow, veh/h	3476	3520	123	3476	3310	292	3476	4085	1010	1792	5136	1599
Grp Volume(v), veh/h	381	290	301	170	273	280	636	793	389	136	800	0
Grp Sat Flow(s),veh/h/ln	1738	1787	1856	1738	1787	1815	1738	1712	1671	1792	1712	1599
Q Serve(g_s), s	9.8	12.4	12.4	4.4	12.7	12.8	16.4	17.9	18.0	6.8	12.8	0.0
Cycle Q Clear(g_c), s	9.8	12.4	12.4	4.4	12.7	12.8	16.4	17.9	18.0	6.8	12.8	0.0
Prop In Lane	1.00		0.07	1.00		0.16	1.00		0.60	1.00		1.00
Lane Grp Cap(c), veh/h	472	540	561	247	415	422	707	1210	590	169	1255	391
V/C Ratio(X)	0.81	0.54	0.54	0.69	0.66	0.66	0.90	0.66	0.66	0.80	0.64	0.00
Avail Cap(c_a), veh/h	1287	876	910	757	662	672	757	1210	590	429	1734	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.5	26.7	26.7	41.6	31.9	32.0	35.6	25.0	25.0	40.7	31.1	0.0
Incr Delay (d2), s/veh	1.3	0.3	0.3	1.3	0.7	0.7	12.5	1.0	2.2	3.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	6.2	6.4	2.1	6.4	6.5	9.1	8.7	8.7	3.5	6.1	0.0
LnGrp Delay(d),s/veh	39.8	27.0	27.0	42.9	32.6	32.7	48.2	26.0	27.2	44.1	31.3	0.0
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	
Approach Vol, veh/h		972			723			1818			936	
Approach Delay, s/veh		32.0			35.1			34.0			33.1	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.1	25.4	22.8	26.5	10.6	31.9	12.8	36.5
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	11.8	14.8	18.4	14.8	6.4	14.4	8.8	20.0
Green Ext Time (p_c), s	0.7	4.6	0.3	6.5	0.2	5.1	0.1	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	135	134	176	0	0	0	340	1047	77	466	1222	287
Future Volume (veh/h)	135	134	176	0	0	0	340	1047	77	466	1222	287
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	138	137	33				347	1068	73	476	1247	261
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	169	168	282				373	2576	176	559	2042	427
Arrive On Green	0.19	0.19	0.19				0.42	1.00	1.00	0.16	0.49	0.49
Sat Flow, veh/h	912	905	1519				1774	4861	332	3442	4197	878
Grp Volume(v), veh/h	275	0	33				347	744	397	476	1007	501
Grp Sat Flow(s),veh/h/ln	1817	0	1519				1774	1695	1803	1721	1695	1685
Q Serve(g_s), s	15.2	0.0	1.9				19.5	0.0	0.0	14.1	22.8	22.8
Cycle Q Clear(g_c), s	15.2	0.0	1.9				19.5	0.0	0.0	14.1	22.8	22.8
Prop In Lane	0.50		1.00				1.00		0.18	1.00		0.52
Lane Grp Cap(c), veh/h	338	0	282				373	1797	956	559	1650	820
V/C Ratio(X)	0.81	0.00	0.12				0.93	0.41	0.41	0.85	0.61	0.61
Avail Cap(c_a), veh/h	511	0	427				529	1797	956	813	1650	820
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.67	0.67	0.67	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	35.6				29.7	0.0	0.0	42.8	19.7	19.7
Incr Delay (d2), s/veh	5.0	0.0	0.1				12.8	0.5	0.9	5.2	1.7	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	0.8				10.7	0.1	0.2	7.1	11.0	11.3
LnGrp Delay(d),s/veh	46.0	0.0	35.7				42.5	0.5	0.9	48.0	21.4	23.1
LnGrp LOS	D		D				D	A	A	D	C	C
Approach Vol, veh/h		308						1488			1984	
Approach Delay, s/veh		44.9						10.4			28.2	
Approach LOS		D						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	21.2	59.8		24.0	25.8	55.2		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 25	37.9		29.5	31.3	31.9		
Max Q Clear Time (g_c+I1), s	16.1	2.0		17.2	21.5	24.8		
Green Ext Time (p_c), s	0.9	22.4		1.2	0.6	6.2		

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
3: Hesperian Blvd & Paseo Grande

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	119	156	35	135	163	141	81	1214	270	194	947	212
Future Volume (veh/h)	119	156	35	135	163	141	81	1214	270	194	947	212
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	125	164	28	142	172	0	85	1278	258	204	997	205
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	394	67	265	475	0	110	2107	425	235	2400	492
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.00	0.06	0.50	0.50	0.27	1.00	1.00
Sat Flow, veh/h	1202	1545	264	1181	1863	0	1774	4216	851	1774	4209	863
Grp Volume(v), veh/h	125	0	192	142	172	0	85	1028	508	204	803	399
Grp Sat Flow(s),veh/h/ln	1202	0	1809	1181	1863	0	1774	1695	1677	1774	1695	1682
Q Serve(g_s), s	10.0	0.0	9.3	12.0	8.0	0.0	5.0	22.8	22.8	11.5	0.0	0.0
Cycle Q Clear(g_c), s	18.0	0.0	9.3	21.2	8.0	0.0	5.0	22.8	22.8	11.5	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.00	1.00		0.51	1.00		0.51
Lane Grp Cap(c), veh/h	284	0	462	265	475	0	110	1695	838	235	1933	959
V/C Ratio(X)	0.44	0.00	0.42	0.53	0.36	0.00	0.77	0.61	0.61	0.87	0.42	0.42
Avail Cap(c_a), veh/h	332	0	534	313	550	0	444	1695	838	444	1933	959
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.94	0.94	0.94	0.69	0.69	0.69
Uniform Delay (d), s/veh	39.5	0.0	32.6	41.4	32.1	0.0	48.5	18.8	18.8	37.7	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.9	2.4	0.7	0.0	10.1	1.5	3.1	6.7	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	4.7	4.1	4.2	0.0	2.7	11.1	11.3	6.0	0.1	0.2
LnGrp Delay(d),s/veh	41.0	0.0	33.4	43.8	32.7	0.0	58.6	20.4	21.9	44.4	0.5	0.9
LnGrp LOS	D		C	D	C		E	C	C	D	A	A
Approach Vol, veh/h		317			314			1621			1406	
Approach Delay, s/veh		36.4			37.8			22.9			7.0	
Approach LOS		D			D			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.6	56.6		30.8	10.2	64.0		30.8
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	35.9		31.0	26.3	35.9		31.0
Max Q Clear Time (g_c+I1), s	13.5	24.8		20.0	7.0	2.0		23.2
Green Ext Time (p_c), s	0.4	9.9		3.4	0.2	25.9		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations							↰	↑↑↑↱		↰	↑↑↑	
Traffic Volume (veh/h)	0	0	0	0	0	0	33	1511	69	16	1116	0
Future Volume (veh/h)	0	0	0	0	0	0	33	1511	69	16	1116	0
Number							1	6	16	5	2	12
Initial Q (Qb), veh							0	0	0	0	0	0
Ped-Bike Adj(A_pbT)							1.00		1.00	1.00		1.00
Parking Bus, Adj							1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln							1863	1863	1900	1863	1863	0
Adj Flow Rate, veh/h							36	1642	75	17	1213	0
Adj No. of Lanes							1	3	0	1	3	0
Peak Hour Factor							0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %							2	2	2	2	2	0
Cap, veh/h							56	4443	203	33	4467	0
Arrive On Green							0.03	0.89	0.89	0.02	0.88	0.00
Sat Flow, veh/h							1774	4985	228	1774	5253	0
Grp Volume(v), veh/h							36	1116	601	17	1213	0
Grp Sat Flow(s),veh/h/ln							1774	1695	1823	1774	1695	0
Q Serve(g_s), s							2.0	5.3	5.3	0.9	3.8	0.0
Cycle Q Clear(g_c), s							2.0	5.3	5.3	0.9	3.8	0.0
Prop In Lane							1.00		0.12	1.00		0.00
Lane Grp Cap(c), veh/h							56	3021	1624	33	4467	0
V/C Ratio(X)							0.64	0.37	0.37	0.51	0.27	0.00
Avail Cap(c_a), veh/h							399	3021	1624	186	4467	0
HCM Platoon Ratio							1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)							1.00	1.00	1.00	0.89	0.89	0.00
Uniform Delay (d), s/veh							47.9	0.9	0.9	48.6	1.0	0.0
Incr Delay (d2), s/veh							11.6	0.3	0.6	10.3	0.1	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							1.2	2.5	2.8	0.6	1.7	0.0
LnGrp Delay(d),s/veh							59.5	1.2	1.5	58.9	1.1	0.0
LnGrp LOS							E	A	A	E	A	
Approach Vol, veh/h								1753			1230	
Approach Delay, s/veh								2.5			1.9	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		
Phs Duration (G+Y+Rc), s	7.7	92.3			6.4	93.6		
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		
Max Green Setting (Gmax), s	22.5	68.5			10.5	80.5		
Max Q Clear Time (g_c+I1), s	4.0	5.8			2.9	7.3		
Green Ext Time (p_c), s	0.0	43.7			0.0	48.4		

Intersection Summary	
HCM 2010 Ctrl Delay	2.3
HCM 2010 LOS	A

5: Hesperian Blvd & Via Mercado/Ducey Way

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	26	0	0	11	0	1626	2	0	1117	46
Future Vol, veh/h	0	0	26	0	0	11	0	1626	2	0	1117	46
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	13	13	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	27	0	0	11	0	1694	2	0	1164	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	615	-	-	861	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	374	0	0	258	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	371	-	-	255	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.5	19.8	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	371	255	-	-
HCM Lane V/C Ratio	-	-	0.073	0.045	-	-
HCM Control Delay (s)	-	-	15.5	19.8	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	-

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	83	113	40	103	134	139	145	1383	169	221	848	95
Future Volume (veh/h)	83	113	40	103	134	139	145	1383	169	221	848	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.95	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	86	118	26	107	140	101	151	1441	166	230	883	90
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	249	410	90	333	277	200	182	2161	249	262	2406	244
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.10	0.47	0.47	0.15	0.51	0.51
Sat Flow, veh/h	1134	1483	327	1236	1002	723	1792	4646	535	1792	4721	479
Grp Volume(v), veh/h	86	0	144	107	0	241	151	1062	545	230	639	334
Grp Sat Flow(s),veh/h/ln	1134	0	1810	1236	0	1724	1792	1712	1757	1792	1712	1776
Q Serve(g_s), s	7.2	0.0	6.6	7.8	0.0	12.3	8.7	25.2	25.3	13.2	11.8	11.9
Cycle Q Clear(g_c), s	19.6	0.0	6.6	14.4	0.0	12.3	8.7	25.2	25.3	13.2	11.8	11.9
Prop In Lane	1.00		0.18	1.00		0.42	1.00		0.30	1.00		0.27
Lane Grp Cap(c), veh/h	249	0	500	333	0	476	182	1593	817	262	1745	905
V/C Ratio(X)	0.35	0.00	0.29	0.32	0.00	0.51	0.83	0.67	0.67	0.88	0.37	0.37
Avail Cap(c_a), veh/h	335	0	638	427	0	608	346	1593	817	346	1745	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	0.0	29.9	35.5	0.0	32.0	46.3	21.8	21.8	43.9	15.5	15.5
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.4	0.0	0.6	3.7	2.2	4.3	14.9	0.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	3.3	2.7	0.0	6.0	4.5	12.4	13.2	7.6	5.7	6.1
LnGrp Delay(d),s/veh	41.0	0.0	30.2	35.9	0.0	32.6	49.9	24.0	26.1	58.9	16.1	16.7
LnGrp LOS	D		C	D		C	D	C	C	E	B	B
Approach Vol, veh/h		230			348			1758			1203	
Approach Delay, s/veh		34.2			33.6			26.9			24.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	52.9		33.0	14.4	57.6		33.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	20.3	35.9		37.0	20.3	35.9		37.0
Max Q Clear Time (g_c+I1), s	15.2	27.3		21.6	10.7	13.9		16.4
Green Ext Time (p_c), s	0.2	7.3		2.5	0.1	15.7		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	244	3	22	333	24	4	2	11	13	4	10
Future Vol, veh/h	5	244	3	22	333	24	4	2	11	13	4	10
Conflicting Peds, #/hr	4	0	6	6	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	252	3	23	343	25	4	2	11	13	4	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	372	0	0	261	0	0	677	686	259	675	676	360
Stage 1	-	-	-	-	-	-	269	269	-	405	405	-
Stage 2	-	-	-	-	-	-	408	417	-	270	271	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1186	-	-	1303	-	-	367	370	780	368	375	684
Stage 1	-	-	-	-	-	-	737	687	-	622	598	-
Stage 2	-	-	-	-	-	-	620	591	-	736	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1186	-	-	1303	-	-	349	357	776	352	361	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	357	-	352	361	-
Stage 1	-	-	-	-	-	-	729	680	-	617	583	-
Stage 2	-	-	-	-	-	-	593	576	-	719	678	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	11.8	13.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	1186	-	-	1303	-	-	431
HCM Lane V/C Ratio	0.032	0.004	-	-	0.017	-	-	0.065
HCM Control Delay (s)	11.8	8	0	-	7.8	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.2

8: Via Arriba & Paseo Grande

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰	↱
Traffic Vol, veh/h	223	26	96	348	32	88
Future Vol, veh/h	223	26	96	348	32	88
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	245	29	105	382	35	97

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	279	0	857	264
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	593	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1284	-	328	775
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1284	-	300	771
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	507	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	771	-	-	1284	-
HCM Lane V/C Ratio	0.117	0.125	-	-	0.082	-
HCM Control Delay (s)	18.6	10.3	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	3	634	22	13	391	52	2	0	9	0	0	1
Future Vol, veh/h	3	634	22	13	391	52	2	0	9	0	0	1
Conflicting Peds, #/hr	11	0	8	8	0	11	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	3	674	23	14	416	55	2	0	10	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	482	0	0	706	0	0	1173	1211	694	1179	1194	455
Stage 1	-	-	-	-	-	-	701	701	-	482	482	-
Stage 2	-	-	-	-	-	-	472	510	-	697	712	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1086	-	-	897	-	-	170	183	444	168	187	607
Stage 1	-	-	-	-	-	-	431	442	-	567	555	-
Stage 2	-	-	-	-	-	-	574	539	-	433	437	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1086	-	-	897	-	-	165	175	441	159	179	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	175	-	159	179	-
Stage 1	-	-	-	-	-	-	426	436	-	558	538	-
Stage 2	-	-	-	-	-	-	561	522	-	421	432	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			16			11		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	338	1086	-	-	897	-	-	601
HCM Lane V/C Ratio	0.035	0.003	-	-	0.015	-	-	0.002
HCM Control Delay (s)	16	8.3	0	-	9.1	0	-	11
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	3	2	0	12	8	15	0	71	6	18	63	0
Future Vol, veh/h	3	2	0	12	8	15	0	71	6	18	63	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	2	0	13	9	16	0	77	7	20	68	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.3	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	60%	34%	22%
Vol Thru, %	92%	40%	23%	78%
Vol Right, %	8%	0%	43%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	5	35	81
LT Vol	0	3	12	18
Through Vol	71	2	8	63
RT Vol	6	0	15	0
Lane Flow Rate	84	5	38	88
Geometry Grp	1	1	1	1
Degree of Util (X)	0.094	0.007	0.043	0.101
Departure Headway (Hd)	4.03	4.379	4.043	4.118
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	885	805	873	867
Service Time	2.071	2.47	2.127	2.157
HCM Lane V/C Ratio	0.095	0.006	0.044	0.101
HCM Control Delay	7.5	7.5	7.3	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0	0.1	0.3

Appendix C: Existing without and with Project Conditions Signal Warrant Analysis Worksheets

FEHR PEERS

Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Paseo Largavista		Scenario	Existing No Project
			Peak Hour	AM

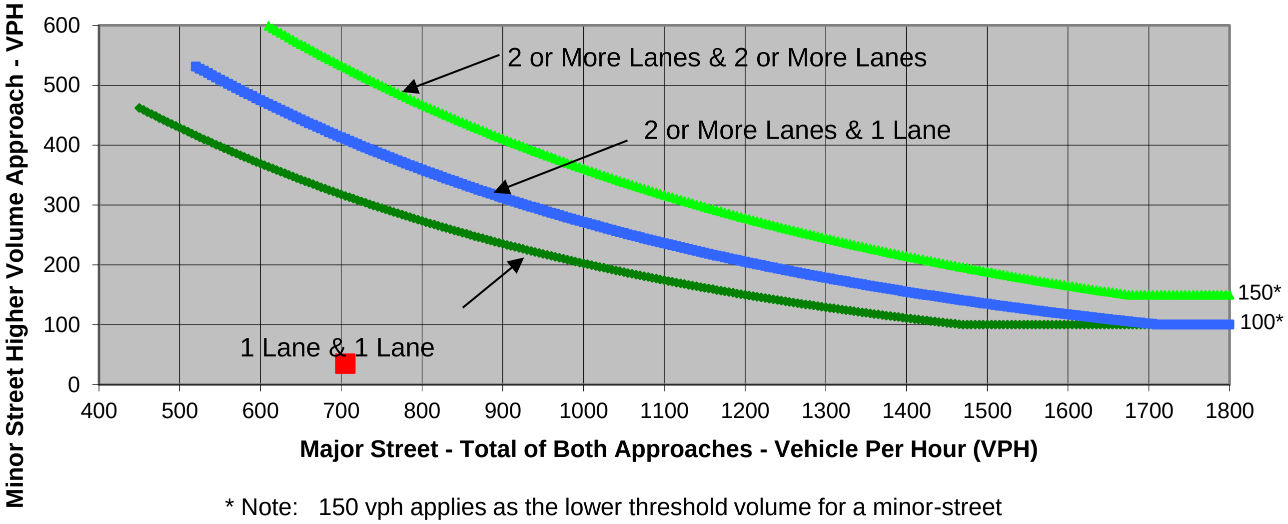
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	22	15	2
Through	2	1	358	295
Right	11	12	2	33
Total	19	35	375	330

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	Minor Street Paseo Largavista	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**705**	**35**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project Village Green TIA
Scenario Existing No Project
Peak Hour AM

Major Street Paseo Grande
Minor Street Via Arriba

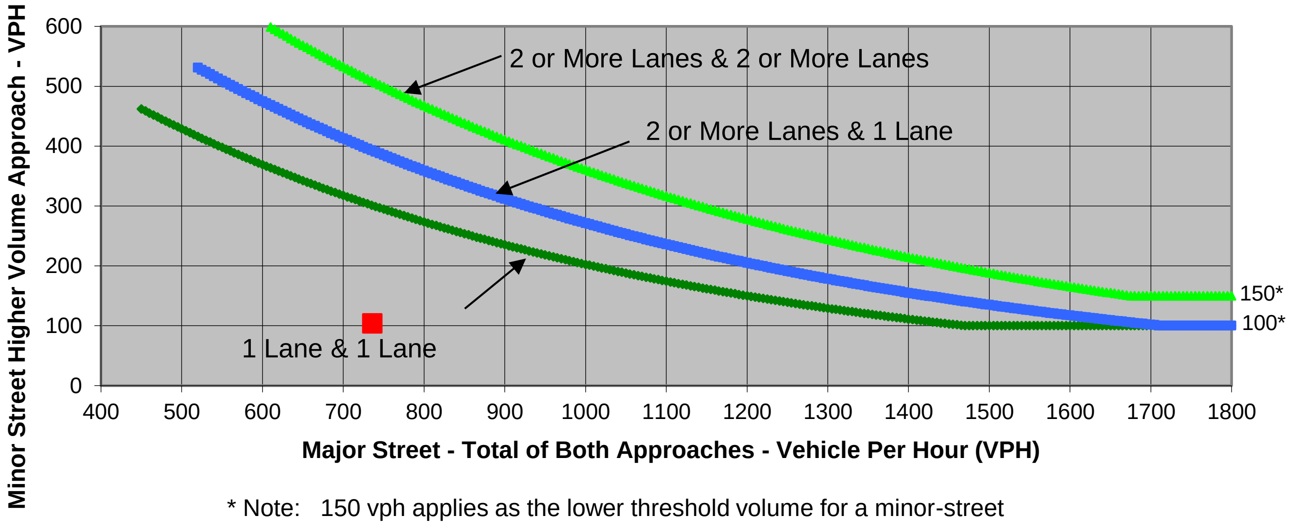
Turn Movement Volumes

	NB	SB	EB	WB
Left	47	0	0	67
Through	0	0	357	280
Right	57	0	32	0
Total	104	0	389	347

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**736**	**104**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Village Green TIA
Scenario	Existing No Project
Peak Hour	AM

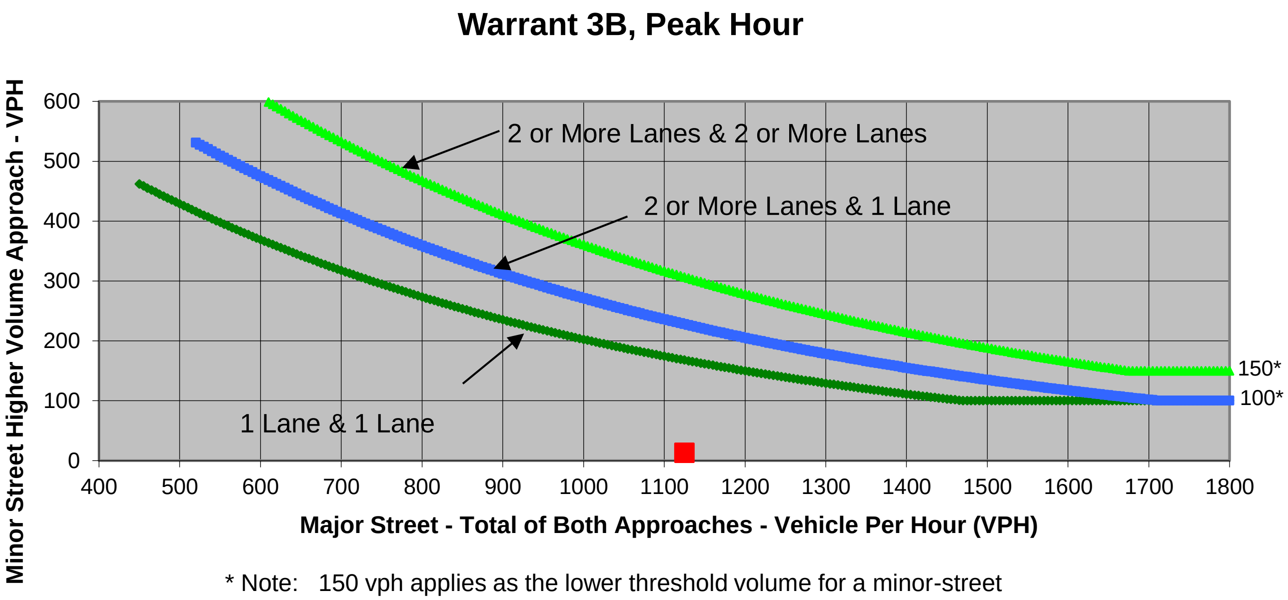
Major Street	Paseo Grande
Minor Street	Ducey Way/Alley

Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	1	8
Through	0	0	521	585
Right	11	5	4	6
Total	13	5	526	599

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	**Minor Street**	**Warrant Met**
	Paseo Grande	Ducey Way/Alley	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,125**	**13**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

			Project	Village Green TIA
Major Street	Via Arriba		Scenario	Existing No Project
Minor Street	Via Mercado		Peak Hour	AM

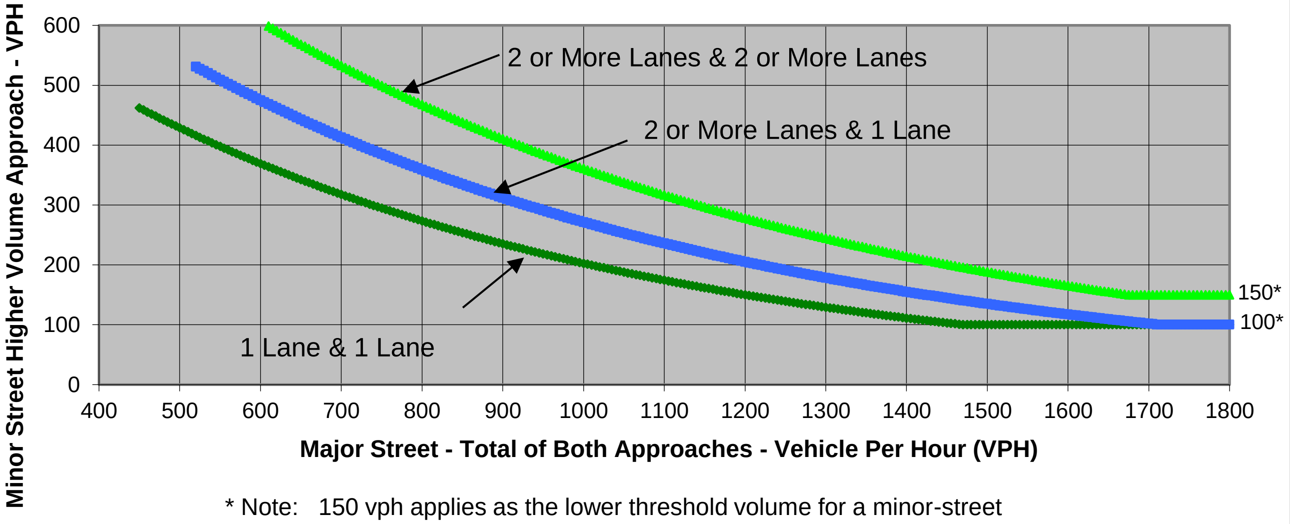
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	37	0	8
Through	73	60	0	0
Right	65	0	0	20
Total	138	97	0	28

Major Street Direction

X	North/South
	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**235**	**28**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

			Project	Village Green TIA
Major Street	Paseo Grande		Scenario	Existing No Project
Minor Street	Paseo Largavista		Peak Hour	PM

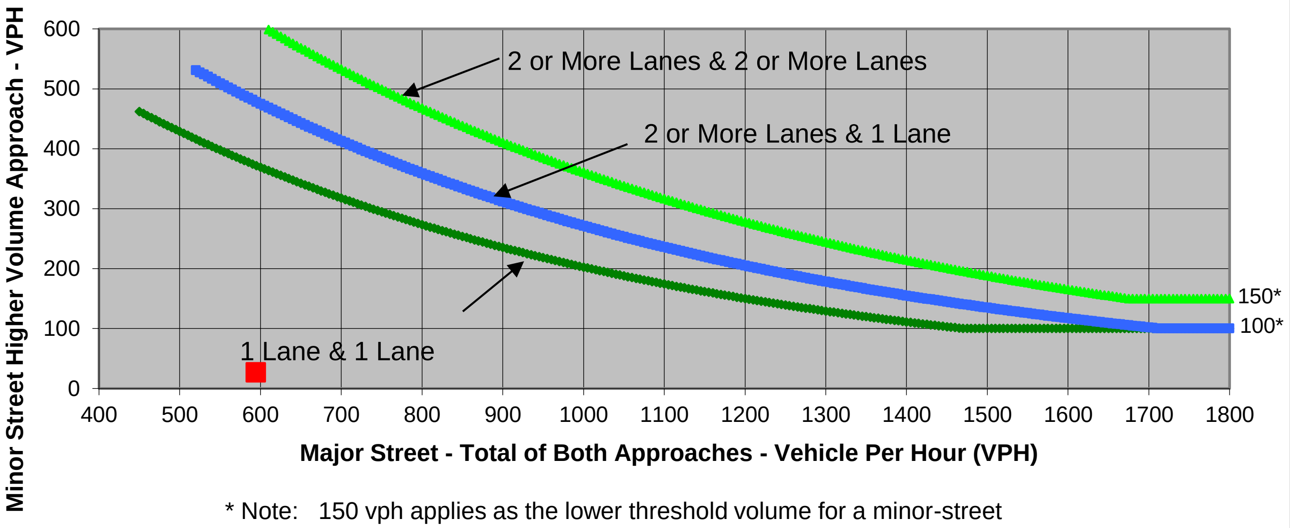
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	13	5	14
Through	2	4	231	320
Right	6	10	0	24
Total	10	27	236	358

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**594**	**27**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Via Arriba		Scenario	Existing No Project
			Peak Hour	PM

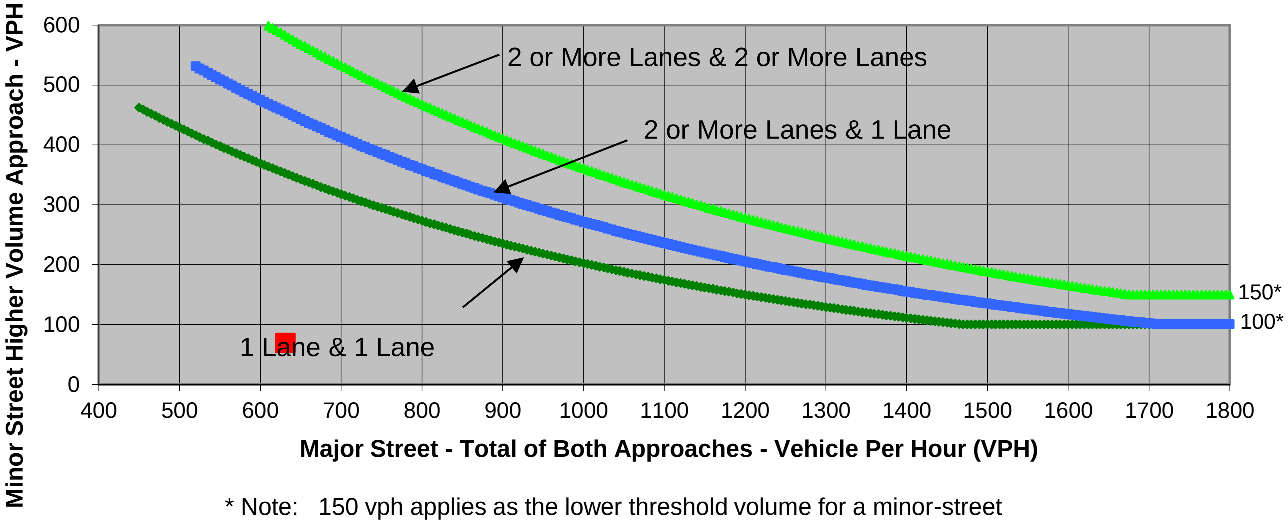
Turn Movement Volumes

	NB	SB	EB	WB
Left	18	0	0	58
Through	0	0	218	342
Right	51	0	13	0
Total	69	0	231	400

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**631**	**69**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

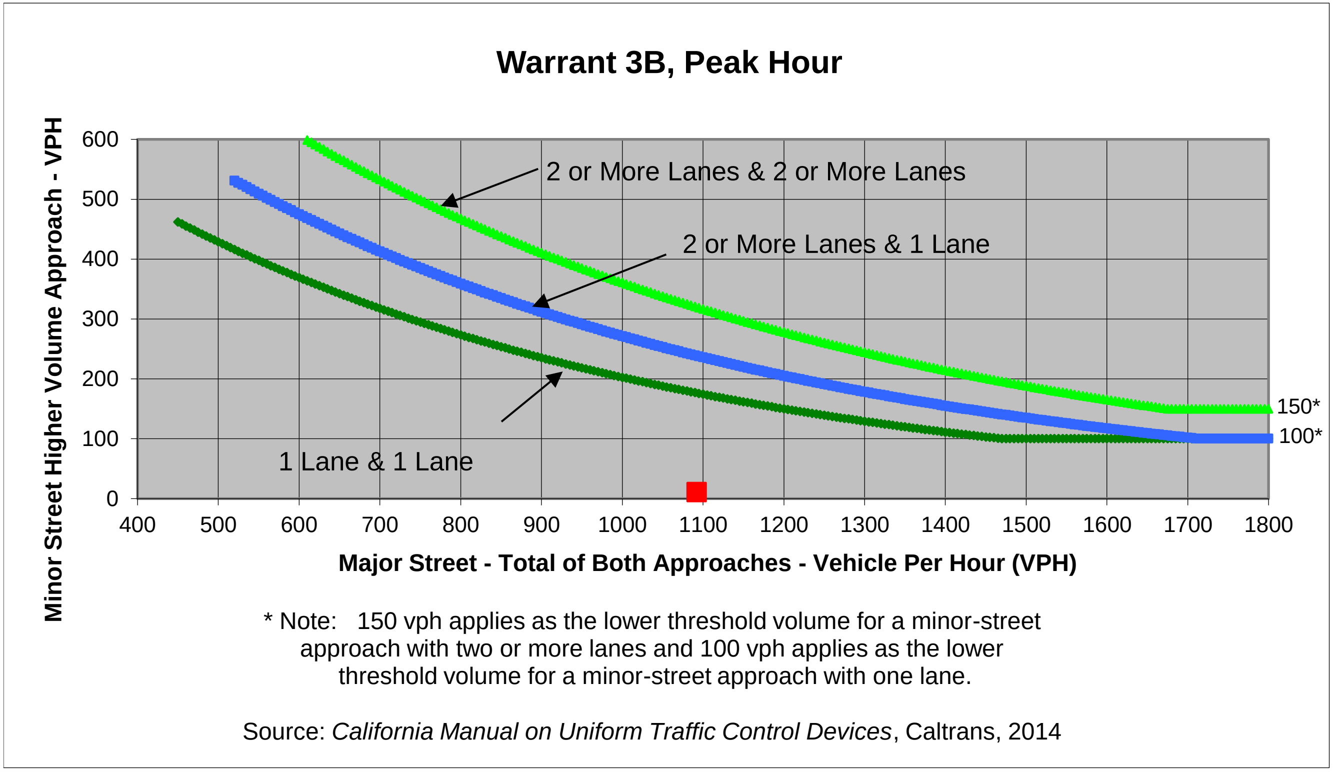
Major Street	Paseo Grande	Project	Village Green TIA
Minor Street	Ducey Way/Alley	Scenario	Existing No Project
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	3	13
Through	0	0	623	379
Right	9	1	22	52
Total	11	1	648	444

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Ducey Way/Alley	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**<u>NO</u>**
Traffic Volume (VPH) *	**1,092**	**11**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

			Project	Village Green TIA
Major Street	Via Arriba		Scenario	Existing No Project
Minor Street	Via Mercado		Peak Hour	PM

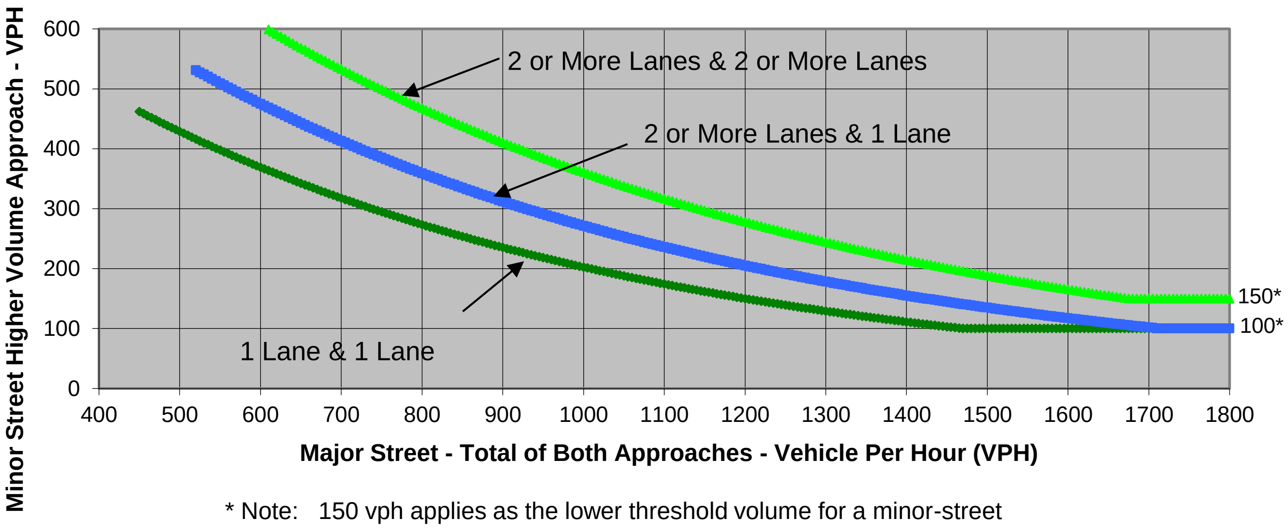
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	6	0	12
Through	69	63	0	0
Right	8	0	0	2
Total	77	69	0	14

Major Street Direction

X	North/South
	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**146**	**14**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Project	Village Green TIA
Scenario	Existing Plus Project
Peak Hour	AM

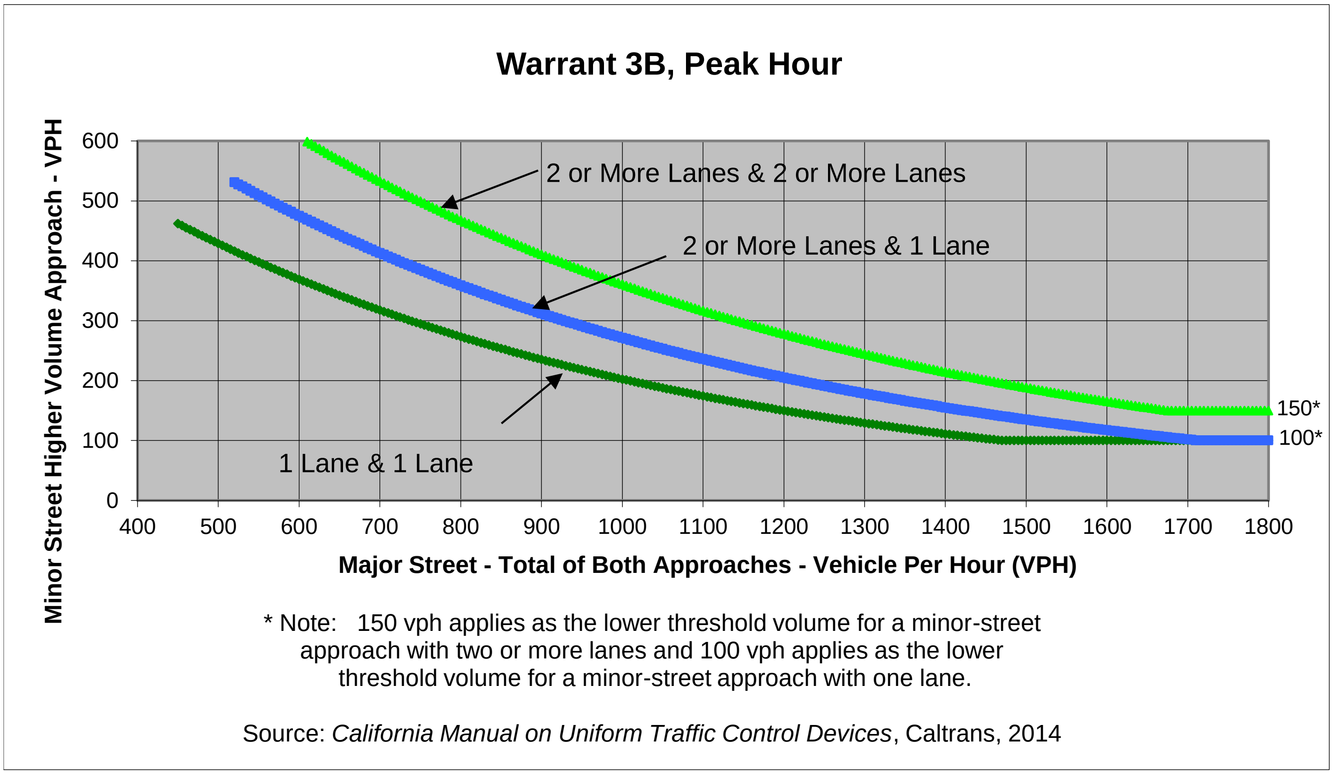
Major Street	Hesperian Blvd
Minor Street	Via Mercado/Ducey Way

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,600	949	0	0
Right	2	81	67	7
Total	1,602	1,030	67	7

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Hesperian Blvd	**Minor Street** Via Mercado/Ducey Way	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**2,632**	**67**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

			Project	Village Green TIA
Major Street	Paseo Grande		Scenario	Existing Plus Project
Minor Street	Paseo Largavista		Peak Hour	AM

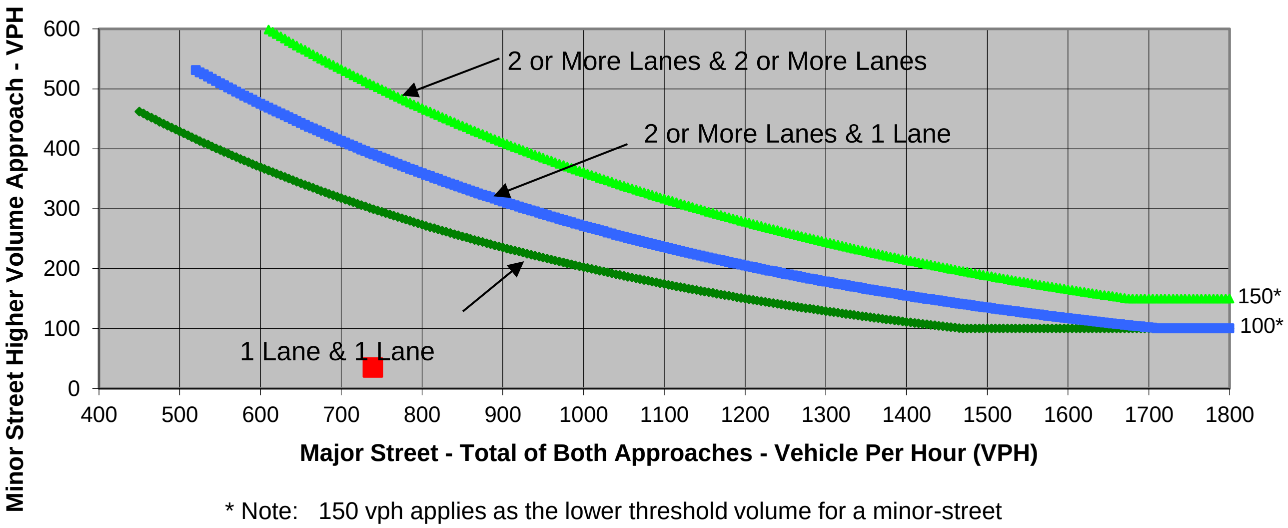
Turn Movement Volumes

	NB	SB	EB	WB
Left	9	22	15	5
Through	2	1	373	310
Right	19	12	3	33
Total	30	35	391	348

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**739**	**35**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

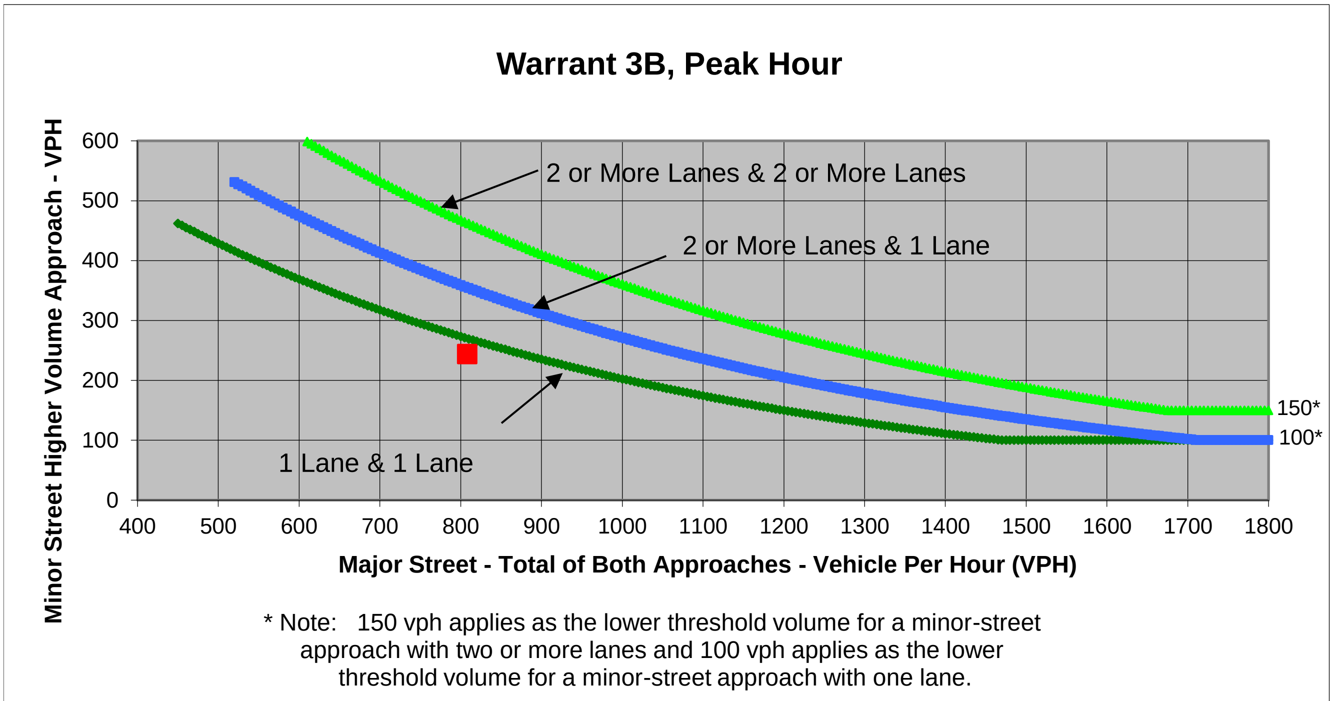
Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Via Arriba		Scenario	Existing Plus Project
			Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	67	0	0	118
Through	0	0	358	278
Right	177	0	54	0
Total	244	0	412	396

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**808**	**244**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Ducey Way/Alley		Scenario	Existing Plus Project
			Peak Hour	AM

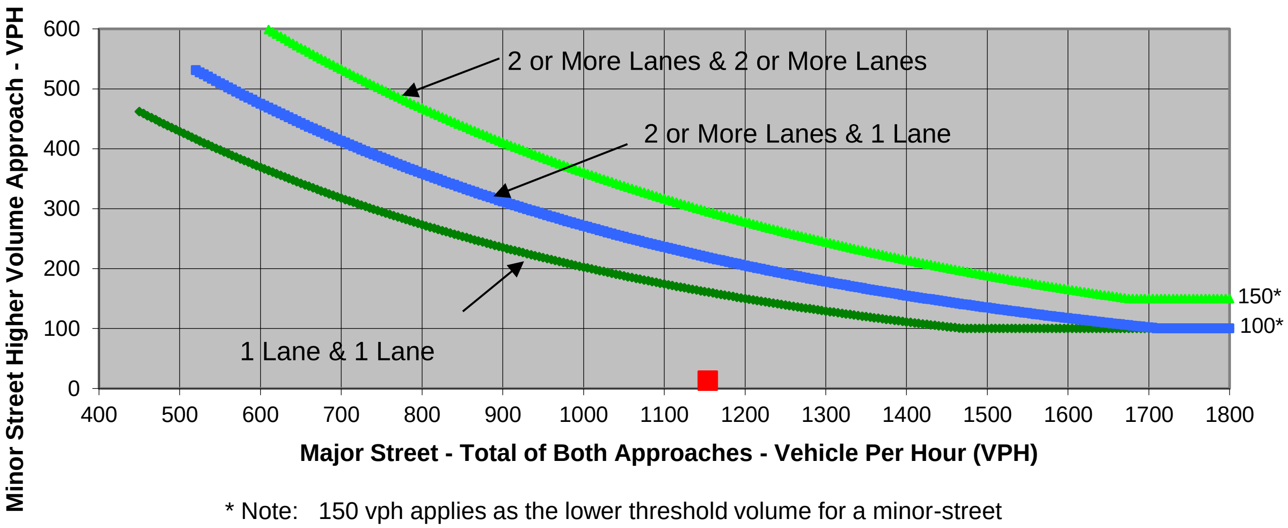
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	1	8
Through	0	0	537	598
Right	11	5	4	6
Total	13	5	542	612

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	**Minor Street**	**Warrant Met**
	Paseo Grande	Ducey Way/Alley	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**1,154**	**13**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Village Green TIA
Scenario	Existing Plus Project
Peak Hour	AM

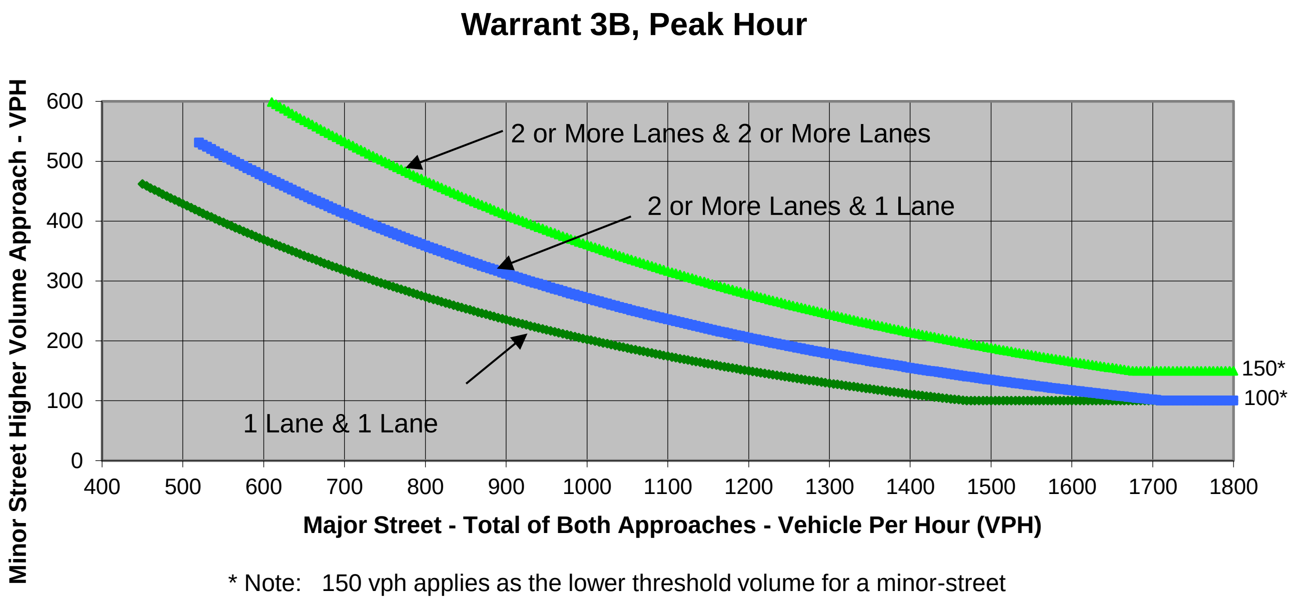
Major Street	Via Arriba
Minor Street	Via Mercado

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	61	15	8
Through	126	60	13	3
Right	12	0	0	43
Total	138	121	28	54

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**259**	**54**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

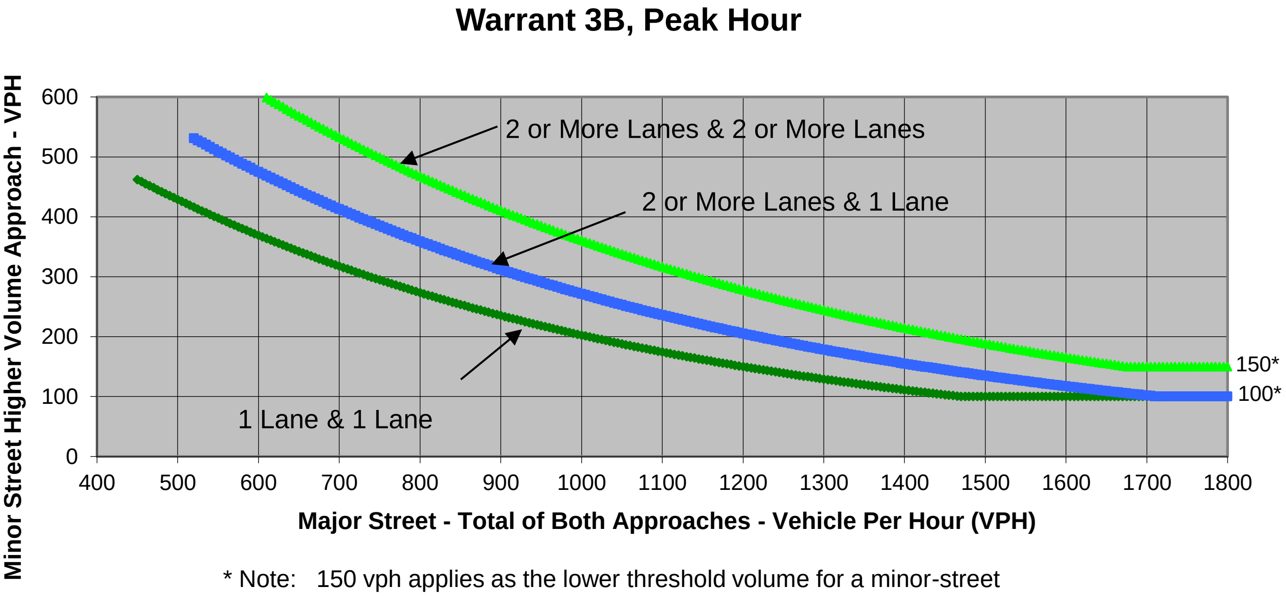
			Project	Village Green TIA
Major Street	Hesperian Blvd		Scenario	Existing Plus Project
Minor Street	Via Mercado/Ducey Way		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,626	1,117	0	0
Right	2	46	26	11
Total	1,628	1,163	26	11

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Hesperian Blvd	**Minor Street** Via Mercado/Ducey Way	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**2,791**	**26**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

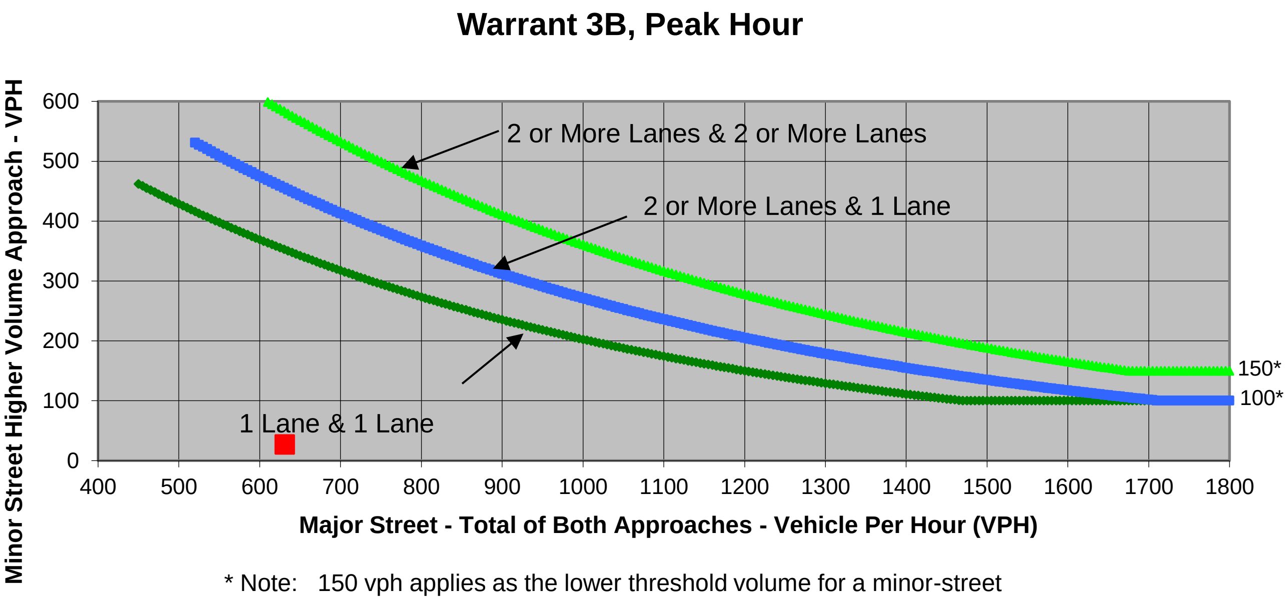
Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Paseo Largavista		Scenario	Existing Plus Project
			Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	4	13	5	22
Through	2	4	244	333
Right	11	10	3	24
Total	17	27	252	379

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**631**	**27**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

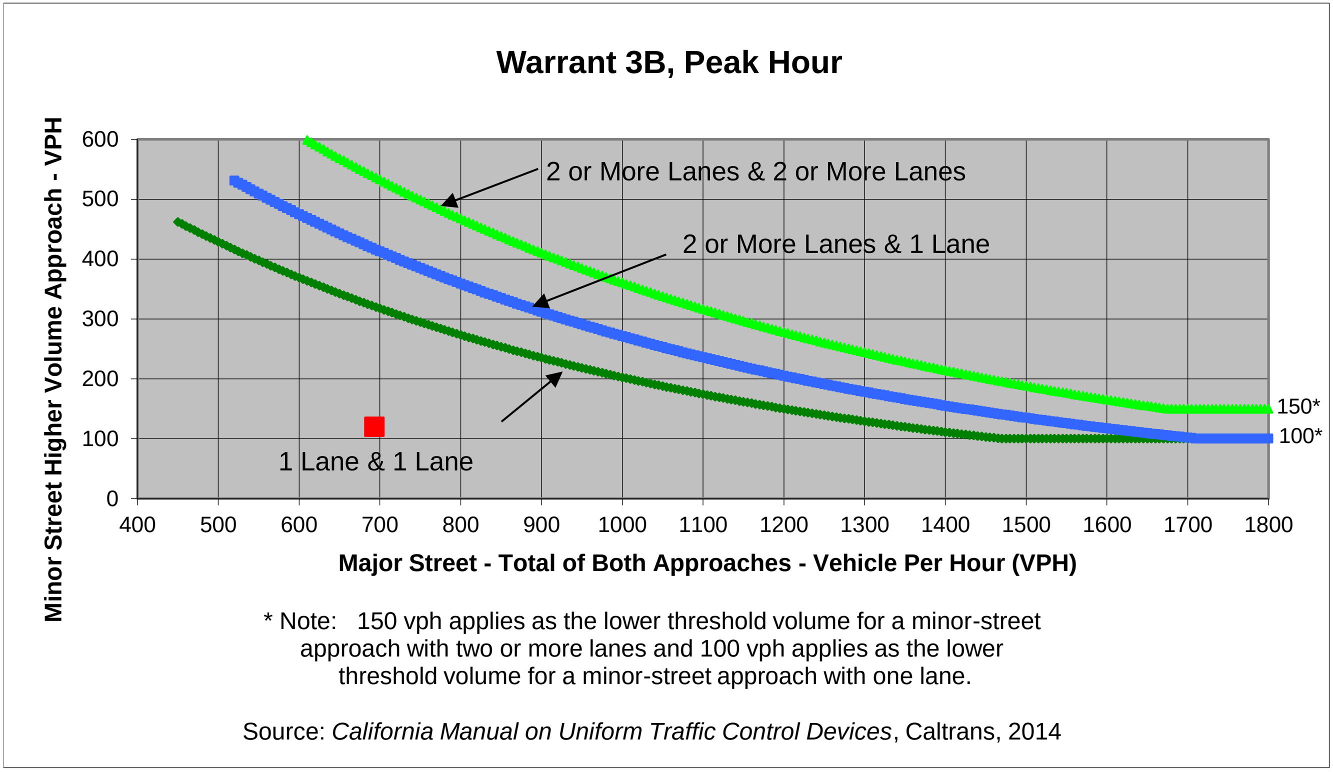
			Project	Village Green TIA
Major Street	Paseo Grande		Scenario	Existing Plus Project
Minor Street	Via Arriba		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	32	0	0	96
Through	0	0	223	348
Right	88	0	26	0
Total	120	0	249	444

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**693**	**120**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Major Street	Paseo Grande	Project	Village Green TIA
Minor Street	Ducey Way/Alley	Scenario	Existing Plus Project
		Peak Hour	PM

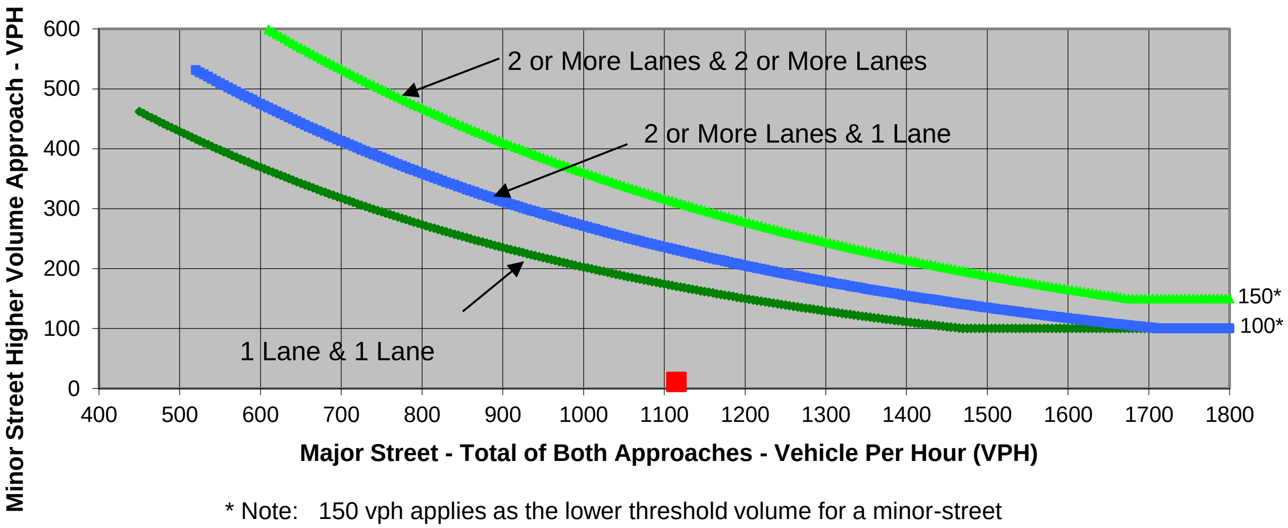
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	3	13
Through	0	0	634	391
Right	9	1	22	52
Total	11	1	659	456

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	Minor Street Ducey Way/Alley	Warrant Met
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**1,115**	**11**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

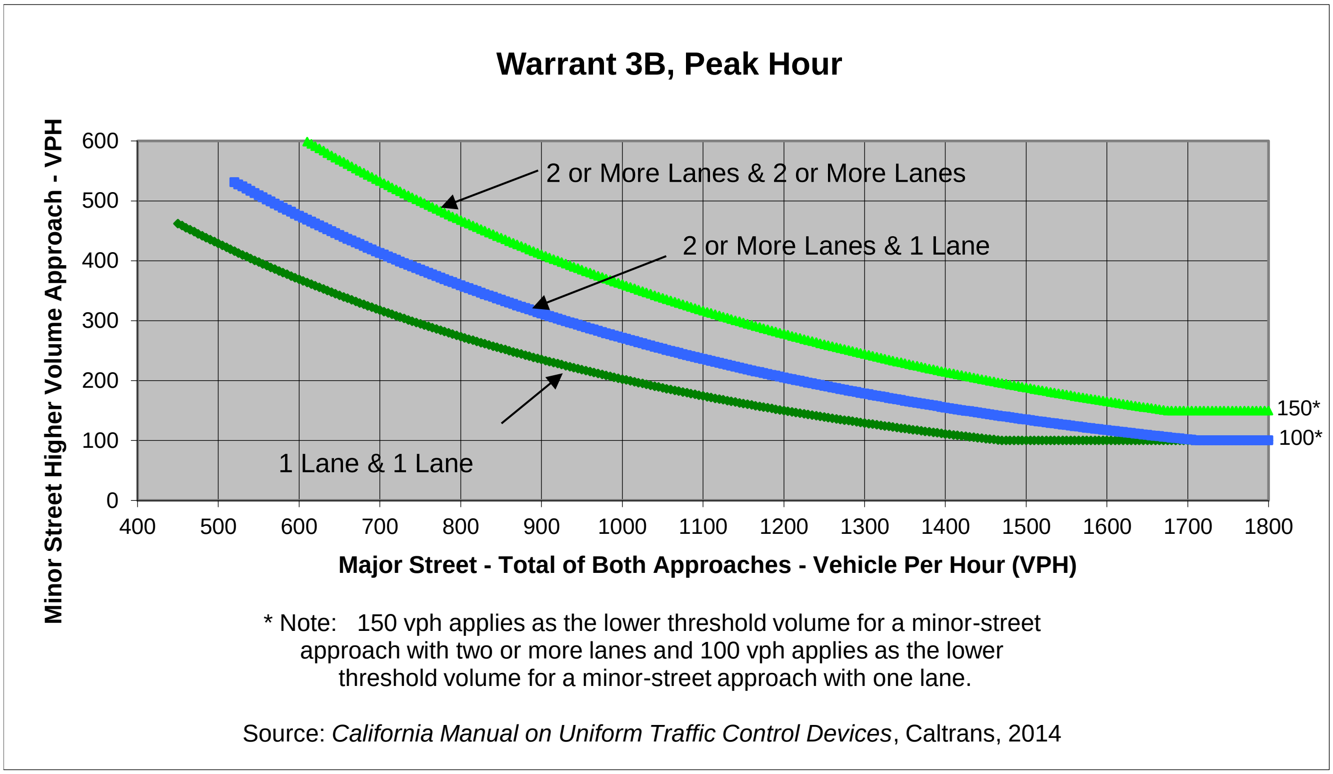
			Project	Village Green TIA
Major Street	Via Arriba		Scenario	Existing Plus Project
Minor Street	Via Mercado		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	18	3	12
Through	71	63	2	8
Right	6	0	0	15
Total	77	81	5	35

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	Minor Street Via Mercado	Warrant Met
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**158**	**35**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix D: American Community Survey Journey to Work Data (2016)

Subject	Census Tract 4358, Alameda County, California					
	Total		Male		Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Workers 16 years and over	2,772	+/-315	1,334	+/-169	1,438	+/-251
MEANS OF TRANSPORTATION TO WORK						
Car, truck, or van	86.3%	+/-6.3	86.2%	+/-7.5	86.4%	+/-7.8
Drove alone	80.5%	+/-7.2	81.9%	+/-8.3	79.2%	+/-9.1
Carpooled	5.8%	+/-2.9	4.3%	+/-2.8	7.2%	+/-4.6
In 2-person carpool	2.7%	+/-1.7	1.9%	+/-1.9	3.3%	+/-2.7
In 3-person carpool	2.5%	+/-2.0	2.3%	+/-1.9	2.7%	+/-3.0
In 4-or-more person carpool	0.6%	+/-0.9	0.0%	+/-2.4	1.2%	+/-1.8
Workers per car, truck, or van	1.04	+/-0.02	1.03	+/-0.02	1.05	+/-0.04
Public transportation (excluding taxicab)	10.5%	+/-5.8	9.4%	+/-6.8	11.4%	+/-6.8
Walked	0.3%	+/-0.7	0.0%	+/-2.4	0.6%	+/-1.3
Bicycle	0.9%	+/-1.1	1.0%	+/-1.7	0.8%	+/-1.3
Taxicab, motorcycle, or other means	0.6%	+/-1.0	0.7%	+/-1.1	0.6%	+/-0.9
Worked at home	1.3%	+/-1.9	2.6%	+/-3.7	0.1%	+/-1.3
PLACE OF WORK						
Worked in state of residence	100.0%	+/-1.2	100.0%	+/-2.4	100.0%	+/-2.2
Worked in county of residence	73.6%	+/-7.6	67.1%	+/-7.9	79.6%	+/-10.2
Worked outside county of residence	26.4%	+/-7.6	32.9%	+/-7.9	20.4%	+/-10.2
Worked outside state of residence	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
Living in a place	100.0%	+/-1.2	100.0%	+/-2.4	100.0%	+/-2.2
Worked in place of residence	6.1%	+/-3.4	10.0%	+/-6.7	2.4%	+/-3.0
Worked outside place of residence	93.9%	+/-3.4	90.0%	+/-6.7	97.6%	+/-3.0
Not living in a place	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
Living in 12 selected states	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
Worked in minor civil division of residence	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
Worked outside minor civil division of residence	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
Not living in 12 selected states	100.0%	+/-1.2	100.0%	+/-2.4	100.0%	+/-2.2
Workers 16 years and over who did not work at home	2,735	+/-323	1,299	+/-169	1,436	+/-250
TIME LEAVING HOME TO GO TO WORK						
12:00 a.m. to 4:59 a.m.	3.7%	+/-2.6	5.2%	+/-3.7	2.4%	+/-3.2
5:00 a.m. to 5:29 a.m.	7.1%	+/-4.1	10.9%	+/-5.7	3.7%	+/-3.3
5:30 a.m. to 5:59 a.m.	4.0%	+/-2.3	5.8%	+/-4.0	2.4%	+/-2.3
6:00 a.m. to 6:29 a.m.	11.8%	+/-4.6	20.9%	+/-8.4	3.5%	+/-3.4
6:30 a.m. to 6:59 a.m.	6.4%	+/-3.5	6.7%	+/-4.0	6.1%	+/-4.3
7:00 a.m. to 7:29 a.m.	10.6%	+/-3.9	9.2%	+/-5.9	11.8%	+/-4.9
7:30 a.m. to 7:59 a.m.	9.2%	+/-3.7	3.2%	+/-2.9	14.7%	+/-6.6
8:00 a.m. to 8:29 a.m.	12.4%	+/-4.8	9.9%	+/-6.1	14.6%	+/-6.1
8:30 a.m. to 8:59 a.m.	4.8%	+/-2.3	3.5%	+/-2.7	5.8%	+/-3.6
9:00 a.m. to 11:59 p.m.	30.1%	+/-7.4	24.6%	+/-6.8	35.0%	+/-10.1
TRAVEL TIME TO WORK						
Less than 10 minutes	6.5%	+/-3.6	6.9%	+/-5.0	6.1%	+/-6.4
10 to 14 minutes	8.2%	+/-3.4	6.7%	+/-4.7	9.5%	+/-4.5
15 to 19 minutes	12.4%	+/-4.3	9.0%	+/-5.5	15.5%	+/-5.8
20 to 24 minutes	11.7%	+/-4.0	12.4%	+/-5.6	11.1%	+/-4.3
25 to 29 minutes	4.7%	+/-2.5	4.8%	+/-3.4	4.7%	+/-3.9
30 to 34 minutes	21.9%	+/-5.2	22.6%	+/-5.9	21.4%	+/-8.1
35 to 44 minutes	10.0%	+/-4.4	13.3%	+/-6.9	7.0%	+/-5.3
45 to 59 minutes	14.7%	+/-5.0	12.2%	+/-4.6	16.9%	+/-7.6
60 or more minutes	9.9%	+/-3.9	12.1%	+/-5.7	7.9%	+/-4.2
Mean travel time to work (minutes)	30.2	+/-2.3	31.3	+/-3.0	29.2	+/-2.8
VEHICLES AVAILABLE						
Workers 16 years and over in households	2,768	+/-315	1,330	+/-169	1,438	+/-251
No vehicle available	0.0%	+/-1.2	0.0%	+/-2.4	0.0%	+/-2.2
1 vehicle available	12.5%	+/-5.5	7.2%	+/-3.3	17.4%	+/-9.9
2 vehicles available	31.9%	+/-8.0	32.3%	+/-9.6	31.5%	+/-8.5
3 or more vehicles available	55.6%	+/-9.1	60.5%	+/-9.6	51.1%	+/-11.4
PERCENT ALLOCATED						
Means of transportation to work	6.1%	(X)	(X)	(X)	(X)	(X)
Private vehicle occupancy	7.9%	(X)	(X)	(X)	(X)	(X)
Place of work	8.9%	(X)	(X)	(X)	(X)	(X)
Time leaving home to go to work	12.8%	(X)	(X)	(X)	(X)	(X)
Travel time to work	7.2%	(X)	(X)	(X)	(X)	(X)
Vehicles available	0.9%	(X)	(X)	(X)	(X)	(X)

Subject	Census Tract 4361, Alameda County, California					
	Total		Male		Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Workers 16 years and over	2,773	+/-238	1,568	+/-162	1,205	+/-185
MEANS OF TRANSPORTATION TO WORK						
Car, truck, or van	79.8%	+/-6.2	84.1%	+/-7.0	74.2%	+/-8.5
Drove alone	70.1%	+/-8.6	74.5%	+/-9.9	64.5%	+/-10.4
Carpooled	9.7%	+/-5.0	9.6%	+/-5.5	9.7%	+/-5.8
In 2-person carpool	8.7%	+/-4.9	8.7%	+/-5.4	8.6%	+/-5.6
In 3-person carpool	1.0%	+/-1.1	1.0%	+/-1.5	1.1%	+/-1.6
In 4-or-more person carpool	0.0%	+/-1.2	0.0%	+/-2.0	0.0%	+/-2.7
Workers per car, truck, or van	1.07	+/-0.04	1.06	+/-0.04	1.07	+/-0.05
Public transportation (excluding taxicab)	11.5%	+/-4.7	5.8%	+/-4.2	18.9%	+/-9.2
Walked	1.7%	+/-2.0	0.1%	+/-0.2	3.7%	+/-4.6
Bicycle	1.2%	+/-1.9	2.2%	+/-3.4	0.0%	+/-2.7
Taxicab, motorcycle, or other means	4.2%	+/-3.4	6.5%	+/-5.6	1.2%	+/-1.9
Worked at home	1.6%	+/-1.3	1.3%	+/-1.4	2.0%	+/-2.5
PLACE OF WORK						
Worked in state of residence	99.7%	+/-0.5	100.0%	+/-2.0	99.3%	+/-1.1
Worked in county of residence	72.8%	+/-6.0	72.3%	+/-8.3	73.4%	+/-9.7
Worked outside county of residence	26.9%	+/-6.0	27.7%	+/-8.3	26.0%	+/-9.5
Worked outside state of residence	0.3%	+/-0.5	0.0%	+/-2.0	0.7%	+/-1.1
Living in a place	100.0%	+/-1.2	100.0%	+/-2.0	100.0%	+/-2.7
Worked in place of residence	4.8%	+/-2.2	5.3%	+/-3.3	4.2%	+/-3.1
Worked outside place of residence	95.2%	+/-2.2	94.7%	+/-3.3	95.8%	+/-3.1
Not living in a place	0.0%	+/-1.2	0.0%	+/-2.0	0.0%	+/-2.7
Living in 12 selected states	0.0%	+/-1.2	0.0%	+/-2.0	0.0%	+/-2.7
Worked in minor civil division of residence	0.0%	+/-1.2	0.0%	+/-2.0	0.0%	+/-2.7
Worked outside minor civil division of residence	0.0%	+/-1.2	0.0%	+/-2.0	0.0%	+/-2.7
Not living in 12 selected states	100.0%	+/-1.2	100.0%	+/-2.0	100.0%	+/-2.7
Workers 16 years and over who did not work at home	2,729	+/-249	1,548	+/-165	1,181	+/-188
TIME LEAVING HOME TO GO TO WORK						
12:00 a.m. to 4:59 a.m.	2.6%	+/-1.8	3.5%	+/-2.3	1.5%	+/-1.9
5:00 a.m. to 5:29 a.m.	5.8%	+/-3.4	8.3%	+/-5.2	2.5%	+/-2.1
5:30 a.m. to 5:59 a.m.	4.3%	+/-3.4	7.6%	+/-6.1	0.0%	+/-2.7
6:00 a.m. to 6:29 a.m.	9.3%	+/-3.4	7.6%	+/-4.8	11.4%	+/-5.2
6:30 a.m. to 6:59 a.m.	8.2%	+/-3.0	11.0%	+/-5.5	4.6%	+/-2.6
7:00 a.m. to 7:29 a.m.	16.1%	+/-4.1	14.8%	+/-6.0	17.9%	+/-6.3
7:30 a.m. to 7:59 a.m.	10.8%	+/-3.9	3.4%	+/-3.1	20.6%	+/-7.1
8:00 a.m. to 8:29 a.m.	15.7%	+/-4.4	12.3%	+/-6.7	20.2%	+/-7.1
8:30 a.m. to 8:59 a.m.	3.1%	+/-1.6	3.5%	+/-2.5	2.5%	+/-1.9
9:00 a.m. to 11:59 p.m.	24.0%	+/-4.6	28.0%	+/-7.2	18.9%	+/-7.2
TRAVEL TIME TO WORK						
Less than 10 minutes	1.8%	+/-1.5	2.5%	+/-2.5	0.9%	+/-1.5
10 to 14 minutes	16.3%	+/-5.0	18.0%	+/-6.7	14.1%	+/-6.9
15 to 19 minutes	16.0%	+/-4.8	13.7%	+/-6.7	19.1%	+/-7.8
20 to 24 minutes	8.1%	+/-3.8	8.1%	+/-5.4	8.2%	+/-5.0
25 to 29 minutes	7.0%	+/-3.0	7.4%	+/-4.1	6.4%	+/-3.7
30 to 34 minutes	21.8%	+/-4.7	20.7%	+/-6.7	23.2%	+/-8.1
35 to 44 minutes	5.2%	+/-3.5	4.4%	+/-3.5	6.2%	+/-5.7
45 to 59 minutes	10.7%	+/-3.4	13.0%	+/-5.2	7.5%	+/-4.4
60 or more minutes	13.2%	+/-3.3	12.2%	+/-4.7	14.4%	+/-6.1
Mean travel time to work (minutes)	30.5	+/-2.3	29.7	+/-2.6	31.5	+/-4.1
VEHICLES AVAILABLE						
Workers 16 years and over in households	2,770	+/-238	1,565	+/-162	1,205	+/-185
No vehicle available	3.0%	+/-4.1	2.7%	+/-3.9	3.5%	+/-4.5
1 vehicle available	20.1%	+/-7.6	22.4%	+/-8.9	17.2%	+/-9.4
2 vehicles available	38.7%	+/-8.4	36.2%	+/-8.9	42.0%	+/-9.6
3 or more vehicles available	38.1%	+/-7.8	38.7%	+/-9.9	37.3%	+/-8.0
PERCENT ALLOCATED						
Means of transportation to work	12.7%	(X)	(X)	(X)	(X)	(X)
Private vehicle occupancy	13.1%	(X)	(X)	(X)	(X)	(X)
Place of work	16.0%	(X)	(X)	(X)	(X)	(X)
Time leaving home to go to work	21.0%	(X)	(X)	(X)	(X)	(X)
Travel time to work	14.3%	(X)	(X)	(X)	(X)	(X)
Vehicles available	1.0%	(X)	(X)	(X)	(X)	(X)

Appendix E: Cumulative without and with Project Conditions Intersection Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	350	420	50	240	910	40	970	1280	160	80	860	440
Future Volume (veh/h)	350	420	50	240	910	40	970	1280	160	80	860	440
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	372	447	46	255	968	41	1032	1362	159	85	915	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	446	1105	113	322	1040	44	621	1554	181	108	1104	344
Arrive On Green	0.13	0.35	0.35	0.10	0.31	0.31	0.18	0.34	0.34	0.06	0.22	0.00
Sat Flow, veh/h	3375	3173	325	3375	3389	144	3375	4527	528	1740	4988	1553
Grp Volume(v), veh/h	372	244	249	255	496	513	1032	1000	521	85	915	0
Grp Sat Flow(s),veh/h/ln	1688	1736	1762	1688	1736	1797	1688	1663	1731	1740	1663	1553
Q Serve(g_s), s	11.7	11.6	11.7	8.0	30.1	30.1	20.0	30.7	30.7	5.2	19.0	0.0
Cycle Q Clear(g_c), s	11.7	11.6	11.7	8.0	30.1	30.1	20.0	30.7	30.7	5.2	19.0	0.0
Prop In Lane	1.00		0.18	1.00		0.08	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	446	605	614	322	533	552	621	1141	594	108	1104	344
V/C Ratio(X)	0.83	0.40	0.41	0.79	0.93	0.93	1.66	0.88	0.88	0.79	0.83	0.00
Avail Cap(c_a), veh/h	1056	719	729	621	543	562	621	1141	594	352	1422	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.0	26.8	26.9	48.1	36.5	36.5	44.3	33.5	33.5	50.3	40.4	0.0
Incr Delay (d2), s/veh	1.6	0.2	0.2	1.7	22.2	21.7	304.8	7.6	13.4	4.7	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.6	5.7	3.8	17.7	18.3	35.5	15.2	16.8	2.7	9.0	0.0
LnGrp Delay(d),s/veh	47.6	27.0	27.0	49.8	58.7	58.2	349.2	41.1	46.9	55.0	43.0	0.0
LnGrp LOS	D	C	C	D	E	E	F	D	D	D	D	
Approach Vol, veh/h		865			1264			2553			1000	
Approach Delay, s/veh		35.9			56.7			166.8			44.0	
Approach LOS		D			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	37.5	24.1	28.2	14.5	42.0	10.8	41.4
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	13.7	32.1	22.0	21.0	10.0	13.7	7.2	32.7
Green Ext Time (p_c), s	0.7	1.3	0.0	2.7	0.3	7.5	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	100.8
HCM 2010 LOS	F

2: Hesperian Blvd & Grant Ave/I-880 SB On Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	380	210	220	0	0	0	350	1610	140	630	1060	280
Future Volume (veh/h)	380	210	220	0	0	0	350	1610	140	630	1060	280
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	400	221	121				368	1695	136	663	1116	247
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				3	3	3	3	3	3
Cap, veh/h	379	209	511				389	1680	135	644	1339	296
Arrive On Green	0.33	0.33	0.33				0.44	0.71	0.71	0.19	0.33	0.33
Sat Flow, veh/h	1151	636	1554				1757	4746	380	3408	4099	907
Grp Volume(v), veh/h	621	0	121				368	1198	633	663	914	449
Grp Sat Flow(s),veh/h/ln	1787	0	1554				1757	1679	1769	1704	1679	1648
Q Serve(g_s), s	32.9	0.0	5.7				20.1	35.4	35.4	18.9	25.2	25.2
Cycle Q Clear(g_c), s	32.9	0.0	5.7				20.1	35.4	35.4	18.9	25.2	25.2
Prop In Lane	0.64		1.00				1.00		0.21	1.00		0.55
Lane Grp Cap(c), veh/h	588	0	511				389	1188	626	644	1097	539
V/C Ratio(X)	1.06	0.00	0.24				0.95	1.01	1.01	1.03	0.83	0.83
Avail Cap(c_a), veh/h	588	0	511				392	1188	626	644	1097	539
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	24.4				27.3	14.6	14.6	40.5	31.1	31.1
Incr Delay (d2), s/veh	52.8	0.0	0.2				5.4	9.9	13.5	43.2	7.5	14.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.8	0.0	5.6				10.2	17.1	18.7	12.7	12.8	13.6
LnGrp Delay(d),s/veh	86.4	0.0	24.6				32.8	24.5	28.2	83.7	38.6	45.2
LnGrp LOS	F		C				C	F	F	F	D	D
Approach Vol, veh/h		742						2199			2026	
Approach Delay, s/veh		76.3						26.9			54.8	
Approach LOS		E						C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	23.1	39.5		37.4	25.8	36.8		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 19	35.4		32.9	22.3	32.5		
Max Q Clear Time (g_c+I1), s	20.9	37.4		34.9	22.1	27.2		
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.0		

Intersection Summary		
HCM 2010 Ctrl Delay		45.7
HCM 2010 LOS		D

Notes

3: Hesperian Blvd & Paseo Grande

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	170	330	70	230	270	270	100	1710	240	130	950	100
Future Volume (veh/h)	170	330	70	230	270	270	100	1710	240	130	950	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	183	355	66	247	290	0	108	1839	242	140	1022	97
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	253	452	84	152	553	0	136	2170	283	176	2355	223
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.15	0.96	0.96	0.03	0.17	0.17
Sat Flow, veh/h	1069	1507	280	949	1845	0	1757	4503	588	1757	4667	442
Grp Volume(v), veh/h	183	0	421	247	290	0	108	1367	714	140	735	384
Grp Sat Flow(s),veh/h/ln	1069	0	1787	949	1845	0	1757	1679	1734	1757	1679	1751
Q Serve(g_s), s	16.9	0.0	21.6	8.4	13.1	0.0	5.9	7.9	8.4	7.9	19.7	19.7
Cycle Q Clear(g_c), s	30.0	0.0	21.6	30.0	13.1	0.0	5.9	7.9	8.4	7.9	19.7	19.7
Prop In Lane	1.00		0.16	1.00		0.00	1.00		0.34	1.00		0.25
Lane Grp Cap(c), veh/h	253	0	536	152	553	0	136	1618	836	176	1694	884
V/C Ratio(X)	0.72	0.00	0.79	1.63	0.52	0.00	0.79	0.85	0.85	0.80	0.43	0.43
Avail Cap(c_a), veh/h	253	0	536	152	553	0	462	1618	836	462	1694	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.81	0.81	0.81	0.50	0.50	0.50
Uniform Delay (d), s/veh	41.6	0.0	32.1	47.8	29.1	0.0	41.5	1.1	1.1	47.3	28.8	28.9
Incr Delay (d2), s/veh	10.6	0.0	8.0	309.6	1.2	0.0	8.1	4.6	9.0	4.2	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	11.8	17.2	6.8	0.0	3.2	2.9	4.0	4.1	9.3	9.8
LnGrp Delay(d),s/veh	52.2	0.0	40.0	357.4	30.3	0.0	49.6	5.7	10.0	51.5	29.2	29.7
LnGrp LOS	D		D	F	C		D	A	B	D	C	C
Approach Vol, veh/h		604			537			2189			1259	
Approach Delay, s/veh		43.7			180.7			9.3			31.8	
Approach LOS		D			F			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.7	52.3		34.0	11.4	54.6		34.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		30.0
Max Q Clear Time (g_c+I1), s	9.9	10.4		32.0	7.9	21.7		32.0
Green Ext Time (p_c), s	0.3	19.4		0.0	0.2	9.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.1
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↳		↰	↑↑↳		↰	↑↑↑	↱
Traffic Volume (veh/h)	60	10	40	0	0	0	70	1970	60	10	1270	10
Future Volume (veh/h)	60	10	40	0	0	0	70	1970	60	10	1270	10
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1900	1827	1827	0	1827	1900	1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	65	11	2	0	0	0	76	2141	64	11	1380	0
Adj No. of Lanes	0	1	1	0	1	0	1	3	0	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	0	4	4	4	4	4	4	4	4
Cap, veh/h	166	19	125	0	150	0	98	3930	117	18	3711	1155
Arrive On Green	0.08	0.08	0.08	0.00	0.00	0.00	0.06	0.79	0.79	0.02	1.00	0.00
Sat Flow, veh/h	1208	233	1524	0	1827	0	1740	4977	148	1740	4988	1553
Grp Volume(v), veh/h	76	0	2	0	0	0	76	1429	776	11	1380	0
Grp Sat Flow(s),veh/h/ln	1441	0	1524	0	1827	0	1740	1663	1800	1740	1663	1553
Q Serve(g_s), s	5.0	0.0	0.1	0.0	0.0	0.0	4.3	15.9	16.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.1	0.0	0.0	0.0	4.3	15.9	16.0	0.6	0.0	0.0
Prop In Lane	0.86		1.00	0.00		0.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	185	0	125	0	150	0	98	2625	1421	18	3711	1155
V/C Ratio(X)	0.41	0.00	0.02	0.00	0.00	0.00	0.78	0.54	0.55	0.60	0.37	0.00
Avail Cap(c_a), veh/h	498	0	457	0	548	0	458	2625	1421	458	3711	1155
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.51	0.51	0.00
Uniform Delay (d), s/veh	44.5	0.0	42.2	0.0	0.0	0.0	46.6	3.9	3.9	48.7	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.1	0.0	0.0	0.0	4.9	0.8	1.5	5.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.1	0.0	0.0	0.0	2.2	7.4	8.4	0.3	0.1	0.0
LnGrp Delay(d),s/veh	45.9	0.0	42.3	0.0	0.0	0.0	51.5	4.7	5.4	54.6	0.1	0.0
LnGrp LOS	D		D				D	A	A	D	A	
Approach Vol, veh/h		78			0			2281			1391	
Approach Delay, s/veh		45.8			0.0			6.5			0.6	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	78.5		12.2	4.8	83.1		12.2
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		30.0
Max Q Clear Time (g_c+I1), s	6.3	2.0		7.1	2.6	18.0		0.0
Green Ext Time (p_c), s	0.1	29.7		0.3	0.0	13.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	10	0	0	20	0	2080	10	0	1310	0
Future Vol, veh/h	0	0	10	0	0	20	0	2080	10	0	1310	0
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	10	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	0	0	11	0	0	22	0	2286	11	0	1440	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	725	-	-	1158	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.18	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.94	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	312	0	0	160	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	311	-	-	158	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	31.4	0	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	311	158	-	-
HCM Lane V/C Ratio	-	-	0.035	0.139	-	-
HCM Control Delay (s)	-	-	17	31.4	-	-
HCM Lane LOS	-	-	C	D	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	120	250	200	170	300	230	150	1700	190	150	1150	50
Future Volume (veh/h)	120	250	200	170	300	230	150	1700	190	150	1150	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.96
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	136	284	194	193	341	229	170	1932	205	170	1307	52
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	154	405	277	222	408	274	201	1844	194	146	1824	73
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.11	0.40	0.40	0.08	0.37	0.37
Sat Flow, veh/h	829	1013	692	902	1020	685	1757	4622	487	1757	4961	197
Grp Volume(v), veh/h	136	0	478	193	0	570	170	1399	738	170	885	474
Grp Sat Flow(s),veh/h/ln	829	0	1704	902	0	1706	1757	1679	1752	1757	1679	1801
Q Serve(g_s), s	9.9	0.0	23.4	16.6	0.0	30.1	9.5	39.9	39.9	8.3	22.6	22.6
Cycle Q Clear(g_c), s	40.0	0.0	23.4	40.0	0.0	30.1	9.5	39.9	39.9	8.3	22.6	22.6
Prop In Lane	1.00		0.41	1.00		0.40	1.00		0.28	1.00		0.11
Lane Grp Cap(c), veh/h	154	0	682	222	0	682	201	1340	699	146	1234	662
V/C Ratio(X)	0.88	0.00	0.70	0.87	0.00	0.84	0.85	1.04	1.06	1.17	0.72	0.72
Avail Cap(c_a), veh/h	154	0	682	222	0	682	237	1340	699	146	1234	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	25.0	43.6	0.0	27.0	43.4	30.1	30.1	45.8	27.1	27.1
Incr Delay (d2), s/veh	40.8	0.0	3.2	28.6	0.0	8.7	18.6	37.0	49.8	126.0	3.6	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	11.5	7.1	0.0	15.7	5.6	25.3	28.9	9.1	11.1	12.4
LnGrp Delay(d),s/veh	87.8	0.0	28.2	72.1	0.0	35.7	62.1	67.1	79.8	171.9	30.7	33.7
LnGrp LOS	F		C	E		D	E	F	F	F	C	C
Approach Vol, veh/h		614			763			2307			1529	
Approach Delay, s/veh		41.4			44.9			70.8			47.3	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	44.0		44.0	15.1	40.9		44.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	8.3	39.9		40.0	13.5	34.7		40.0
Max Q Clear Time (g_c+I1), s	10.3	41.9		42.0	11.5	24.6		42.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.7
HCM 2010 LOS	E

Notes

7: Paseo Largavista & Paseo Grande

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	20	470	10	10	390	50	10	10	20	30	10	20
Future Vol, veh/h	20	470	10	10	390	50	10	10	20	30	10	20
Conflicting Peds, #/hr	15	0	5	5	0	15	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	540	11	11	448	57	11	11	23	34	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	521	0	0	557	0	0	1119	1141	556	1129	1118	497
Stage 1	-	-	-	-	-	-	597	597	-	515	515	-
Stage 2	-	-	-	-	-	-	522	544	-	614	603	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1040	-	-	1009	-	-	183	200	529	180	206	571
Stage 1	-	-	-	-	-	-	488	490	-	541	533	-
Stage 2	-	-	-	-	-	-	536	517	-	477	487	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1035	-	-	1004	-	-	160	187	524	155	193	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	187	-	155	193	-
Stage 1	-	-	-	-	-	-	470	472	-	516	518	-
Stage 2	-	-	-	-	-	-	493	502	-	429	469	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	21.9	29.8
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1035	-	-	1004	-	-	213
HCM Lane V/C Ratio	0.178	0.022	-	-	0.011	-	-	0.324
HCM Control Delay (s)	21.9	8.6	0	-	8.6	0	-	29.8
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Traffic Vol, veh/h	470	40	70	370	50	60
Future Vol, veh/h	470	40	70	370	50	60
Conflicting Peds, #/hr	0	5	5	0	5	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	511	43	76	402	54	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	559	0	1097	538
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1007	-	235	541
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1007	-	215	538
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	320	-	-	1007	-
HCM Lane V/C Ratio	0.374	-	-	0.076	-
HCM Control Delay (s)	22.8	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	690	10	20	770	10	10	0	20	0	0	10
Future Vol, veh/h	10	690	10	20	770	10	10	0	20	0	0	10
Conflicting Peds, #/hr	10	0	5	5	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	734	11	21	819	11	11	0	21	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	840	0	0	750	0	0	1638	1648	744	1648	1648	834
Stage 1	-	-	-	-	-	-	766	766	-	877	877	-
Stage 2	-	-	-	-	-	-	872	882	-	771	771	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	795	-	-	859	-	-	80	99	415	79	99	368
Stage 1	-	-	-	-	-	-	395	412	-	343	366	-
Stage 2	-	-	-	-	-	-	345	364	-	393	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	795	-	-	859	-	-	73	91	413	70	91	364
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	91	-	70	91	-
Stage 1	-	-	-	-	-	-	384	400	-	332	346	-
Stage 2	-	-	-	-	-	-	320	344	-	364	398	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	32.6	15.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	162	795	-	-	859	-	-	364
HCM Lane V/C Ratio	0.197	0.013	-	-	0.025	-	-	0.029
HCM Control Delay (s)	32.6	9.6	0	-	9.3	0	-	15.2
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

HCM 2010 TWSC
10: Via Arriba & Via Mercado

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	10	20	80	70	40	60
Future Vol, veh/h	10	20	80	70	40	60
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	15	29	118	103	59	88

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	380	174	0	0	226	0
Stage 1	174	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	624	872	-	-	1348	-
Stage 1	859	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	592	868	-	-	1348	-
Mov Cap-2 Maneuver	592	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	10.1		0		3.1
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	751	1348	-
HCM Lane V/C Ratio	-	-	0.059	0.044	-
HCM Control Delay (s)	-	-	10.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

HCM 2010 Signalized Intersection Summary
1: Hesperian Blvd & Lewelling Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	350	420	52	242	910	40	980	1294	163	80	870	440
Future Volume (veh/h)	350	420	52	242	910	40	980	1294	163	80	870	440
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1827
Adj Flow Rate, veh/h	372	447	48	257	968	41	1043	1377	162	85	926	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	446	1096	117	324	1039	44	619	1557	183	108	1111	346
Arrive On Green	0.13	0.35	0.35	0.10	0.31	0.31	0.18	0.34	0.34	0.06	0.22	0.00
Sat Flow, veh/h	3375	3158	337	3375	3389	144	3375	4523	532	1740	4988	1553
Grp Volume(v), veh/h	372	245	250	257	496	513	1043	1012	527	85	926	0
Grp Sat Flow(s),veh/h/ln	1688	1736	1760	1688	1736	1797	1688	1663	1730	1740	1663	1553
Q Serve(g_s), s	11.7	11.7	11.8	8.1	30.2	30.2	20.0	31.3	31.3	5.3	19.3	0.0
Cycle Q Clear(g_c), s	11.7	11.7	11.8	8.1	30.2	30.2	20.0	31.3	31.3	5.3	19.3	0.0
Prop In Lane	1.00		0.19	1.00		0.08	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	446	603	611	324	532	551	619	1145	596	108	1111	346
V/C Ratio(X)	0.83	0.41	0.41	0.79	0.93	0.93	1.68	0.88	0.88	0.79	0.83	0.00
Avail Cap(c_a), veh/h	1053	717	726	619	541	561	619	1145	596	351	1418	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.1	27.0	27.1	48.2	36.7	36.7	44.5	33.7	33.7	50.4	40.4	0.0
Incr Delay (d2), s/veh	1.6	0.2	0.2	1.7	22.5	22.0	314.8	8.2	14.3	4.7	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	5.6	5.7	3.9	17.8	18.3	36.4	15.6	17.3	2.7	9.1	0.0
LnGrp Delay(d),s/veh	47.7	27.2	27.2	49.9	59.2	58.7	359.3	41.9	48.0	55.1	43.2	0.0
LnGrp LOS	D	C	C	D	E	E	F	D	D	E	D	
Approach Vol, veh/h		867			1266			2582			1011	
Approach Delay, s/veh		36.0			57.1			171.3			44.2	
Approach LOS		D			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	37.5	24.1	28.4	14.6	41.9	10.9	41.6
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	13.7	32.2	22.0	21.3	10.1	13.8	7.3	33.3
Green Ext Time (p_c), s	0.7	1.2	0.0	2.6	0.3	7.6	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	103.1
HCM 2010 LOS	F

2: Hesperian Blvd & Grant Ave/I-880 SB On Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	380	210	220	0	0	0	350	1637	144	630	1077	280
Future Volume (veh/h)	380	210	220	0	0	0	350	1637	144	630	1077	280
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	400	221	121				368	1723	141	663	1134	248
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				3	3	3	3	3	3
Cap, veh/h	379	209	511				389	1677	137	644	1343	294
Arrive On Green	0.33	0.33	0.33				0.44	0.71	0.71	0.19	0.33	0.33
Sat Flow, veh/h	1151	636	1554				1757	4738	387	3408	4109	898
Grp Volume(v), veh/h	621	0	121				368	1220	644	663	927	455
Grp Sat Flow(s),veh/h/ln	1787	0	1554				1757	1679	1767	1704	1679	1650
Q Serve(g_s), s	32.9	0.0	5.7				20.1	35.4	35.4	18.9	25.7	25.7
Cycle Q Clear(g_c), s	32.9	0.0	5.7				20.1	35.4	35.4	18.9	25.7	25.7
Prop In Lane	0.64		1.00				1.00		0.22	1.00		0.54
Lane Grp Cap(c), veh/h	588	0	511				389	1188	626	644	1097	539
V/C Ratio(X)	1.06	0.00	0.24				0.95	1.03	1.03	1.03	0.84	0.84
Avail Cap(c_a), veh/h	588	0	511				392	1188	626	644	1097	539
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	24.4				27.3	14.6	14.6	40.5	31.3	31.3
Incr Delay (d2), s/veh	52.8	0.0	0.2				5.4	15.8	19.5	43.2	8.0	15.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.8	0.0	5.6				10.2	18.1	19.7	12.7	13.1	13.9
LnGrp Delay(d),s/veh	86.4	0.0	24.6				32.8	30.4	34.1	83.7	39.3	46.3
LnGrp LOS	F		C				C	F	F	F	D	D
Approach Vol, veh/h		742						2232			2045	
Approach Delay, s/veh		76.3						31.9			55.2	
Approach LOS		E						C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	23.1	39.5		37.4	25.8	36.8		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 19	35.4		32.9	22.3	32.5		
Max Q Clear Time (g_c+I1), s	20.9	37.4		34.9	22.1	27.7		
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	4.6		

Intersection Summary		
HCM 2010 Ctrl Delay		48.0
HCM 2010 LOS		D

Notes

HCM 2010 Signalized Intersection Summary
3: Hesperian Blvd & Paseo Grande

Village Green Apartments
Cumulative Plus Project AM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	274	354	70	230	283	270	107	1637	232	130	938	129
Future Volume (veh/h)	274	354	70	230	283	270	107	1637	232	130	938	129
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	295	381	67	247	304	0	115	1760	233	140	1009	124
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	243	456	80	133	553	0	144	2168	285	176	2265	278
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.16	0.96	0.96	0.03	0.17	0.17
Sat Flow, veh/h	1055	1522	268	926	1845	0	1757	4498	592	1757	4529	555
Grp Volume(v), veh/h	295	0	448	247	304	0	115	1311	682	140	747	386
Grp Sat Flow(s),veh/h/ln	1055	0	1789	926	1845	0	1757	1679	1733	1757	1679	1727
Q Serve(g_s), s	16.2	0.0	23.4	6.6	13.8	0.0	6.3	6.4	6.7	7.9	20.1	20.1
Cycle Q Clear(g_c), s	30.0	0.0	23.4	30.0	13.8	0.0	6.3	6.4	6.7	7.9	20.1	20.1
Prop In Lane	1.00		0.15	1.00		0.00	1.00		0.34	1.00		0.32
Lane Grp Cap(c), veh/h	243	0	537	133	553	0	144	1618	835	176	1679	864
V/C Ratio(X)	1.21	0.00	0.83	1.85	0.55	0.00	0.80	0.81	0.82	0.80	0.45	0.45
Avail Cap(c_a), veh/h	243	0	537	133	553	0	462	1618	835	462	1679	864
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.89	0.89	0.89	0.49	0.49	0.49
Uniform Delay (d), s/veh	44.3	0.0	32.7	48.5	29.3	0.0	41.0	1.1	1.1	47.3	29.2	29.3
Incr Delay (d2), s/veh	128.3	0.0	11.3	411.2	1.5	0.0	8.8	4.1	7.8	4.0	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.3	0.0	13.3	18.9	7.2	0.0	3.4	2.3	3.3	4.0	9.4	9.9
LnGrp Delay(d),s/veh	172.6	0.0	44.0	459.7	30.8	0.0	49.8	5.1	8.9	51.4	29.7	30.1
LnGrp LOS	F		D	F	C		D	A	A	D	C	C
Approach Vol, veh/h		743			551			2108			1273	
Approach Delay, s/veh		95.1			223.1			8.8			32.2	
Approach LOS		F			F			A			C	

Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.7	52.3		34.0	11.9	54.1		34.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	31.9		30.0	26.3	31.9		30.0
Max Q Clear Time (g_c+I1), s	19.9	8.7		32.0	8.3	22.1		32.0
Green Ext Time (p_c), s	0.3	20.6		0.0	0.2	9.2		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			54.1
HCM 2010 LOS			D

Notes

HCM 2010 Signalized Intersection Summary
4: Hesperian Blvd & Old Via Mercado

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations							↰	↑↑↱		↰	↑↑↑	
Traffic Volume (veh/h)	0	0	0	0	0	0	94	1956	60	10	1258	0
Future Volume (veh/h)	0	0	0	0	0	0	94	1956	60	10	1258	0
Number							1	6	16	5	2	12
Initial Q (Qb), veh							0	0	0	0	0	0
Ped-Bike Adj(A_pbT)							1.00		1.00	1.00		1.00
Parking Bus, Adj							1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln							1863	1863	1900	1863	1863	0
Adj Flow Rate, veh/h							102	2126	65	11	1367	0
Adj No. of Lanes							1	3	0	1	3	0
Peak Hour Factor							0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %							2	2	2	2	2	0
Cap, veh/h							129	4548	139	23	4258	0
Arrive On Green							0.15	1.00	1.00	0.03	1.00	0.00
Sat Flow, veh/h							1774	5071	155	1774	5253	0
Grp Volume(v), veh/h							102	1420	771	11	1367	0
Grp Sat Flow(s),veh/h/ln							1774	1695	1835	1774	1695	0
Q Serve(g_s), s							5.6	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s							5.6	0.0	0.0	0.6	0.0	0.0
Prop In Lane							1.00		0.08	1.00		0.00
Lane Grp Cap(c), veh/h							129	3040	1646	23	4258	0
V/C Ratio(X)							0.79	0.47	0.47	0.47	0.32	0.00
Avail Cap(c_a), veh/h							364	3040	1646	151	4258	0
HCM Platoon Ratio							2.00	2.00	2.00	2.00	2.00	1.00
Upstream Filter(I)							1.00	1.00	1.00	0.36	0.36	0.00
Uniform Delay (d), s/veh							42.0	0.0	0.0	48.3	0.0	0.0
Incr Delay (d2), s/veh							10.3	0.5	1.0	5.2	0.1	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							3.1	0.2	0.4	0.3	0.0	0.0
LnGrp Delay(d),s/veh							52.3	0.5	1.0	53.6	0.1	0.0
LnGrp LOS							D	A	A	D	A	
Approach Vol, veh/h								2293			1378	
Approach Delay, s/veh								3.0			0.5	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		
Phs Duration (G+Y+Rc), s	11.8	88.2			5.8	94.2		
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		
Max Green Setting (Gmax), s	20.5	70.5			8.5	82.5		
Max Q Clear Time (g_c+I1), s	17.6	2.0			2.6	2.0		
Green Ext Time (p_c), s	0.2	57.7			0.0	66.0		

Intersection Summary			
HCM 2010 Ctrl Delay			2.0
HCM 2010 LOS			A

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	87	0	0	10	0	2090	10	0	1256	106
Future Vol, veh/h	0	0	87	0	0	10	0	2090	10	0	1256	106
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	0	0	96	0	0	11	0	2297	11	0	1380	116

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	758	-	-	1169	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.18	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.94	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	296	0	0	157	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	293	-	-	155	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.1	30	0	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	293	155	-	-
HCM Lane V/C Ratio	-	-	0.326	0.071	-	-
HCM Control Delay (s)	-	-	23.1	30	-	-
HCM Lane LOS	-	-	C	D	-	-
HCM 95th %tile Q(veh)	-	-	1.4	0.2	-	-

HCM 2010 Signalized Intersection Summary
6: Hesperian Blvd & Hacienda Ave

Village Green Apartments
Cumulative Plus Project AM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	120	250	200	170	300	232	150	1708	190	154	1159	50
Future Volume (veh/h)	120	250	200	170	300	232	150	1708	190	154	1159	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.95
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	136	284	194	193	341	232	170	1941	205	175	1317	52
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	150	404	276	221	405	275	201	1779	186	170	1824	72
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.11	0.38	0.38	0.03	0.12	0.12
Sat Flow, veh/h	826	1010	690	901	1011	688	1757	4621	484	1757	4959	196
Grp Volume(v), veh/h	136	0	478	193	0	573	170	1406	740	175	892	477
Grp Sat Flow(s),veh/h/ln	826	0	1699	901	0	1700	1757	1679	1748	1757	1679	1798
Q Serve(g_s), s	9.5	0.0	23.5	16.5	0.0	30.5	9.5	38.5	38.5	9.7	25.6	25.6
Cycle Q Clear(g_c), s	40.0	0.0	23.5	40.0	0.0	30.5	9.5	38.5	38.5	9.7	25.6	25.6
Prop In Lane	1.00		0.41	1.00		0.40	1.00		0.28	1.00		0.11
Lane Grp Cap(c), veh/h	150	0	680	221	0	680	201	1293	673	170	1235	661
V/C Ratio(X)	0.90	0.00	0.70	0.87	0.00	0.84	0.85	1.09	1.10	1.03	0.72	0.72
Avail Cap(c_a), veh/h	150	0	680	221	0	680	225	1293	673	170	1235	661
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	0.0	25.0	43.6	0.0	27.2	43.4	30.8	30.8	48.4	39.0	39.0
Incr Delay (d2), s/veh	46.4	0.0	3.3	29.4	0.0	9.2	21.0	52.4	65.4	76.2	3.7	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	11.6	7.1	0.0	16.1	5.8	27.2	30.7	8.3	12.5	14.0
LnGrp Delay(d),s/veh	93.7	0.0	28.3	73.1	0.0	36.4	64.5	83.1	96.1	124.9	42.7	45.7
LnGrp LOS	F		C	E		D	E	F	F	F	D	D
Approach Vol, veh/h		614			766			2316			1544	
Approach Delay, s/veh		42.8			45.6			85.9			52.9	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.4	42.6		44.0	15.1	40.9		44.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	9.7	38.5		40.0	12.8	35.4		40.0
Max Q Clear Time (g_c+I1), s	11.7	40.5		42.0	11.5	27.6		42.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	65.3
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	20	485	11	13	405	50	13	10	28	30	10	20
Future Vol, veh/h	20	485	11	13	405	50	13	10	28	30	10	20
Conflicting Peds, #/hr	15	0	5	5	0	15	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	23	557	13	15	466	57	15	11	32	34	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	538	0	0	575	0	0	1161	1183	574	1176	1160	514
Stage 1	-	-	-	-	-	-	615	615	-	539	539	-
Stage 2	-	-	-	-	-	-	546	568	-	637	621	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1025	-	-	993	-	-	171	189	516	167	195	558
Stage 1	-	-	-	-	-	-	477	481	-	525	520	-
Stage 2	-	-	-	-	-	-	520	505	-	464	478	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1020	-	-	988	-	-	148	175	511	140	181	547
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	175	-	140	181	-
Stage 1	-	-	-	-	-	-	459	463	-	500	501	-
Stage 2	-	-	-	-	-	-	474	487	-	408	460	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	23.3	33
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	1020	-	-	988	-	-	196
HCM Lane V/C Ratio	0.23	0.023	-	-	0.015	-	-	0.352
HCM Control Delay (s)	23.3	8.6	0	-	8.7	0	-	33
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰	↱
Traffic Vol, veh/h	471	62	121	368	70	187
Future Vol, veh/h	471	62	121	368	70	187
Conflicting Peds, #/hr	0	5	5	0	5	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	512	67	132	400	76	203

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	584	0	1219	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	668	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	986	-	198	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	986	-	170	529
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	170	529	-	-	986	-
HCM Lane V/C Ratio	0.448	0.384	-	-	0.133	-
HCM Control Delay (s)	42.3	16	-	-	9.2	-
HCM Lane LOS	E	C	-	-	A	-
HCM 95th %tile Q(veh)	2.1	1.8	-	-	0.5	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	706	10	20	783	10	10	0	20	0	0	10
Future Vol, veh/h	10	706	10	20	783	10	10	0	20	0	0	10
Conflicting Peds, #/hr	10	0	5	5	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	751	11	21	833	11	11	0	21	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	854	0	0	767	0	0	1669	1679	761	1679	1679	848
Stage 1	-	-	-	-	-	-	783	783	-	891	891	-
Stage 2	-	-	-	-	-	-	886	896	-	788	788	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	785	-	-	847	-	-	76	95	405	75	95	361
Stage 1	-	-	-	-	-	-	387	404	-	337	361	-
Stage 2	-	-	-	-	-	-	339	359	-	384	402	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	785	-	-	847	-	-	69	87	403	67	87	358
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	87	-	67	87	-
Stage 1	-	-	-	-	-	-	376	392	-	326	341	-
Stage 2	-	-	-	-	-	-	313	339	-	355	390	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	34.4	15.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	154	785	-	-	847	-	-	358
HCM Lane V/C Ratio	0.207	0.014	-	-	0.025	-	-	0.03
HCM Control Delay (s)	34.4	9.6	0	-	9.4	0	-	15.4
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	15	13	0	10	3	43	0	140	10	64	60	0
Future Vol, veh/h	15	13	0	10	3	43	0	140	10	64	60	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	14	0	11	3	47	0	152	11	70	65	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	7.5	8.2	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	54%	18%	52%
Vol Thru, %	93%	46%	5%	48%
Vol Right, %	7%	0%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	28	56	124
LT Vol	0	15	10	64
Through Vol	140	13	3	60
RT Vol	10	0	43	0
Lane Flow Rate	163	30	61	135
Geometry Grp	1	1	1	1
Degree of Util (X)	0.188	0.04	0.071	0.162
Departure Headway (Hd)	4.156	4.776	4.211	4.321
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	849	754	856	817
Service Time	2.253	2.779	2.212	2.419
HCM Lane V/C Ratio	0.192	0.04	0.071	0.165
HCM Control Delay	8.2	8	7.5	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.2	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	490	740	30	220	660	70	810	1200	350	180	1010	420
Future Volume (veh/h)	490	740	30	220	660	70	810	1200	350	180	1010	420
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	500	755	29	224	673	65	827	1224	321	184	1031	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	579	1204	46	292	841	81	635	1217	319	215	1233	384
Arrive On Green	0.17	0.34	0.34	0.08	0.26	0.26	0.18	0.30	0.30	0.12	0.24	0.00
Sat Flow, veh/h	3476	3506	135	3476	3279	316	3476	4020	1054	1792	5136	1599
Grp Volume(v), veh/h	500	385	399	224	366	372	827	1042	503	184	1031	0
Grp Sat Flow(s),veh/h/ln	1738	1787	1853	1738	1787	1808	1738	1712	1650	1792	1712	1599
Q Serve(g_s), s	15.3	19.7	19.7	6.9	21.0	21.1	20.0	33.2	33.2	11.0	20.9	0.0
Cycle Q Clear(g_c), s	15.3	19.7	19.7	6.9	21.0	21.1	20.0	33.2	33.2	11.0	20.9	0.0
Prop In Lane	1.00		0.07	1.00		0.17	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	579	614	637	292	458	463	635	1036	500	215	1233	384
V/C Ratio(X)	0.86	0.63	0.63	0.77	0.80	0.80	1.30	1.01	1.01	0.86	0.84	0.00
Avail Cap(c_a), veh/h	1079	734	761	635	555	561	635	1036	500	360	1454	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	30.1	30.1	49.1	38.1	38.1	44.8	38.2	38.2	47.3	39.6	0.0
Incr Delay (d2), s/veh	1.5	0.6	0.6	1.6	5.6	5.6	147.6	29.4	41.8	4.7	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	9.8	10.2	3.4	11.1	11.2	22.5	19.8	20.8	5.7	10.2	0.0
LnGrp Delay(d),s/veh	46.0	30.7	30.7	50.7	43.7	43.7	192.4	67.6	80.0	51.9	42.9	0.0
LnGrp LOS	D	C	C	D	D	D	F	F	F	D	D	
Approach Vol, veh/h		1284			962			2372			1215	
Approach Delay, s/veh		36.6			45.3			113.7			44.3	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	32.2	24.1	30.4	13.3	41.7	17.2	37.3
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	17.3	23.1	22.0	22.9	8.9	21.7	13.0	35.2
Green Ext Time (p_c), s	0.9	5.0	0.0	3.1	0.3	7.0	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	71.0
HCM 2010 LOS	E

2: Hesperian Blvd & Grant Ave/I-880 SB On Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱				↰	↑↑↱		↰↰	↑↑↱	
Traffic Volume (veh/h)	180	180	240	0	0	0	450	1350	100	610	1560	380
Future Volume (veh/h)	180	180	240	0	0	0	450	1350	100	610	1560	380
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	184	184	55				459	1378	95	622	1592	350
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	212	212	358				479	2147	148	698	1578	344
Arrive On Green	0.23	0.23	0.23				0.54	0.88	0.88	0.20	0.38	0.38
Sat Flow, veh/h	909	909	1537				1774	4856	335	3442	4154	905
Grp Volume(v), veh/h	368	0	55				459	962	511	622	1296	646
Grp Sat Flow(s),veh/h/ln	1817	0	1537				1774	1695	1801	1721	1695	1669
Q Serve(g_s), s	20.4	0.0	3.0				25.9	8.0	8.0	18.5	39.9	39.9
Cycle Q Clear(g_c), s	20.4	0.0	3.0				25.9	8.0	8.0	18.5	39.9	39.9
Prop In Lane	0.50		1.00				1.00		0.19	1.00		0.54
Lane Grp Cap(c), veh/h	424	0	358				479	1499	796	698	1288	634
V/C Ratio(X)	0.87	0.00	0.15				0.96	0.64	0.64	0.89	1.01	1.02
Avail Cap(c_a), veh/h	511	0	432				529	1499	796	813	1288	634
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	0.0	32.0				23.6	3.9	3.9	40.7	32.6	32.6
Incr Delay (d2), s/veh	12.3	0.0	0.1				4.9	0.2	0.4	10.5	26.7	40.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	0.0	2.8				13.0	3.4	3.6	9.7	23.4	25.4
LnGrp Delay(d),s/veh	51.1	0.0	32.2				28.5	4.0	4.2	51.2	59.3	73.0
LnGrp LOS	D		C				C	A	A	D	F	F
Approach Vol, veh/h		423						1932			2564	
Approach Delay, s/veh		48.6						9.9			60.8	
Approach LOS		D						A			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	25.5	50.5		29.0	32.0	44.0		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 25	37.9		29.5	31.3	31.9		
Max Q Clear Time (g_c+I1), s	20.5	10.0		22.4	27.9	41.9		
Green Ext Time (p_c), s	0.8	23.7		1.2	0.4	0.0		

Intersection Summary			
HCM 2010 Ctrl Delay			39.7
HCM 2010 LOS			D

Notes

HCM 2010 Signalized Intersection Summary
3: Hesperian Blvd & Paseo Grande

Village Green Apartments
Cumulative No Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	120	190	50	180	200	190	110	1600	360	260	1240	240
Future Volume (veh/h)	120	190	50	180	200	190	110	1600	360	260	1240	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		1.00	1.00		0.96	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	126	200	44	189	211	0	116	1684	345	274	1305	231
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	434	96	276	550	0	145	1774	359	303	2209	391
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.16	0.84	0.84	0.34	1.00	1.00
Sat Flow, veh/h	1158	1472	324	1125	1863	0	1774	4208	851	1774	4322	765
Grp Volume(v), veh/h	126	0	244	189	211	0	116	1352	677	274	1024	512
Grp Sat Flow(s),veh/h/ln	1158	0	1796	1125	1863	0	1774	1695	1669	1774	1695	1697
Q Serve(g_s), s	10.2	0.0	11.6	17.3	9.5	0.0	6.6	32.5	35.3	15.4	0.0	0.0
Cycle Q Clear(g_c), s	19.6	0.0	11.6	28.9	9.5	0.0	6.6	32.5	35.3	15.4	0.0	0.0
Prop In Lane	1.00		0.18	1.00		0.00	1.00		0.51	1.00		0.45
Lane Grp Cap(c), veh/h	306	0	530	276	550	0	145	1429	703	303	1733	867
V/C Ratio(X)	0.41	0.00	0.46	0.69	0.38	0.00	0.80	0.95	0.96	0.90	0.59	0.59
Avail Cap(c_a), veh/h	306	0	530	276	550	0	444	1429	703	444	1733	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.87	0.87	0.87	0.09	0.09	0.09
Uniform Delay (d), s/veh	37.2	0.0	30.2	42.0	29.4	0.0	43.1	7.3	7.5	33.7	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.9	7.6	0.6	0.0	8.7	12.7	23.6	1.9	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	5.9	5.9	5.0	0.0	3.5	16.2	19.1	7.7	0.0	0.1
LnGrp Delay(d),s/veh	38.5	0.0	31.1	49.6	30.0	0.0	51.8	20.0	31.1	35.6	0.1	0.3
LnGrp LOS	D		C	D	C		D	C	C	D	A	A
Approach Vol, veh/h		370			400			2145			1810	
Approach Delay, s/veh		33.6			39.3			25.2			5.5	
Approach LOS		C			D			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.7	48.4		35.0	12.3	57.8		35.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	35.9		31.0	26.3	35.9		31.0
Max Q Clear Time (g_c+I1), s	17.4	37.3		21.6	8.6	2.0		30.9
Green Ext Time (p_c), s	0.5	0.0		3.9	0.2	30.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

4: Hesperian Blvd & Via Mercado

Cumulative No Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↑↱		↰	↑↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	10	10	10	0	0	0	30	2000	70	20	1460	20
Future Volume (veh/h)	10	10	10	0	0	0	30	2000	70	20	1460	20
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1900	1863	1863	0	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	10	10	0	0	0	0	31	2062	71	21	1505	0
Adj No. of Lanes	0	1	1	0	1	0	1	3	0	1	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	63	11	22	0	26	0	40	4294	147	31	4302	1340
Arrive On Green	0.01	0.01	0.00	0.00	0.00	0.00	0.05	1.00	1.00	0.03	1.00	0.00
Sat Flow, veh/h	803	803	1583	0	1863	0	1774	5044	173	1774	5085	1583
Grp Volume(v), veh/h	20	0	0	0	0	0	31	1384	749	21	1505	0
Grp Sat Flow(s),veh/h/ln	1606	0	1583	0	1863	0	1774	1695	1827	1774	1695	1583
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.2	0.0	0.0
Prop In Lane	0.50		1.00	0.00		0.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	74	0	22	0	26	0	40	2886	1555	31	4302	1340
V/C Ratio(X)	0.27	0.00	0.00	0.00	0.00	0.00	0.77	0.48	0.48	0.68	0.35	0.00
Avail Cap(c_a), veh/h	602	0	543	0	630	0	157	2886	1555	157	4302	1340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.69	0.69	0.00
Uniform Delay (d), s/veh	51.7	0.0	0.0	0.0	0.0	0.0	49.8	0.0	0.0	50.4	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.0	0.0	0.0	10.9	0.6	1.1	6.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.5	0.7	0.1	0.0
LnGrp Delay(d),s/veh	53.6	0.0	0.0	0.0	0.0	0.0	60.8	0.6	1.1	56.9	0.2	0.0
LnGrp LOS	D						E	A	A	E	A	
Approach Vol, veh/h		20			0			2164			1526	
Approach Delay, s/veh		53.6			0.0			1.6			0.9	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	92.9		6.0	5.5	93.5		6.0
Change Period (Y+Rc), s	3.7	4.1		* 4.5	3.7	4.1		4.5
Max Green Setting (Gmax), s	9.3	47.9		* 36	9.3	47.9		35.5
Max Q Clear Time (g_c+I1), s	3.3	2.0		3.3	3.2	2.0		0.0
Green Ext Time (p_c), s	0.0	45.4		0.1	0.0	45.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	10	0	0	20	0	2120	10	0	1480	0
Future Vol, veh/h	0	0	10	0	0	20	0	2120	10	0	1480	0
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	10	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	10	0	0	21	0	2208	10	0	1542	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	776	-	-	1119	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	294	0	0	174	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	293	-	-	172	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.7	28.8	0	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	293	172	-	-
HCM Lane V/C Ratio	-	-	0.036	0.121	-	-
HCM Control Delay (s)	-	-	17.7	28.8	-	-
HCM Lane LOS	-	-	C	D	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.4	-	-

HCM 2010 Signalized Intersection Summary
6: Hesperian Blvd & Hacienda Ave

Village Green Apartments
Cumulative No Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	110	150	60	140	180	180	190	1800	230	290	1100	130
Future Volume (veh/h)	110	150	60	140	180	180	190	1800	230	290	1100	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.95	1.00		0.96
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	115	156	45	146	188	146	198	1875	226	302	1146	124
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	238	452	130	350	314	244	230	1749	209	331	2038	220
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.13	0.38	0.38	0.18	0.43	0.43
Sat Flow, veh/h	1045	1394	402	1177	969	753	1792	4623	552	1792	4687	507
Grp Volume(v), veh/h	115	0	201	146	0	334	198	1384	717	302	837	433
Grp Sat Flow(s),veh/h/ln	1045	0	1796	1177	0	1722	1792	1712	1750	1792	1712	1770
Q Serve(g_s), s	10.9	0.0	8.9	11.3	0.0	17.1	11.4	39.7	39.7	17.4	19.2	19.2
Cycle Q Clear(g_c), s	28.0	0.0	8.9	20.2	0.0	17.1	11.4	39.7	39.7	17.4	19.2	19.2
Prop In Lane	1.00		0.22	1.00		0.44	1.00		0.32	1.00		0.29
Lane Grp Cap(c), veh/h	238	0	583	350	0	559	230	1296	662	331	1489	770
V/C Ratio(X)	0.48	0.00	0.35	0.42	0.00	0.60	0.86	1.07	1.08	0.91	0.56	0.56
Avail Cap(c_a), veh/h	267	0	633	383	0	607	346	1296	662	346	1489	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	27.0	34.7	0.0	29.7	44.8	32.6	32.6	42.0	22.2	22.2
Incr Delay (d2), s/veh	1.5	0.0	0.4	0.6	0.0	1.2	9.0	45.3	59.4	26.0	1.5	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	4.5	3.7	0.0	8.3	6.2	26.9	30.1	10.9	9.4	10.0
LnGrp Delay(d),s/veh	43.0	0.0	27.3	35.3	0.0	30.9	53.8	78.0	92.1	68.0	23.7	25.2
LnGrp LOS	D		C	D		C	D	F	F	E	C	C
Approach Vol, veh/h		316			480			2299			1572	
Approach Delay, s/veh		33.0			32.2			80.3			32.6	
Approach LOS		C			C			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.1	43.8		38.1	17.2	49.8		38.1
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	20.3	35.9		37.0	20.3	35.9		37.0
Max Q Clear Time (g_c+I1), s	19.4	41.7		30.0	13.4	21.2		22.2
Green Ext Time (p_c), s	0.1	0.0		2.4	0.2	13.3		3.7

Intersection Summary			
HCM 2010 Ctrl Delay			56.1
HCM 2010 LOS			E

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	310	0	20	420	40	10	10	10	20	10	20
Future Vol, veh/h	10	310	0	20	420	40	10	10	10	20	10	20
Conflicting Peds, #/hr	5	0	10	10	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	320	0	21	433	41	10	10	10	21	10	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	330	0	0	860	870	330	851	850	459
Stage 1	-	-	-	-	-	-	350	350	-	500	500	-
Stage 2	-	-	-	-	-	-	510	520	-	351	350	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1083	-	-	1229	-	-	276	290	712	280	298	602
Stage 1	-	-	-	-	-	-	666	633	-	553	543	-
Stage 2	-	-	-	-	-	-	546	532	-	666	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1083	-	-	1229	-	-	250	276	705	260	284	599
Mov Cap-2 Maneuver	-	-	-	-	-	-	250	276	-	260	284	-
Stage 1	-	-	-	-	-	-	652	620	-	544	528	-
Stage 2	-	-	-	-	-	-	505	517	-	638	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	17	17.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	332	1083	-	-	1229	-	-	344
HCM Lane V/C Ratio	0.093	0.01	-	-	0.017	-	-	0.15
HCM Control Delay (s)	17	8.4	0	-	8	0	-	17.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.5

8: Via Arriba & Paseo Grande

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Traffic Vol, veh/h	290	20	60	450	20	60
Future Vol, veh/h	290	20	60	450	20	60
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	319	22	66	495	22	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	346	0	961	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	626	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1213	-	284	707
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	533	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1213	-	267	704
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	504	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	500	-	-	1213	-
HCM Lane V/C Ratio	0.176	-	-	0.054	-
HCM Control Delay (s)	13.7	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	820	30	20	500	70	10	0	20	0	0	10
Future Vol, veh/h	10	820	30	20	500	70	10	0	20	0	0	10
Conflicting Peds, #/hr	15	0	10	10	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	11	872	32	21	532	74	11	0	21	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	621	0	0	914	0	0	1537	1584	898	1547	1563	584
Stage 1	-	-	-	-	-	-	920	920	-	627	627	-
Stage 2	-	-	-	-	-	-	617	664	-	920	936	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	965	-	-	750	-	-	95	109	339	94	112	513
Stage 1	-	-	-	-	-	-	326	351	-	473	478	-
Stage 2	-	-	-	-	-	-	479	460	-	326	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	965	-	-	750	-	-	88	100	336	82	102	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	100	-	82	102	-
Stage 1	-	-	-	-	-	-	315	340	-	456	451	-
Stage 2	-	-	-	-	-	-	449	434	-	298	334	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	30.5	12.3
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	173	965	-	-	750	-	-	506
HCM Lane V/C Ratio	0.184	0.011	-	-	0.028	-	-	0.021
HCM Control Delay (s)	30.5	8.8	0	-	9.9	0	-	12.3
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	20	10	70	20	10	70
Future Vol, veh/h	20	10	70	20	10	70
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	22	11	77	22	11	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	192	98	0	0	104	0
Stage 1	93	-	-	-	-	-
Stage 2	99	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	799	961	-	-	1494	-
Stage 1	933	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	789	952	-	-	1487	-
Mov Cap-2 Maneuver	789	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	837	1487	-
HCM Lane V/C Ratio	-	-	0.039	0.007	-
HCM Control Delay (s)	-	-	9.5	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

HCM 2010 Signalized Intersection Summary
1: Hesperian Blvd & Lewelling Blvd

Village Green Apartments
Cumulative Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑↱		↰	↑↑↑	↱
Traffic Volume (veh/h)	490	740	33	223	660	70	816	1214	352	180	1024	420
Future Volume (veh/h)	490	740	33	223	660	70	816	1214	352	180	1024	420
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	500	755	31	228	673	65	833	1239	323	184	1045	0
Adj No. of Lanes	2	2	0	2	2	0	2	3	0	1	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	579	1196	49	296	840	81	634	1219	318	215	1235	384
Arrive On Green	0.17	0.34	0.34	0.09	0.26	0.26	0.18	0.30	0.30	0.12	0.24	0.00
Sat Flow, veh/h	3476	3495	143	3476	3279	316	3476	4026	1049	1792	5136	1599
Grp Volume(v), veh/h	500	386	400	228	366	372	833	1054	508	184	1045	0
Grp Sat Flow(s),veh/h/ln	1738	1787	1851	1738	1787	1808	1738	1712	1651	1792	1712	1599
Q Serve(g_s), s	15.3	19.9	19.9	7.0	21.0	21.1	20.0	33.2	33.2	11.0	21.3	0.0
Cycle Q Clear(g_c), s	15.3	19.9	19.9	7.0	21.0	21.1	20.0	33.2	33.2	11.0	21.3	0.0
Prop In Lane	1.00		0.08	1.00		0.17	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	579	612	634	296	458	463	634	1037	500	215	1235	384
V/C Ratio(X)	0.86	0.63	0.63	0.77	0.80	0.80	1.31	1.02	1.02	0.86	0.85	0.00
Avail Cap(c_a), veh/h	1078	734	760	634	554	561	634	1037	500	360	1452	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.5	30.2	30.2	49.1	38.1	38.2	44.8	38.2	38.2	47.3	39.7	0.0
Incr Delay (d2), s/veh	1.5	0.6	0.6	1.6	5.6	5.6	152.1	32.0	44.5	4.7	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	9.9	10.2	3.5	11.1	11.2	22.9	20.2	21.2	5.8	10.5	0.0
LnGrp Delay(d),s/veh	46.0	30.9	30.9	50.7	43.7	43.8	197.0	70.2	82.7	52.0	43.4	0.0
LnGrp LOS	D	C	C	D	D	D	F	F	F	D	D	
Approach Vol, veh/h		1286			966			2395			1229	
Approach Delay, s/veh		36.8			45.4			116.9			44.7	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	32.2	24.1	30.5	13.4	41.6	17.3	37.3
Change Period (Y+Rc), s	4.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Max Green Setting (Gmax), s	34.0	34.0	20.0	31.0	20.0	45.0	22.0	31.0
Max Q Clear Time (g_c+I1), s	17.3	23.1	22.0	23.3	9.0	21.9	13.0	35.2
Green Ext Time (p_c), s	0.9	5.0	0.0	2.8	0.3	7.0	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	72.5
HCM 2010 LOS	E

2: Hesperian Blvd & Grant Ave/I-880 SB On Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱				↰	↑↑↑↱		↰↰	↑↑↑↱	
Traffic Volume (veh/h)	180	180	240	0	0	0	450	1371	102	610	1590	380
Future Volume (veh/h)	180	180	240	0	0	0	450	1371	102	610	1590	380
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95				1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	184	184	55				459	1399	97	622	1622	352
Adj No. of Lanes	0	1	1				1	3	0	2	3	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	212	212	351				479	2146	149	698	1583	340
Arrive On Green	0.23	0.23	0.23				0.54	0.88	0.88	0.20	0.38	0.38
Sat Flow, veh/h	909	909	1506				1774	4854	337	3442	4166	895
Grp Volume(v), veh/h	368	0	55				459	977	519	622	1317	657
Grp Sat Flow(s),veh/h/ln	1817	0	1506				1774	1695	1801	1721	1695	1671
Q Serve(g_s), s	20.4	0.0	3.1				25.9	8.3	8.3	18.5	39.9	39.9
Cycle Q Clear(g_c), s	20.4	0.0	3.1				25.9	8.3	8.3	18.5	39.9	39.9
Prop In Lane	0.50		1.00				1.00		0.19	1.00		0.54
Lane Grp Cap(c), veh/h	424	0	351				479	1499	796	698	1288	635
V/C Ratio(X)	0.87	0.00	0.16				0.96	0.65	0.65	0.89	1.02	1.04
Avail Cap(c_a), veh/h	511	0	423				529	1499	796	813	1288	635
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	0.0	32.0				23.6	3.9	3.9	40.7	32.6	32.6
Incr Delay (d2), s/veh	12.3	0.0	0.2				4.9	0.2	0.4	10.5	30.9	45.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	0.0	2.8				13.0	3.4	3.7	9.7	24.1	26.3
LnGrp Delay(d),s/veh	51.0	0.0	32.2				28.5	4.1	4.3	51.2	63.5	77.8
LnGrp LOS	D		C				C	A	A	D	F	F
Approach Vol, veh/h		423						1955			2596	
Approach Delay, s/veh		48.6						9.8			64.2	
Approach LOS		D						A			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	25.5	50.5		29.0	32.0	44.0		
Change Period (Y+Rc), s	* 4.2	4.1		4.5	3.7	4.1		
Max Green Setting (Gmax), s	* 25	37.9		29.5	31.3	31.9		
Max Q Clear Time (g_c+I1), s	20.5	10.3		22.4	27.9	41.9		
Green Ext Time (p_c), s	0.8	23.7		1.2	0.4	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	41.5
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
3: Hesperian Blvd & Paseo Grande

Village Green Apartments
Cumulative Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	156	203	50	180	212	190	112	1586	358	260	1240	270
Future Volume (veh/h)	156	203	50	180	212	190	112	1586	358	260	1240	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		1.00	1.00		0.96	1.00		0.97
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	164	214	45	189	223	0	118	1669	343	274	1305	257
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	439	92	265	550	0	149	1772	360	303	2155	424
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.08	0.42	0.42	0.34	1.00	1.00
Sat Flow, veh/h	1146	1486	312	1110	1863	0	1774	4205	854	1774	4238	834
Grp Volume(v), veh/h	164	0	259	189	223	0	118	1342	670	274	1044	518
Grp Sat Flow(s),veh/h/ln	1146	0	1798	1110	1863	0	1774	1695	1668	1774	1695	1682
Q Serve(g_s), s	14.0	0.0	12.5	17.7	10.1	0.0	6.9	39.8	40.8	15.4	0.0	0.0
Cycle Q Clear(g_c), s	24.1	0.0	12.5	30.2	10.1	0.0	6.9	39.8	40.8	15.4	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.00	1.00		0.51	1.00		0.50
Lane Grp Cap(c), veh/h	297	0	531	265	550	0	149	1428	703	303	1724	855
V/C Ratio(X)	0.55	0.00	0.49	0.71	0.41	0.00	0.79	0.94	0.95	0.90	0.61	0.61
Avail Cap(c_a), veh/h	297	0	531	265	550	0	444	1428	703	444	1724	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.82	0.82	0.82	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.3	0.0	30.5	42.9	29.6	0.0	47.2	29.1	29.4	33.7	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	1.0	9.6	0.7	0.0	7.5	11.3	21.3	1.9	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	6.3	6.2	5.2	0.0	3.7	20.7	22.8	7.7	0.0	0.1
LnGrp Delay(d),s/veh	42.1	0.0	31.5	52.5	30.3	0.0	54.7	40.4	50.7	35.6	0.1	0.3
LnGrp LOS	D		C	D	C		D	D	D	D	A	A
Approach Vol, veh/h		423			412			2130			1836	
Approach Delay, s/veh		35.6			40.5			44.4			5.5	
Approach LOS		D			D			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.7	48.3		35.0	12.5	57.5		35.0
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	26.3	35.9		31.0	26.3	35.9		31.0
Max Q Clear Time (g_c+I1), s	17.4	42.8		26.1	8.9	2.0		32.2
Green Ext Time (p_c), s	0.5	0.0		2.5	0.2	31.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
4: Hesperian Blvd & Old Via Mercado

Village Green Apartments
Cumulative Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations							↰	↑↑↱		↰	↑↑↑	
Traffic Volume (veh/h)	0	0	0	0	0	0	46	1996	70	20	1460	0
Future Volume (veh/h)	0	0	0	0	0	0	46	1996	70	20	1460	0
Number							1	6	16	5	2	12
Initial Q (Qb), veh							0	0	0	0	0	0
Ped-Bike Adj(A_pbT)							1.00		1.00	1.00		1.00
Parking Bus, Adj							1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln							1863	1863	1900	1863	1863	0
Adj Flow Rate, veh/h							50	2170	76	22	1587	0
Adj No. of Lanes							1	3	0	1	3	0
Peak Hour Factor							0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %							2	2	2	2	2	0
Cap, veh/h							67	4062	142	186	4437	0
Arrive On Green							0.04	0.81	0.81	0.10	0.87	0.00
Sat Flow, veh/h							1774	5046	176	1774	5253	0
Grp Volume(v), veh/h							50	1456	790	22	1587	0
Grp Sat Flow(s),veh/h/ln							1774	1695	1832	1774	1695	0
Q Serve(g_s), s							2.8	14.7	14.8	1.1	5.8	0.0
Cycle Q Clear(g_c), s							2.8	14.7	14.8	1.1	5.8	0.0
Prop In Lane							1.00		0.10	1.00		0.00
Lane Grp Cap(c), veh/h							67	2729	1474	186	4437	0
V/C Ratio(X)							0.75	0.53	0.54	0.12	0.36	0.00
Avail Cap(c_a), veh/h							399	2729	1474	186	4437	0
HCM Platoon Ratio							1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)							1.00	1.00	1.00	0.66	0.66	0.00
Uniform Delay (d), s/veh							47.7	3.3	3.3	40.6	1.2	0.0
Incr Delay (d2), s/veh							15.5	0.8	1.4	0.9	0.1	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							1.7	7.0	7.8	0.6	2.7	0.0
LnGrp Delay(d),s/veh							63.1	4.1	4.7	41.4	1.3	0.0
LnGrp LOS							E	A	A	D	A	
Approach Vol, veh/h								2296			1609	
Approach Delay, s/veh								5.6			1.9	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2			5	6		
Phs Duration (G+Y+Rc), s	8.3	91.7			15.0	85.0		
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		
Max Green Setting (Gmax), s	22.5	68.5			10.5	80.5		
Max Q Clear Time (g_c+I1), s	4.8	7.8			3.1	16.8		
Green Ext Time (p_c), s	0.1	54.6			0.0	57.1		

Intersection Summary			
HCM 2010 Ctrl Delay			4.1
HCM 2010 LOS			A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↱			↑↑↱	
Traffic Vol, veh/h	0	0	44	0	0	10	0	2132	10	0	1465	71
Future Vol, veh/h	0	0	44	0	0	10	0	2132	10	0	1465	71
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	46	0	0	10	0	2221	10	0	1526	74

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	810	-	-	1131	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.12	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	-	-	3.91	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	279	0	0	171	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	276	-	-	169	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.6	27.7	0	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	276	169	-	-
HCM Lane V/C Ratio	-	-	0.166	0.062	-	-
HCM Control Delay (s)	-	-	20.6	27.7	-	-
HCM Lane LOS	-	-	C	D	-	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	-

HCM 2010 Signalized Intersection Summary
6: Hesperian Blvd & Hacienda Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	110	150	60	140	180	184	190	1809	230	292	1108	130
Future Volume (veh/h)	110	150	60	140	180	184	190	1809	230	292	1108	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	1.00		0.94	1.00		0.95
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	115	156	45	146	188	150	198	1884	226	304	1154	124
Adj No. of Lanes	1	1	0	1	1	0	1	3	0	1	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	240	458	132	356	314	250	230	1720	204	333	2014	216
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.13	0.37	0.37	0.19	0.43	0.43
Sat Flow, veh/h	1039	1391	401	1174	953	760	1792	4618	548	1792	4685	503
Grp Volume(v), veh/h	115	0	201	146	0	338	198	1391	719	304	843	435
Grp Sat Flow(s),veh/h/ln	1039	0	1793	1174	0	1713	1792	1712	1743	1792	1712	1764
Q Serve(g_s), s	10.9	0.0	8.9	11.3	0.0	17.3	11.4	39.1	39.1	17.5	19.6	19.6
Cycle Q Clear(g_c), s	28.2	0.0	8.9	20.2	0.0	17.3	11.4	39.1	39.1	17.5	19.6	19.6
Prop In Lane	1.00		0.22	1.00		0.44	1.00		0.31	1.00		0.29
Lane Grp Cap(c), veh/h	240	0	590	356	0	564	230	1275	649	333	1472	758
V/C Ratio(X)	0.48	0.00	0.34	0.41	0.00	0.60	0.86	1.09	1.11	0.91	0.57	0.57
Avail Cap(c_a), veh/h	264	0	632	383	0	604	346	1275	649	346	1472	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	0.0	26.6	34.2	0.0	29.4	44.8	33.0	33.0	41.9	22.6	22.7
Incr Delay (d2), s/veh	1.5	0.0	0.3	0.6	0.0	1.2	9.0	54.0	68.6	26.3	1.6	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	4.5	3.7	0.0	8.4	6.2	28.0	31.1	11.0	9.6	10.2
LnGrp Delay(d),s/veh	42.7	0.0	26.9	34.8	0.0	30.6	53.8	86.9	101.5	68.2	24.3	25.8
LnGrp LOS	D		C	C		C	D	F	F	E	C	C
Approach Vol, veh/h		316			484			2308			1582	
Approach Delay, s/veh		32.7			31.9			88.6			33.1	
Approach LOS		C			C			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.2	43.2		38.6	17.2	49.2		38.6
Change Period (Y+Rc), s	3.7	4.1		4.0	3.7	4.1		4.0
Max Green Setting (Gmax), s	20.3	35.9		37.0	20.3	35.9		37.0
Max Q Clear Time (g_c+I1), s	19.5	41.1		30.2	13.4	21.6		22.2
Green Ext Time (p_c), s	0.0	0.0		2.4	0.2	13.0		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	60.3
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	323	3	28	433	40	12	10	15	20	10	20
Future Vol, veh/h	10	323	3	28	433	40	12	10	15	20	10	20
Conflicting Peds, #/hr	5	0	10	10	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	333	3	29	446	41	12	10	15	21	10	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	493	0	0	346	0	0	905	915	345	898	897	472
Stage 1	-	-	-	-	-	-	365	365	-	530	530	-
Stage 2	-	-	-	-	-	-	540	550	-	368	367	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1213	-	-	257	273	698	260	279	592
Stage 1	-	-	-	-	-	-	654	623	-	533	527	-
Stage 2	-	-	-	-	-	-	526	516	-	652	622	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1071	-	-	1213	-	-	230	257	691	237	263	589
Mov Cap-2 Maneuver	-	-	-	-	-	-	230	257	-	237	263	-
Stage 1	-	-	-	-	-	-	641	610	-	525	507	-
Stage 2	-	-	-	-	-	-	481	497	-	620	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	17.4	18.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	328	1071	-	-	1213	-	-	320
HCM Lane V/C Ratio	0.116	0.01	-	-	0.024	-	-	0.161
HCM Control Delay (s)	17.4	8.4	0	-	8	0	-	18.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.6

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰	↱
Traffic Vol, veh/h	295	33	98	456	34	105
Future Vol, veh/h	295	33	98	456	34	105
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	324	36	108	501	37	115

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	365	0	1063	347
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	716	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1194	-	247	696
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1194	-	224	693
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	440	-

Approach	EB		WB		NB
HCM Control Delay, s	0		1.5		14.4
HCM LOS					B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	693	-	-	1194	-
HCM Lane V/C Ratio	0.167	0.167	-	-	0.09	-
HCM Control Delay (s)	24.3	11.2	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.6	-	-	0.3	-

9: Ducey Way/Alley & Paseo Grande

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	831	30	20	512	70	10	0	20	0	0	10
Future Vol, veh/h	10	831	30	20	512	70	10	0	20	0	0	10
Conflicting Peds, #/hr	15	0	10	10	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	11	884	32	21	545	74	11	0	21	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	634	0	0	926	0	0	1561	1608	910	1571	1586	597
Stage 1	-	-	-	-	-	-	931	931	-	639	639	-
Stage 2	-	-	-	-	-	-	630	677	-	932	947	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	954	-	-	742	-	-	92	105	334	90	109	505
Stage 1	-	-	-	-	-	-	321	347	-	466	472	-
Stage 2	-	-	-	-	-	-	471	454	-	321	341	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	742	-	-	85	96	331	79	99	498
Mov Cap-2 Maneuver	-	-	-	-	-	-	85	96	-	79	99	-
Stage 1	-	-	-	-	-	-	310	335	-	448	445	-
Stage 2	-	-	-	-	-	-	441	428	-	293	330	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	31.4	12.4
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	954	-	-	742	-	-	498
HCM Lane V/C Ratio	0.19	0.011	-	-	0.029	-	-	0.021
HCM Control Delay (s)	31.4	8.8	0	-	10	0	-	12.4
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	3	2	0	20	8	23	0	80	10	22	70	0
Future Vol, veh/h	3	2	0	20	8	23	0	80	10	22	70	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	2	0	22	9	25	0	87	11	24	76	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7.5	7.6	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	60%	39%	24%
Vol Thru, %	89%	40%	16%	76%
Vol Right, %	11%	0%	45%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	5	51	92
LT Vol	0	3	20	22
Through Vol	80	2	8	70
RT Vol	10	0	23	0
Lane Flow Rate	98	5	55	100
Geometry Grp	1	1	1	1
Degree of Util (X)	0.11	0.007	0.063	0.116
Departure Headway (Hd)	4.049	4.548	4.086	4.162
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	878	792	861	856
Service Time	2.104	2.548	2.182	2.214
HCM Lane V/C Ratio	0.112	0.006	0.064	0.117
HCM Control Delay	7.6	7.6	7.5	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0	0.2	0.4

Appendix F: Cumulative without and with Project Conditions Signal Warrant Analysis Worksheets

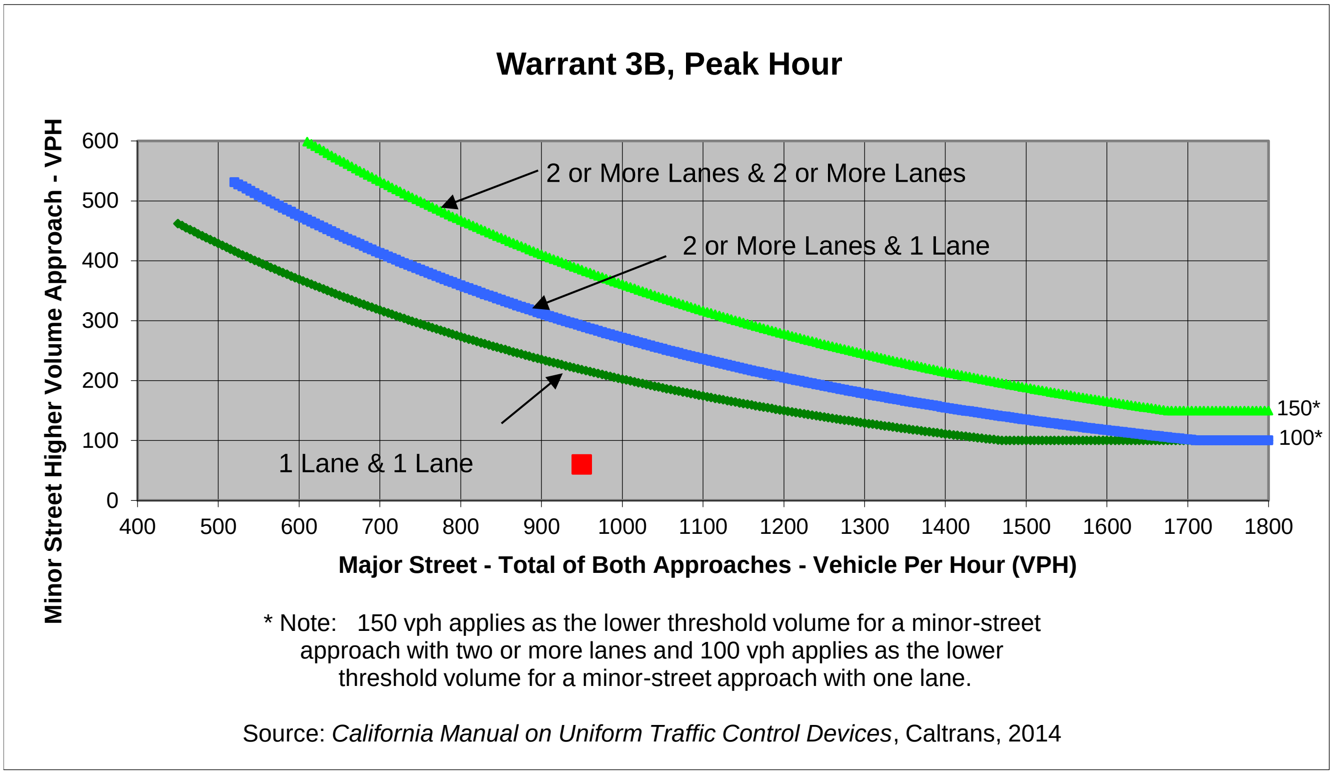
Major Street	Paseo Grande	Project	Village Green TIA
Minor Street	Paseo Largavista	Scenario	Cumulative No Project
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	30	20	10
Through	10	10	470	390
Right	20	20	10	50
Total	40	60	500	450

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**950**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

			Project	Village Green TIA
Major Street	Paseo Grande		Scenario	Cumulative No Project
Minor Street	Via Arriba		Peak Hour	AM

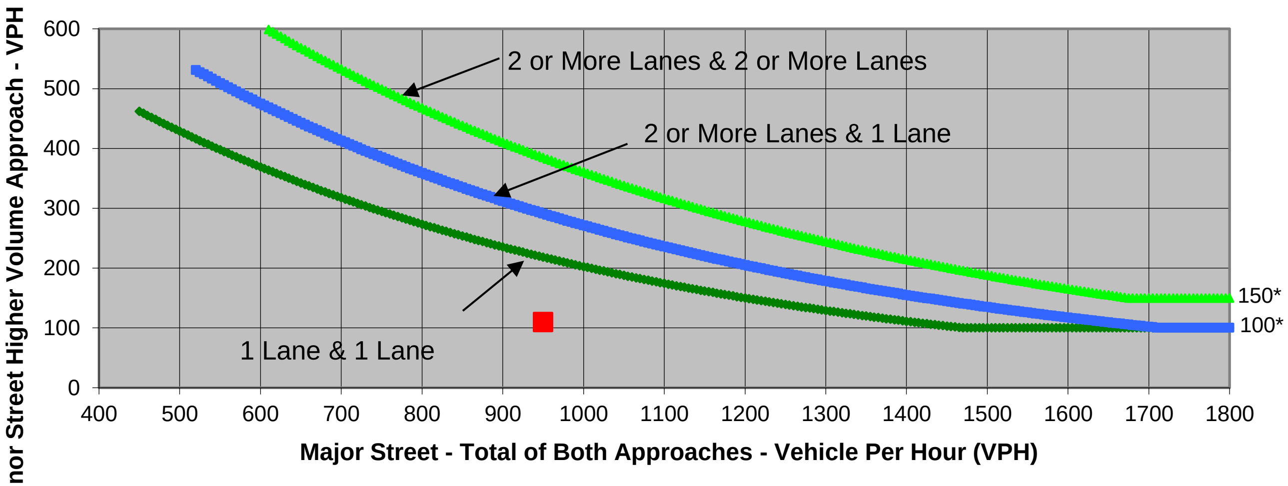
Turn Movement Volumes

	NB	SB	EB	WB
Left	50	0	0	70
Through	0	0	470	370
Right	60	0	40	0
Total	110	0	510	440

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**950**	**110**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project Village Green TIA
Scenario Cumulative No Project
Peak Hour AM

Major Street Paseo Grande
Minor Street Ducey Way/Alley

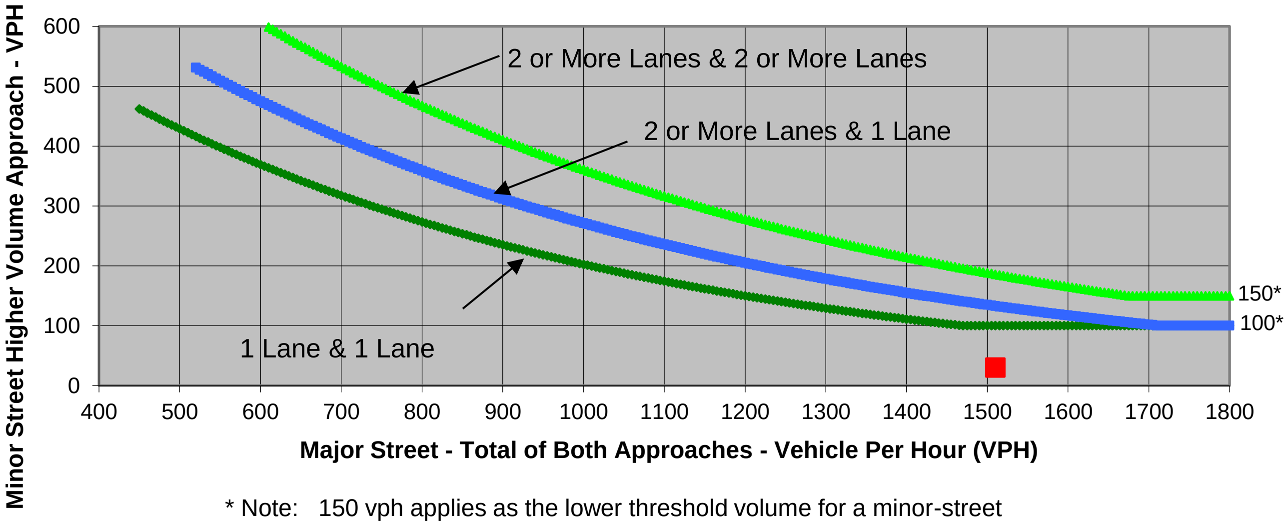
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	10	20
Through	0	0	690	770
Right	20	10	10	10
Total	30	10	710	800

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Ducey Way/Alley	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,510**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

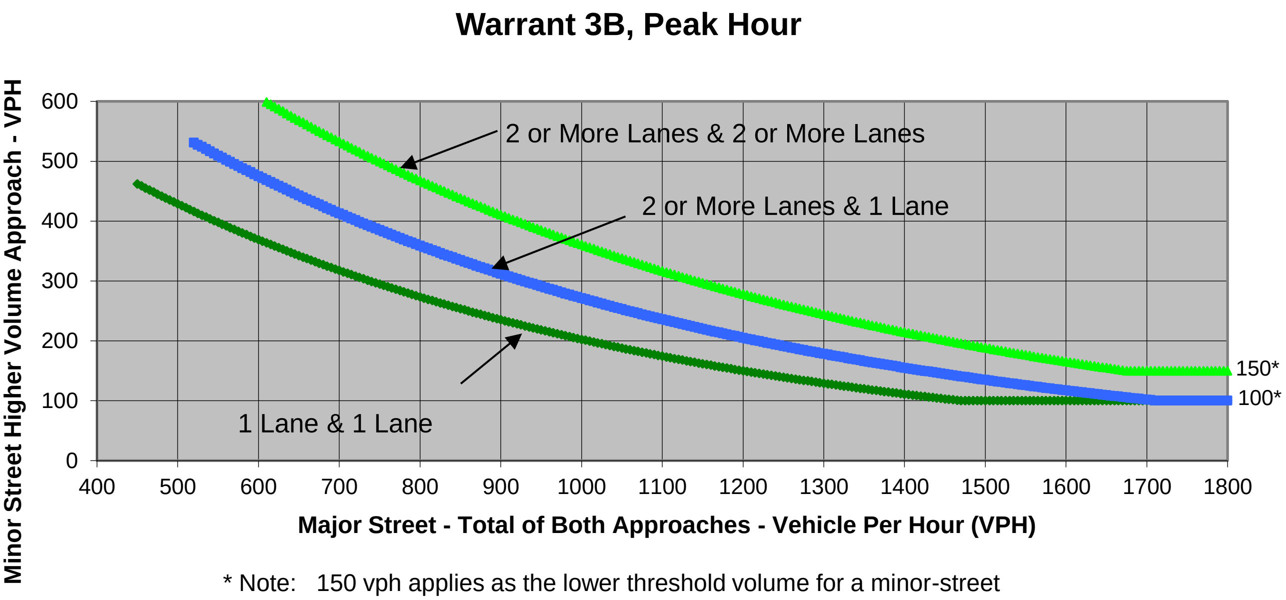
			Project	Village Green TIA
Major Street	Via Arriba		Scenario	Cumulative No Project
Minor Street	Via Mercado		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	40	0	10
Through	80	60	0	0
Right	70	0	0	20
Total	150	100	0	30

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**250**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Project Village Green TIA
Scenario Cumulative No Project
Peak Hour PM

Major Street Paseo Grande
Minor Street Paseo Largavista

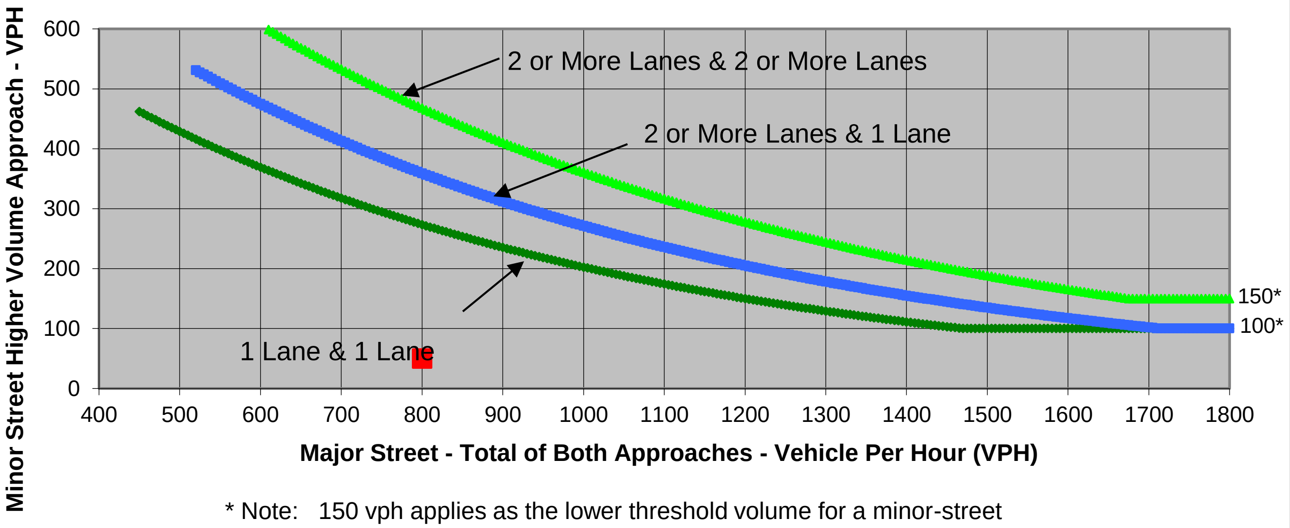
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	20	10	20
Through	10	10	310	420
Right	10	20	0	40
Total	30	50	320	480

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**800**	**50**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

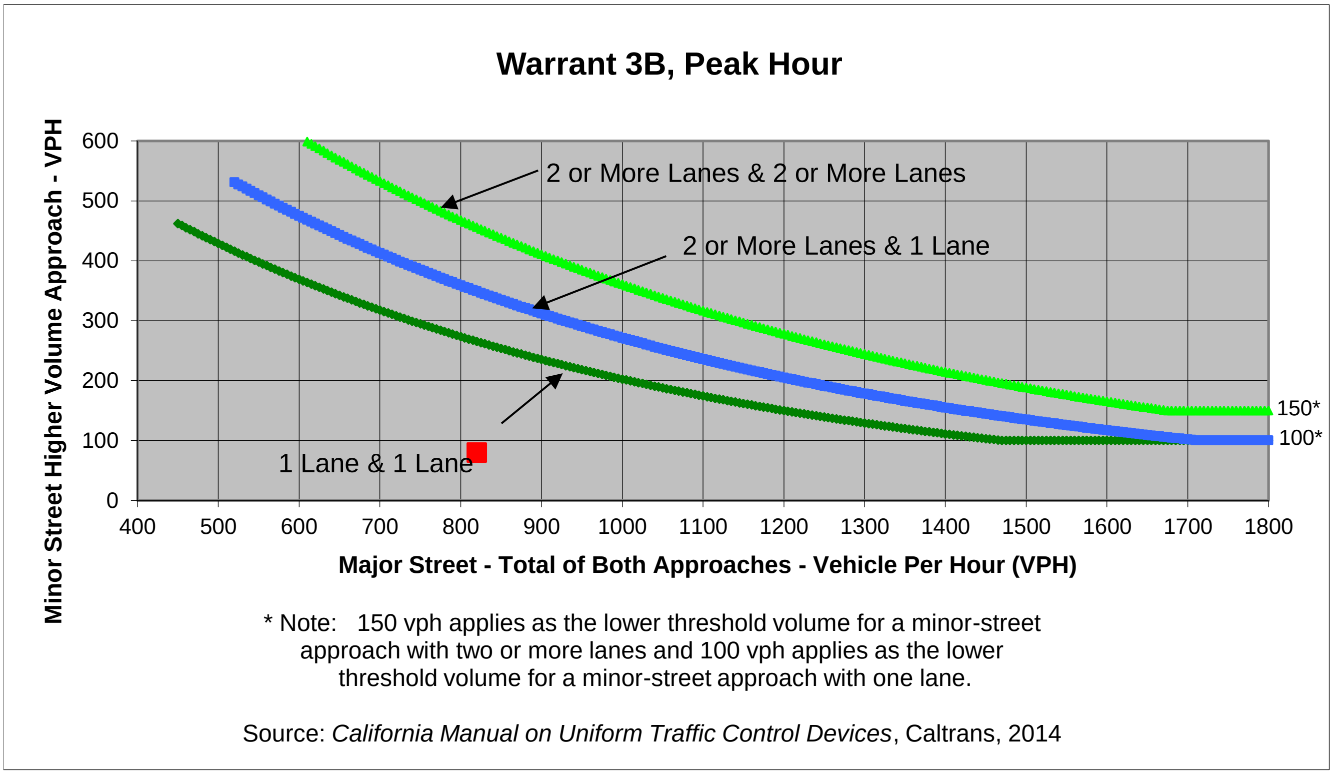
		Project	Village Green TIA
Major Street	Paseo Grande	Scenario	Cumulative No Project
Minor Street	Via Arriba	Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	0	0	60
Through	0	0	290	450
Right	60	0	20	0
Total	80	0	310	510

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**820**	**80**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

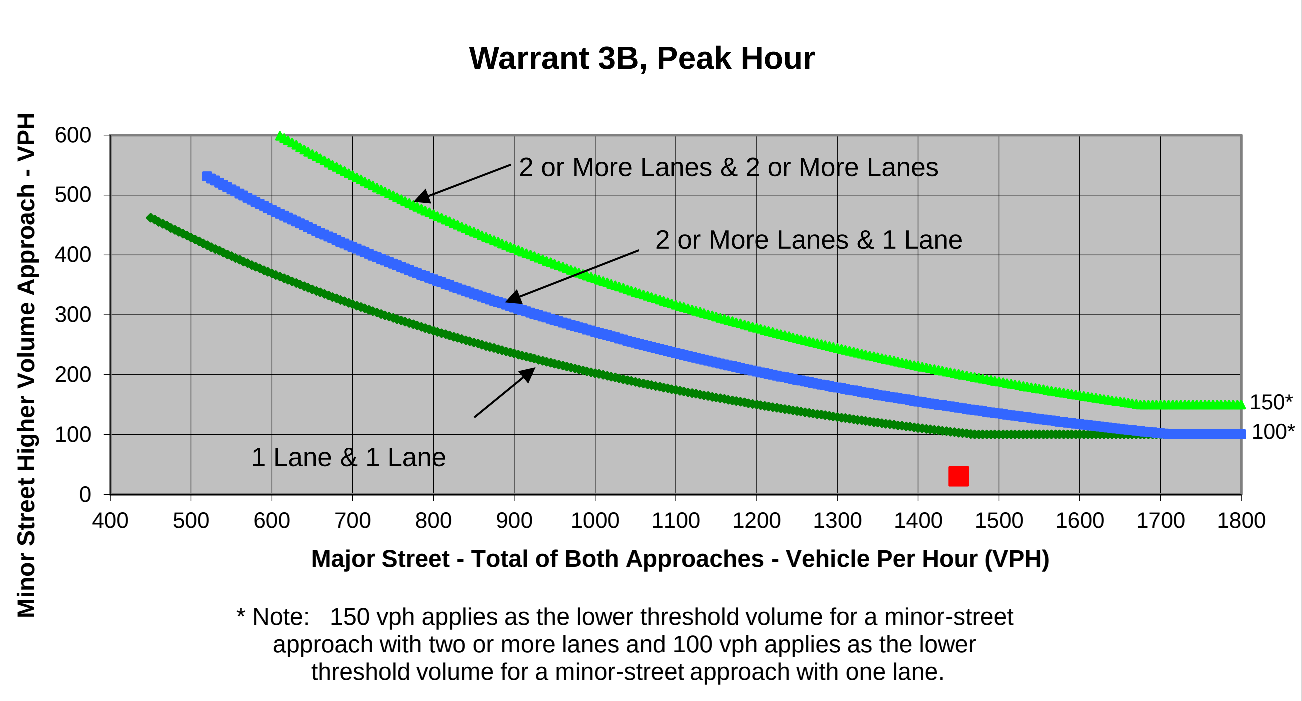
		Project	Village Green TIA
Major Street	Paseo Grande	Scenario	Cumulative No Project
Minor Street	Ducey Way/Alley	Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	10	20
Through	0	0	820	500
Right	20	10	30	70
Total	30	10	860	590

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Ducey Way/Alley	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,450**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project: Village Green TIA
Scenario: Cumulative No Project
Peak Hour: PM

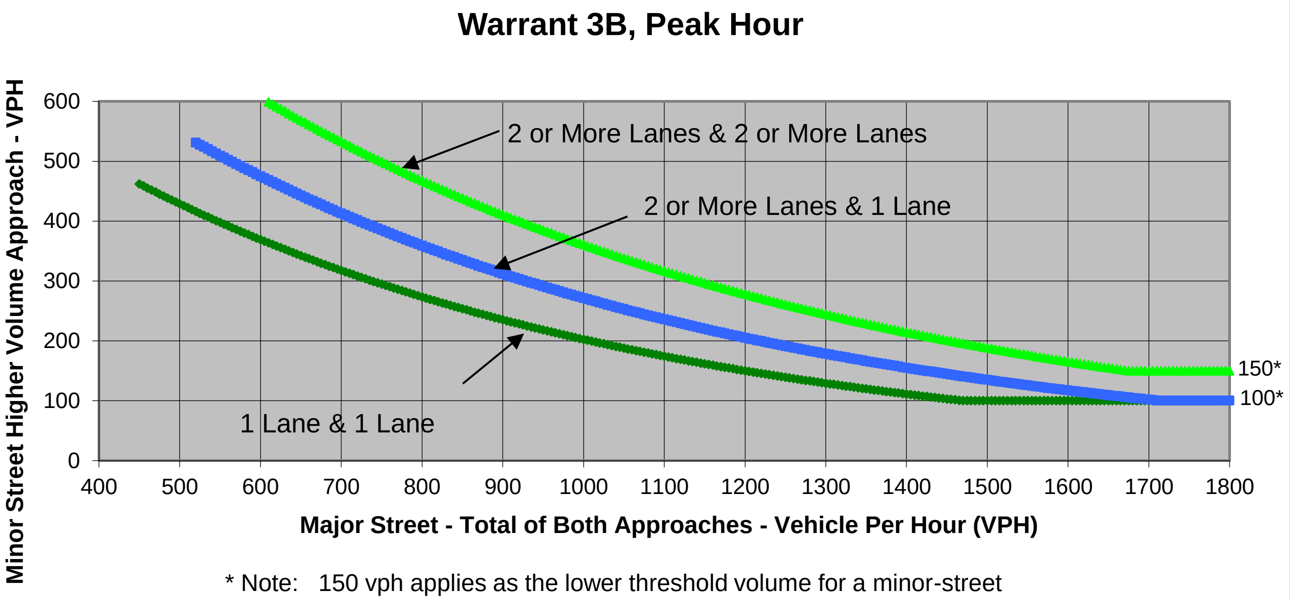
Major Street: Via Arriba
Minor Street: Via Mercado

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	0	20
Through	70	70	0	0
Right	20	0	0	10
Total	90	80	0	30

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**1**	**<u>NO</u>**
Traffic Volume (VPH) *	**170**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

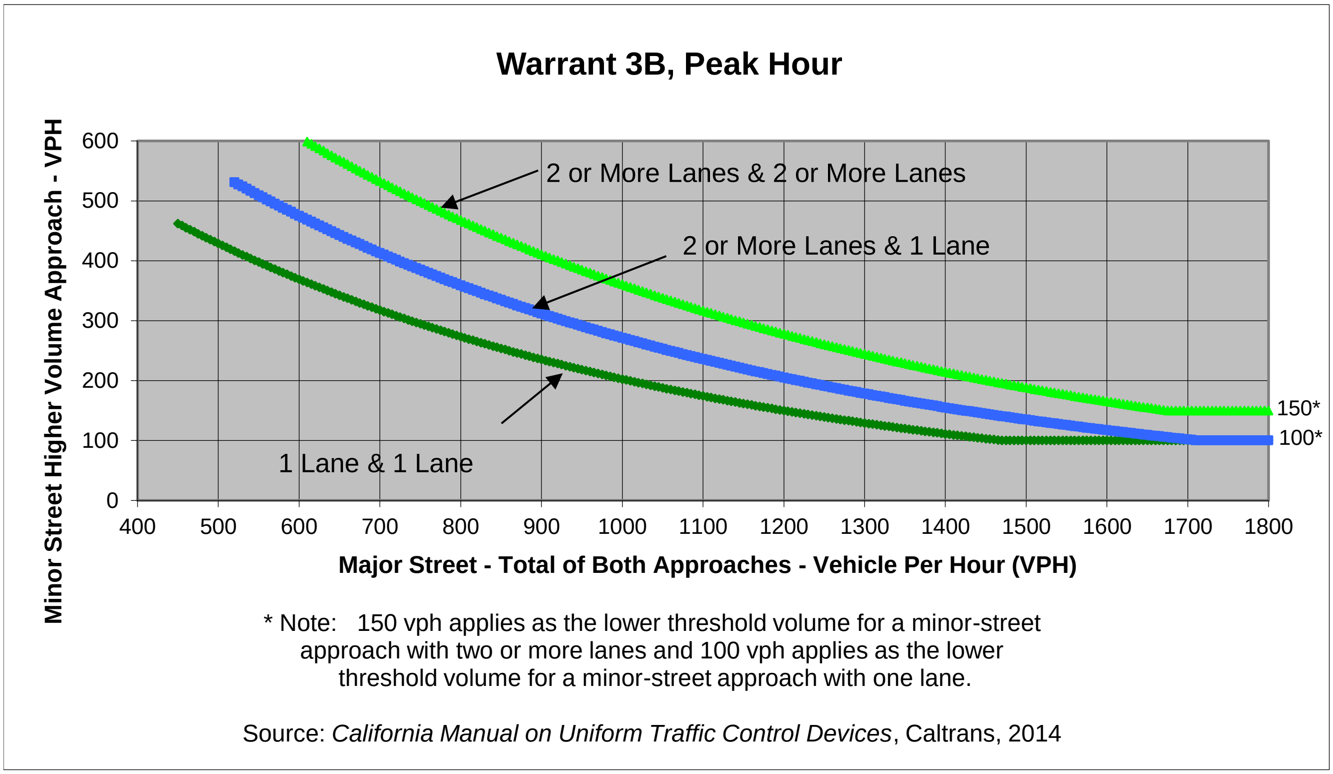
			Project	Village Green TIA
Major Street	Hesperian Blvd		Scenario	Cumulative Plus Project
Minor Street	Via Mercado/Ducey Way		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	2,090	1,256	0	0
Right	10	106	87	10
Total	2,100	1,362	87	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Hesperian Blvd	**Minor Street** Via Mercado/Ducey Way	**Warrant Met**
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**3,462**	**87**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Paseo Largavista		Scenario	Cumulative Plus Project
			Peak Hour	AM

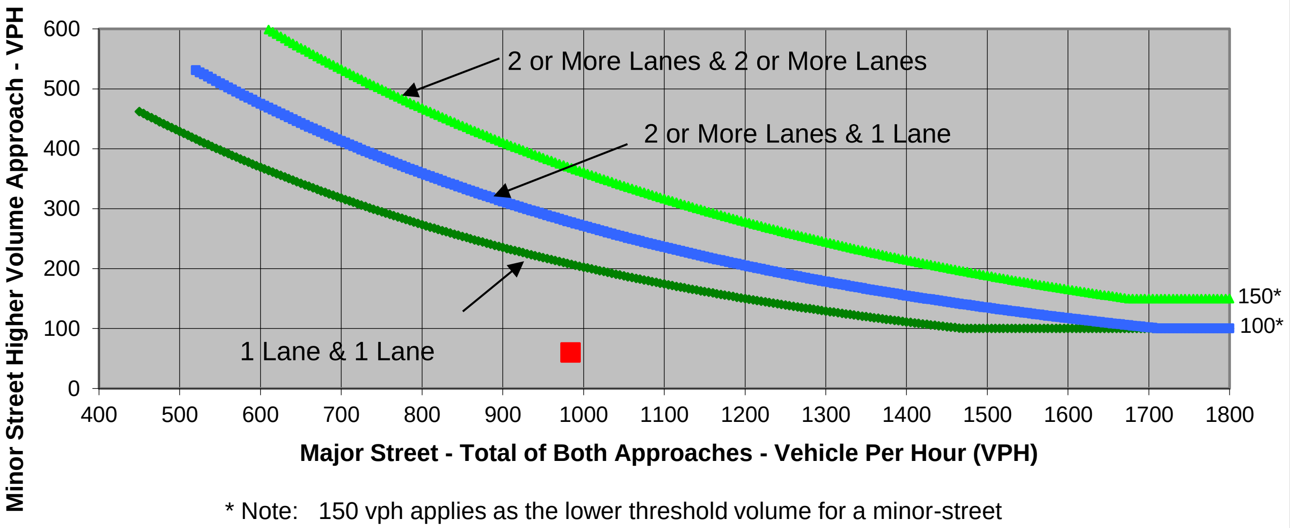
Turn Movement Volumes

	NB	SB	EB	WB
Left	13	30	20	13
Through	10	10	485	405
Right	28	20	11	50
Total	51	60	516	468

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**984**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

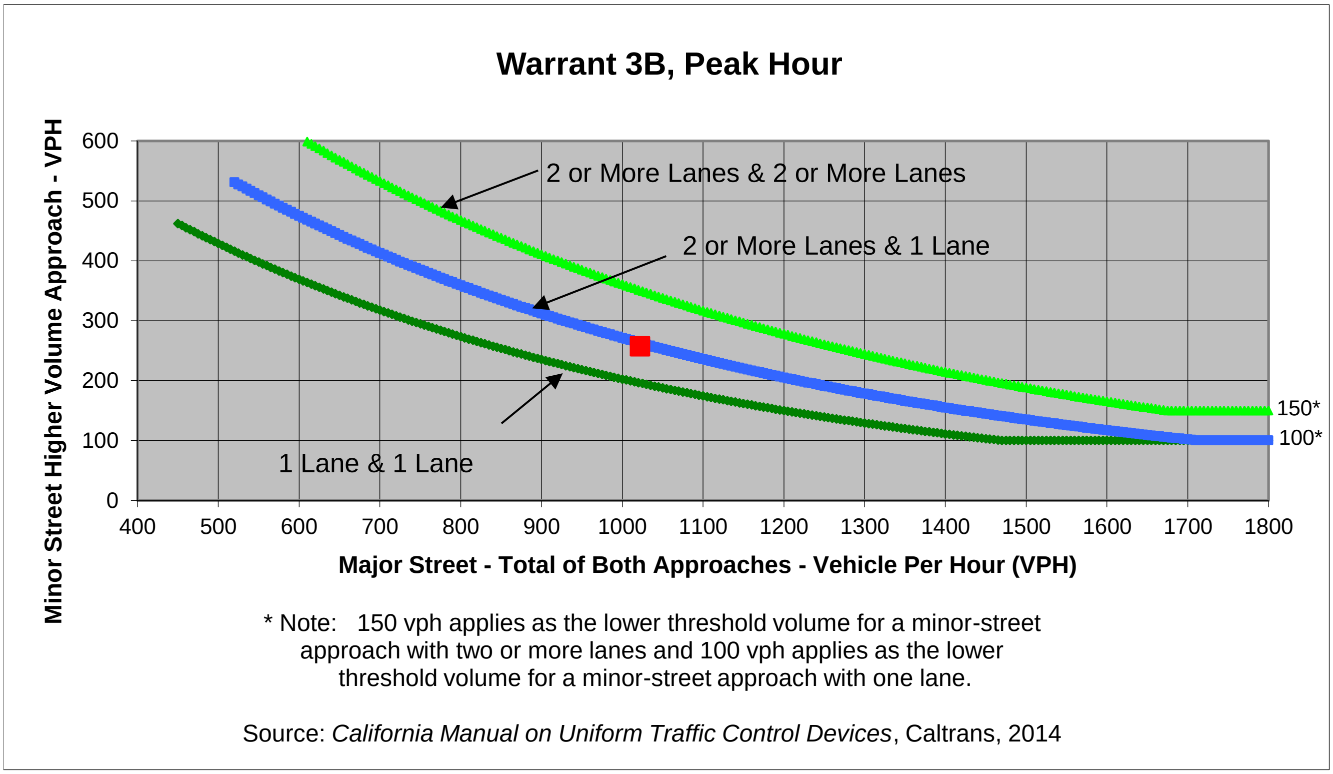
			Project	Village Green TIA
Major Street	Paseo Grande		Scenario	Cumulative Plus Project
Minor Street	Via Arriba		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	70	0	0	121
Through	0	0	471	368
Right	187	0	62	0
Total	257	0	533	489

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**1,022**	**257**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

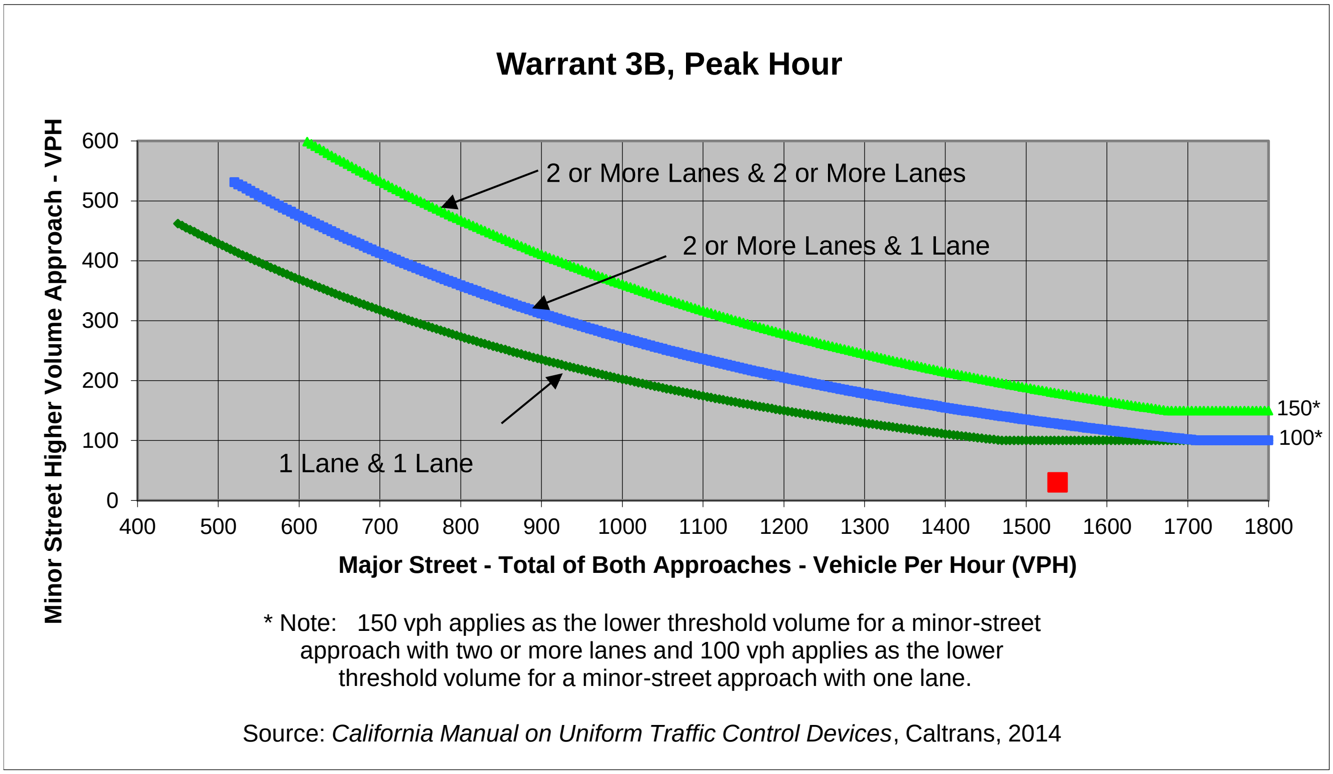
Major Street	Paseo Grande	Project	Village Green TIA
Minor Street	Ducey Way/Alley	Scenario	Cumulative Plus Project
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	10	20
Through	0	0	706	783
Right	20	10	10	10
Total	30	10	726	813

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Ducey Way/Alley	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**1,539**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

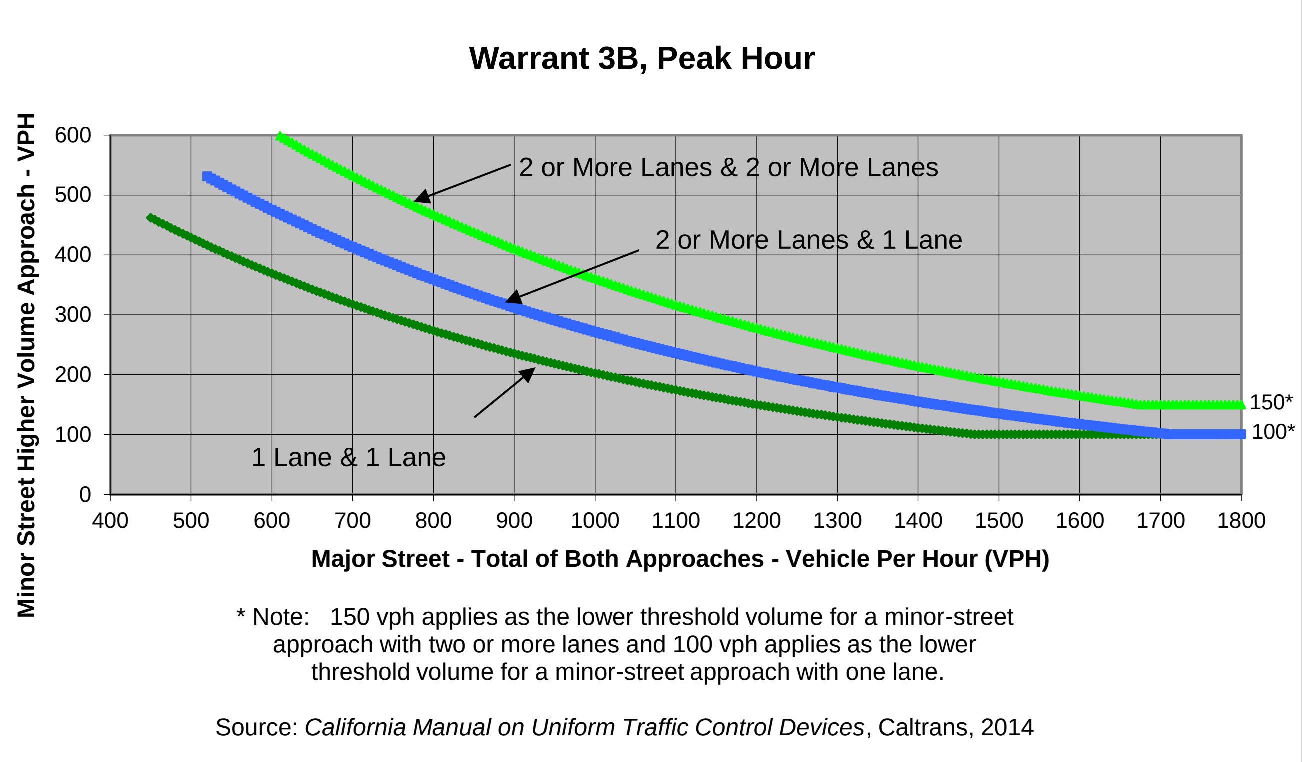
		Project	Village Green TIA
Major Street	Via Arriba	Scenario	Cumulative Plus Project
Minor Street	Via Mercado	Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	64	15	10
Through	140	60	13	3
Right	10	0	0	43
Total	150	124	28	56

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	Minor Street Via Mercado	Warrant Met
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**274**	**56**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

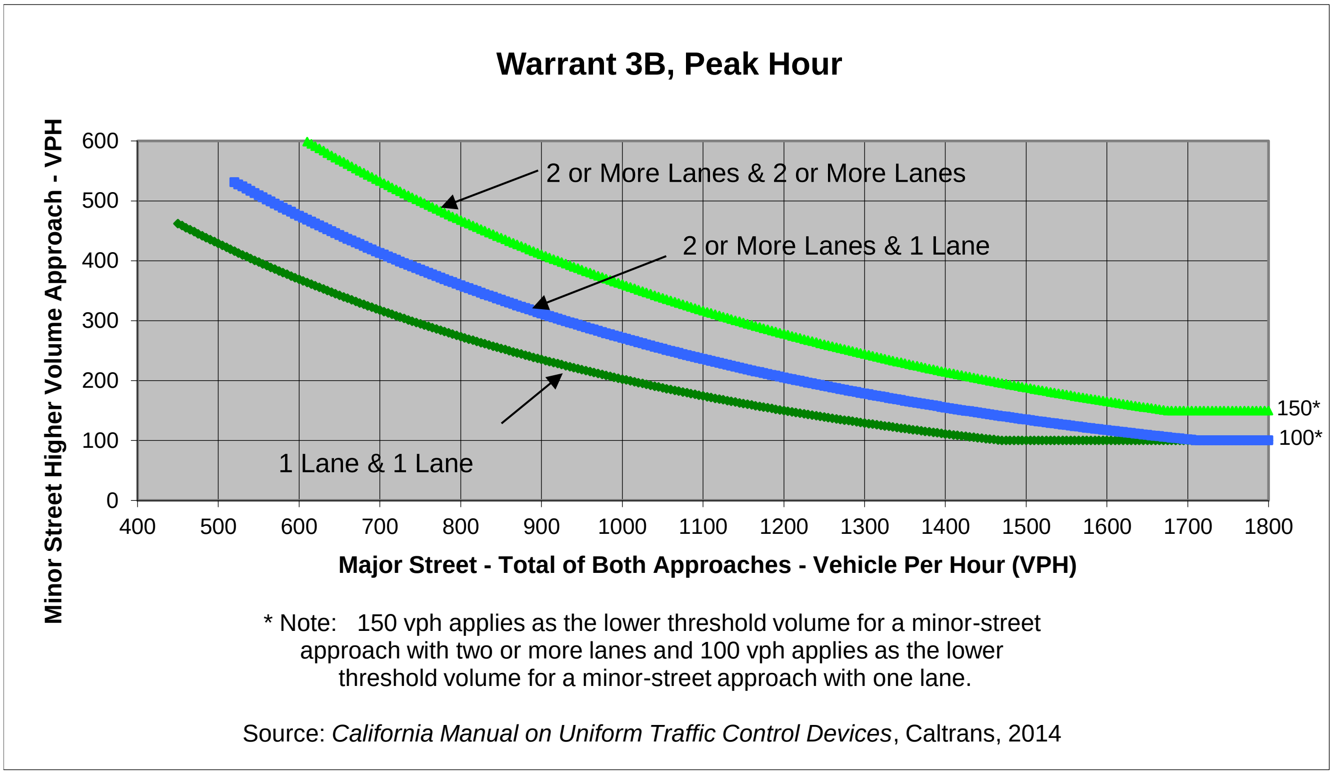
Major Street	Hesperian Blvd	Project	Village Green TIA
Minor Street	Via Mercado/Ducey Way	Scenario	Cumulative Plus Project
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	2,132	1,465	0	0
Right	10	71	44	10
Total	2,142	1,536	44	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Hesperian Blvd	**Minor Street** Via Mercado/Ducey Way	**Warrant Met**
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**3,678**	**44**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

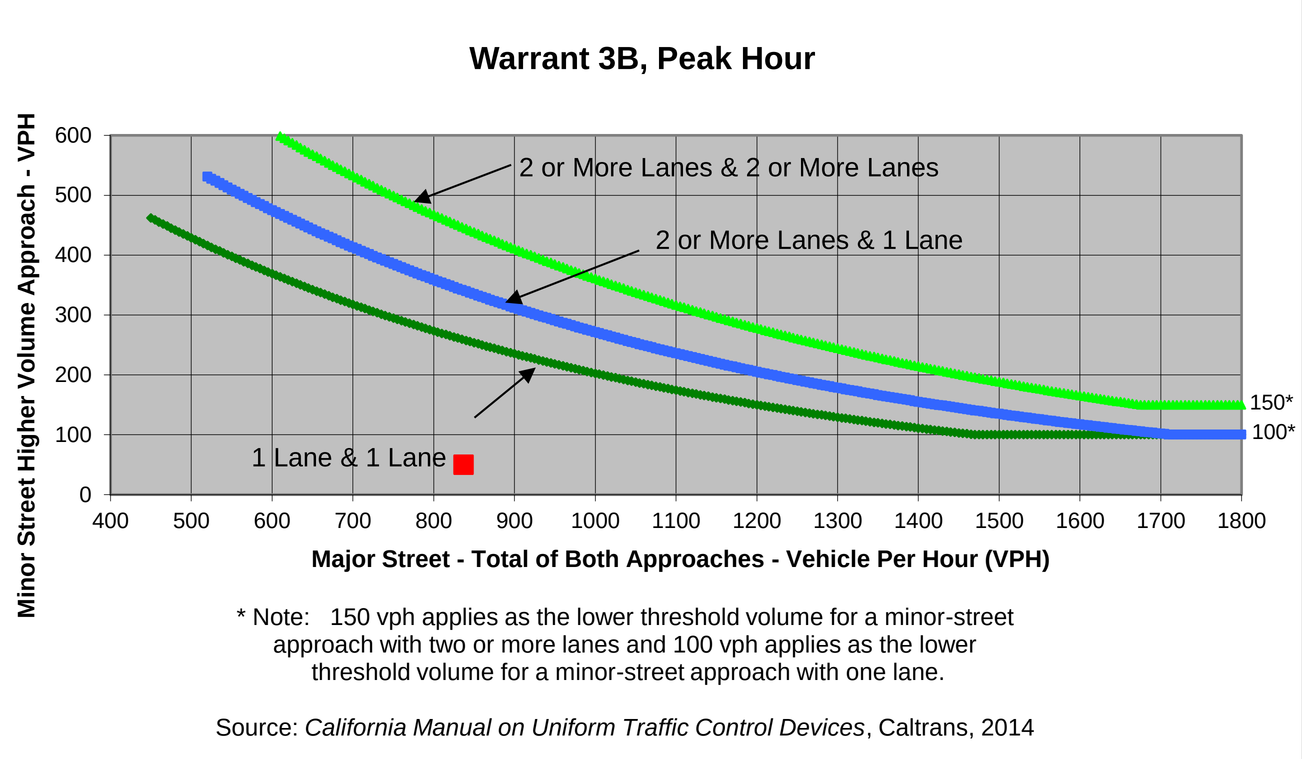
Major Street	Paseo Grande		Project	Village Green TIA
Minor Street	Paseo Largavista		Scenario	Cumulative Plus Project
			Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	12	20	10	28
Through	10	10	323	433
Right	15	20	3	40
Total	37	50	336	501

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Paseo Largavista	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**837**	**50**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

		Project	Village Green TIA
Major Street	Paseo Grande	Scenario	Cumulative Plus Project
Minor Street	Via Arriba	Peak Hour	PM

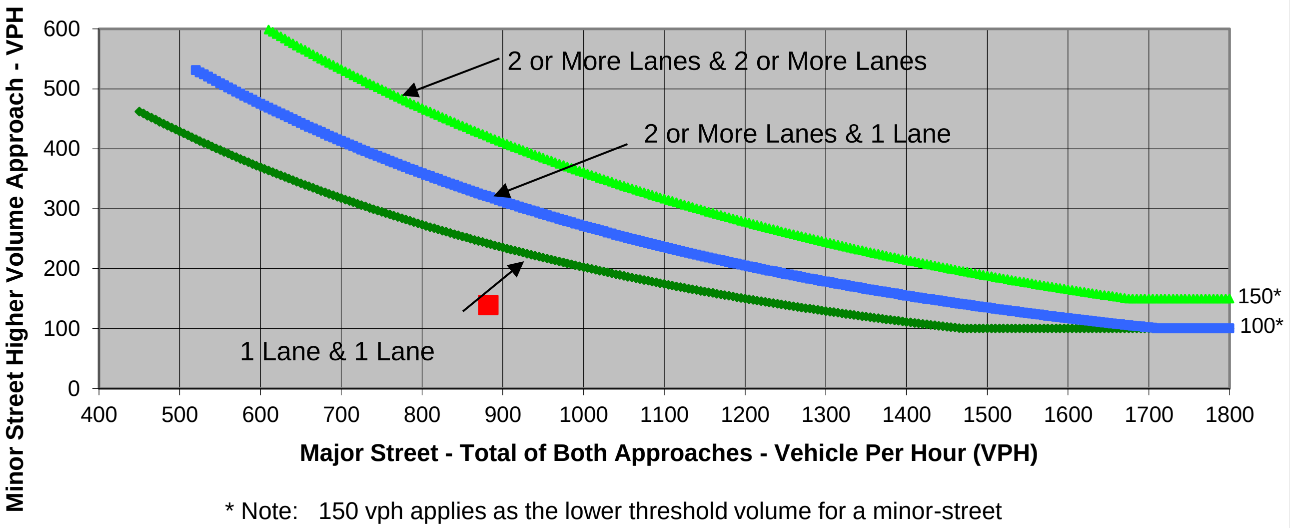
Turn Movement Volumes

	NB	SB	EB	WB
Left	34	0	0	98
Through	0	0	295	456
Right	105	0	33	0
Total	139	0	328	554

Major Street Direction

	North/South
X	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Via Arriba	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**<u>NO</u>**
Traffic Volume (VPH) *	**882**	**139**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street: Paseo Grande
Minor Street: Ducey Way/Alley

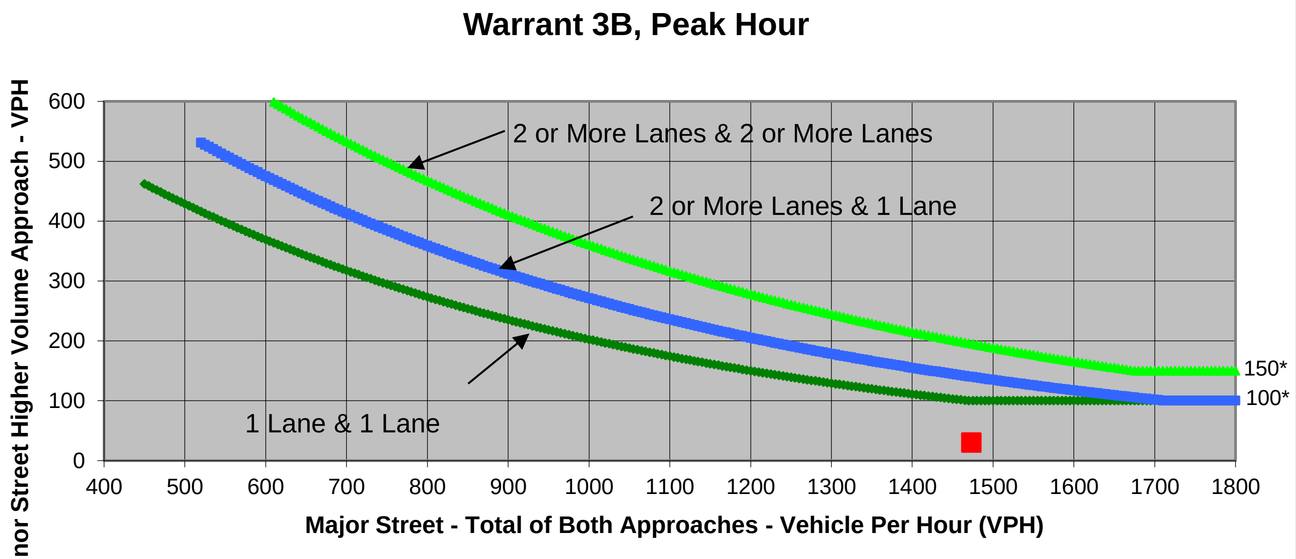
Project: Village Green TIA
Scenario: Cumulative Plus Project
Peak Hour: PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	10	20
Through	0	0	831	512
Right	20	10	30	70
Total	30	10	871	602

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Paseo Grande	**Minor Street** Ducey Way/Alley	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**1,473**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

			Project	Village Green TIA
Major Street	Via Arriba		Scenario	Cumulative Plus Project
Minor Street	Via Mercado		Peak Hour	PM

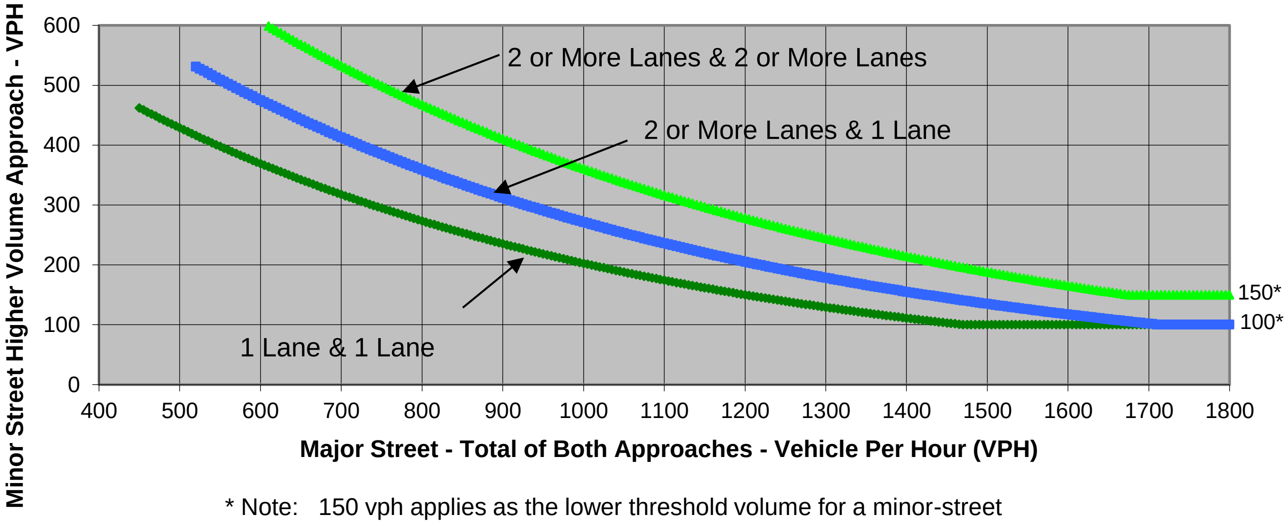
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	22	3	20
Through	80	70	2	8
Right	10	0	0	23
Total	90	92	5	51

Major Street Direction

X	North/South
	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Via Arriba	**Minor Street** Via Mercado	**Warrant Met**
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**182**	**51**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix G: Congestion Management Program (CMP) Analysis Summary

Village Green TIA
Alameda CTC Roadway System Analysis Summary - 2020 PM

Link Location	Segment Limits		# Lanes	Project Trips	No Project Volume	With Project Volume	% Increase	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments													
I-880 NB													
Between	I-238/Washington Avenue	Marina Boulevard	4	5	6,790	6,795	0%	0.85	0.85	D	D	No	-
Between	A Street	Hesperian Boulevard	4	5	6,745	6,750	0%	0.84	0.84	D	D	No	-
I-880 SB													
Between	Marina Boulevard	I-238/Washington Avenue	4	8	7,083	7,091	0%	0.89	0.89	D	D	No	-
Between	Hesperian Boulevard	A Street	4	4	6,628	6,632	0%	0.83	0.83	D	D	No	-
Arterials													
Hesperian Boulevard NB													
Between	A Street	Paseo Grande	3	11	2,462	2,473	0%	1.03	1.03	F	F	-	No
Between	Paseo Grande	Lewelling Boulevard	3	25	2,199	2,224	0%	0.92	0.93	E	E	No	-
Between	Lewelling Boulevard	SpringLake Dr	3	13	2,408	2,421	0%	1.00	1.01	F	F	-	No
Hesperian Boulevard SB													
Between	SpringLake Dr	Lewelling Boulevard	3	14	2,094	2,108	0%	0.87	0.88	D	D	No	-
Between	Lewelling Boulevard	Paseo Grande	3	35	1,451	1,486	0%	0.60	0.62	C	C	No	-
Between	Paseo Grande	A Street	3	10	732	742	0%	0.31	0.31	A	A	No	-

Fehr & Peers, 2018.

Village Green TIA

Alameda CTC Roadway System Analysis Summary - 2040 PM

Link Location	Segment Limits		# Lanes	Project Trips	No Project Volume	With Project Volume	% Increase	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments													
I-880 NB													
Between	I-238/Washington Ave	Marina Boulevard	4	5	7,177	7,182	0%	0.90	0.90	D	D	No	-
Between	A Street	Hesperian Boulevard	4	5	7,069	7,074	0%	0.88	0.88	D	D	No	-
I-880 SB													
Between	Marina Boulevard	I-238/Washington Avenue	4	8	7,740	7,748	0%	0.97	0.97	E	E	No	-
Between	Hesperian Boulevard	A Street	4	4	8,203	8,207	0%	1.03	1.03	F	F	-	No
Arterials													
Hesperian Boulevard NB													
Between	A Street	Paseo Grande	3	11	2,708	2,719	0%	1.13	1.13	F	F	-	No
Between	Paseo Grande	Lewelling Boulevard	3	25	2,591	2,616	0%	1.08	1.09	F	F	-	No
Between	Lewelling Boulevard	SpringLake Dr	3	13	2,519	2,532	0%	1.05	1.06	F	F	-	No
Hesperian Boulevard SB													
Between	SpringLake Dr	Lewelling Boulevard	3	14	3,066	3,080	0%	1.28	1.28	F	F	-	No
Between	Lewelling Boulevard	Paseo Grande	3	35	2,320	2,355	0%	0.97	0.98	E	E	No	-
Between	Paseo Grande	A Street	3	10	1,637	1,647	0%	0.68	0.69	C	C	No	-

Fehr & Peers, 2018.

Appendix H: Auto-Turn Analysis

GENERAL NOTES:

1. FIRE ALARM SYSTEM IS REQUIRED AND WILL BE INSTALLED THROUGHOUT AS REQUIRED BY CODE. THE FIRE ALARM PANEL LOCATION AND NUMBER OF PANELS WILL BE DETERMINED BY A LOW VOLTAGE DESIGNER. DESIGN WILL BE A DEFERRED SUBMITTAL AND NOT A PART OF THIS SUBMITTAL.

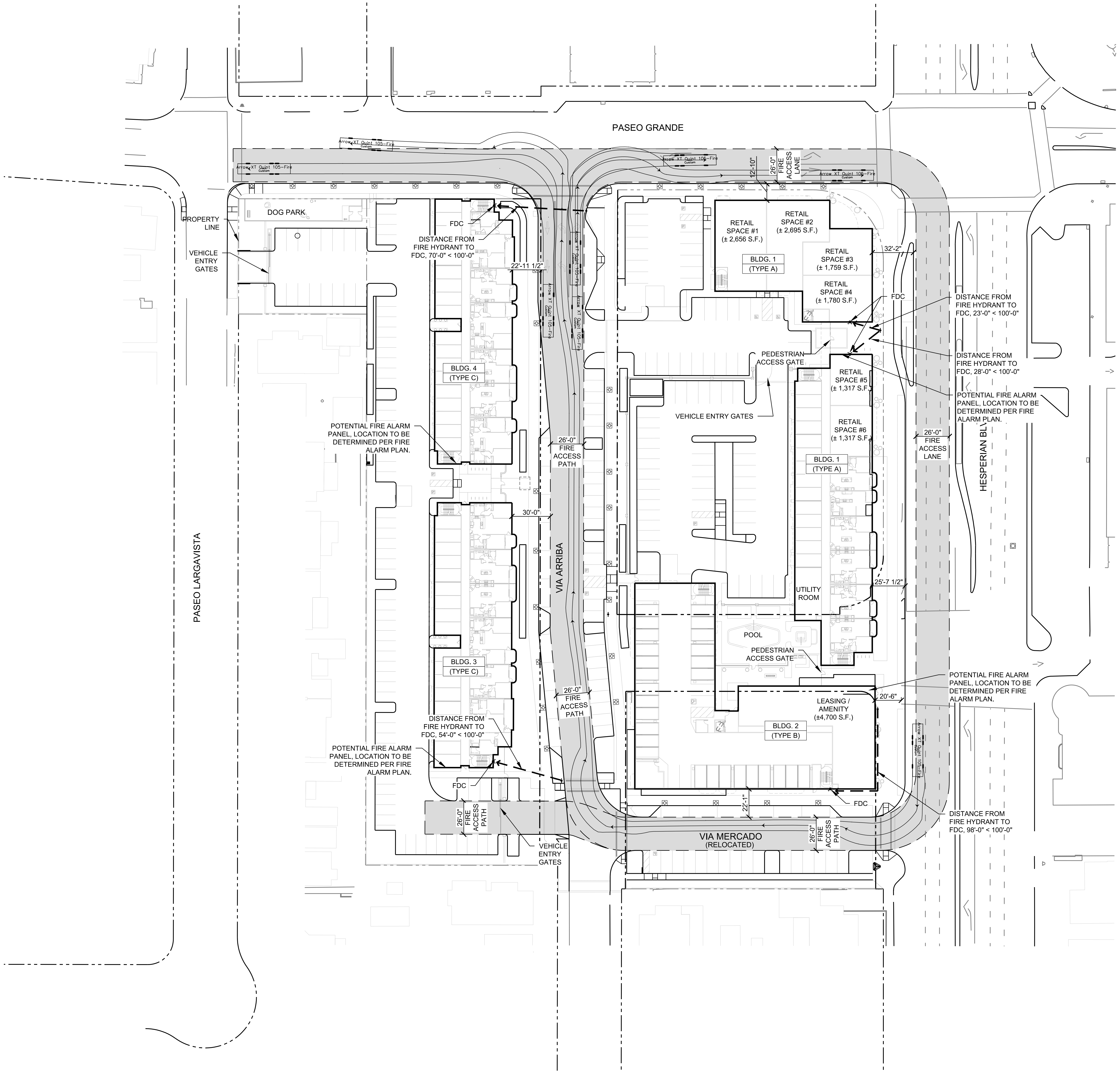
SYMBOL LEGEND:

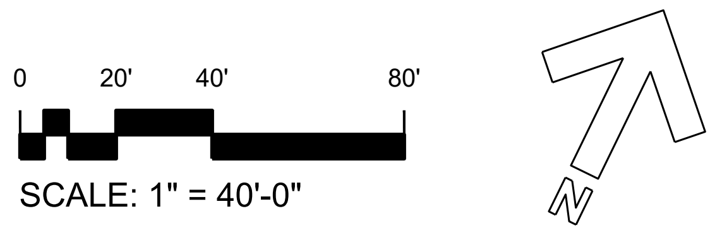
● FIRE HYDRANT

● FDC

▨ 26'-0" FIRE ACCESS LANE

← – – DISTANCE FROM FDC LOCATION TO NEAREST FIRE HYDRANT, MAXIMUM 100'-0"





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Principal: Chris Weimholt
Project Manager: Chris Weimholt

Client

DEMMON PARTNERS

Company: DEMMON PARTNERS
Address: 1451 River Park Dr. Suite 121
Sacramento, CA 95815
Phone No. 916-514-0426

VILLAGE GREEN

SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL 11/30/2017

1ST SUBMITTAL 04/09/2018

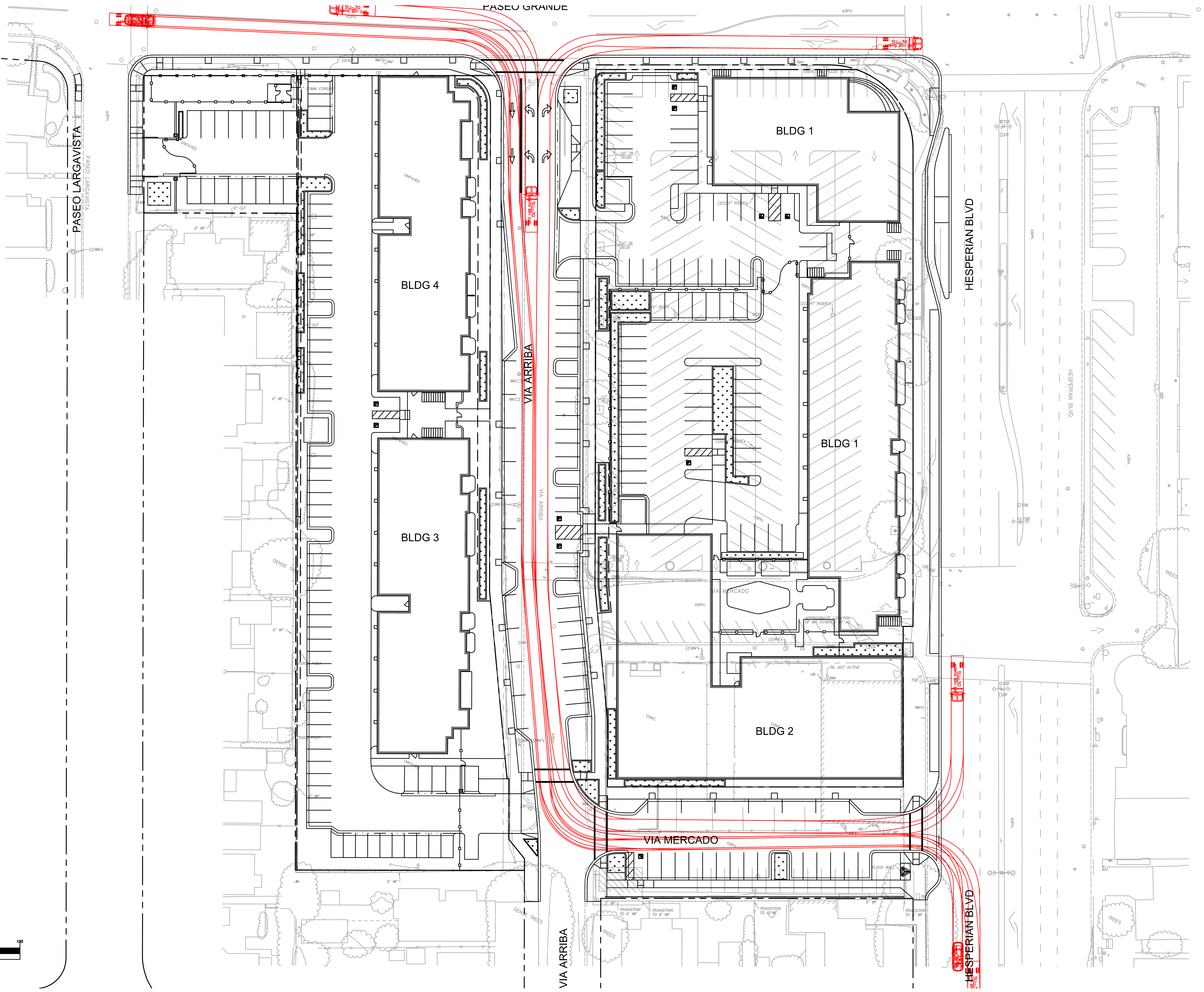
2ND SUBMITTAL 08/15/2018

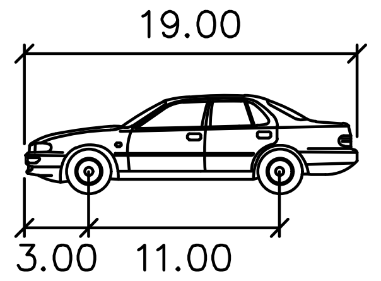
3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

FIRE ACCESS PLAN

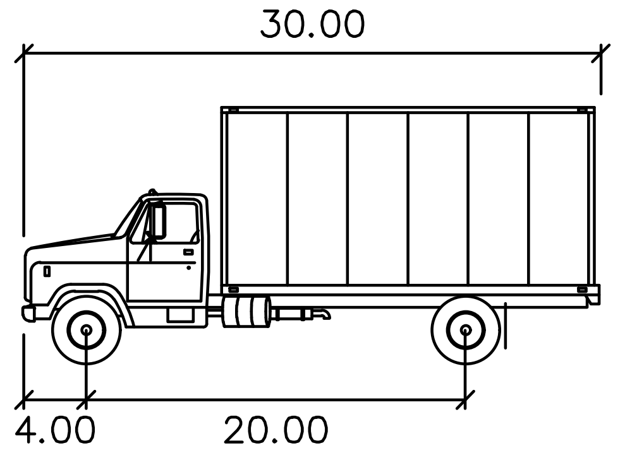
A1.1





P

		feet
Width	:	7.00
Track	:	6.00
Lock to Lock Time	:	6.0
Steering Angle	:	31.6



SU–30

		feet
Width	:	8.00
Track	:	8.00
Lock to Lock Time	:	6.0
Steering Angle	:	31.8

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

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VILLAGE GREEN

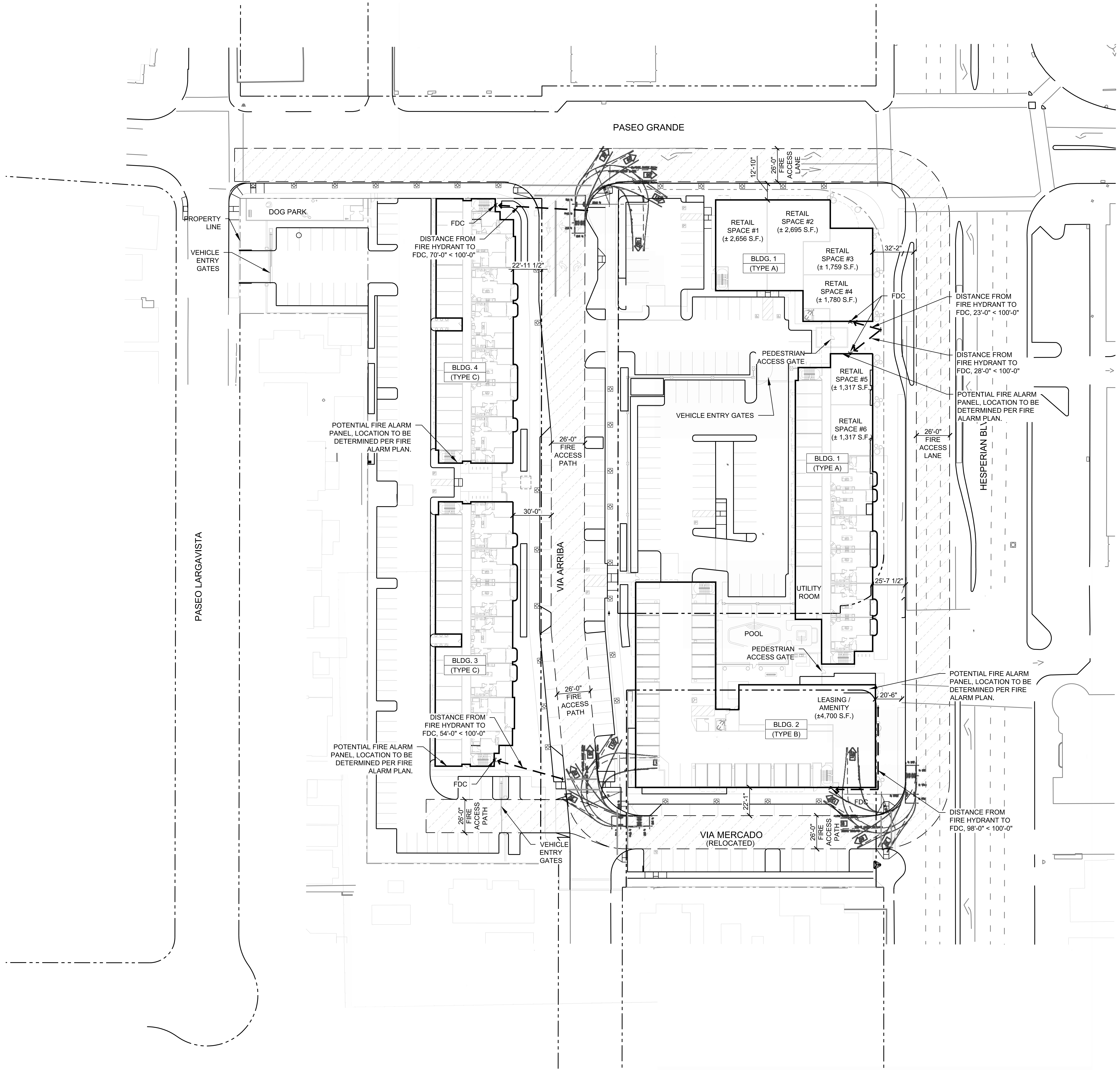
TRUCK TURNS

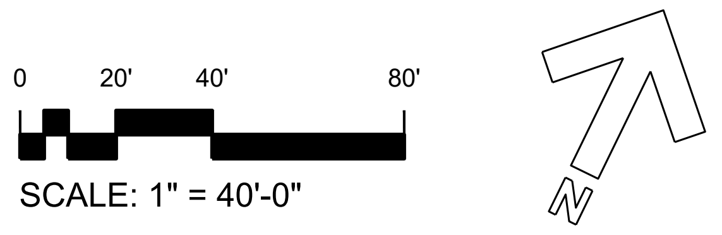
01/21/2019

GENERAL NOTES:
1. FIRE ALARM SYSTEM IS REQUIRED AND WILL BE INSTALLED THROUGHOUT AS REQUIRED BY CODE. THE FIRE ALARM PANEL LOCATION AND NUMBER OF PANELS WILL BE DETERMINED BY A LOW VOLTAGE DESIGNER. DESIGN WILL BE A DEFERRED SUBMITTAL AND NOT A PART OF THIS SUBMITTAL.

SYMBOL LEGEND:

●	FIRE HYDRANT
●	FDC
▨	26'-0" FIRE ACCESS LANE
← –	DISTANCE FROM FDC LOCATION TO NEAREST FIRE HYDRANT, MAXIMUM 100'-0"





SCALE: 1" = 40'-0"

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DEMMON PARTNERS

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VILLAGE GREEN

SAN LORENZO, CA

Issue Date

PRELIM-SUBMITTAL 11/30/2017

1ST SUBMITTAL 04/09/2018

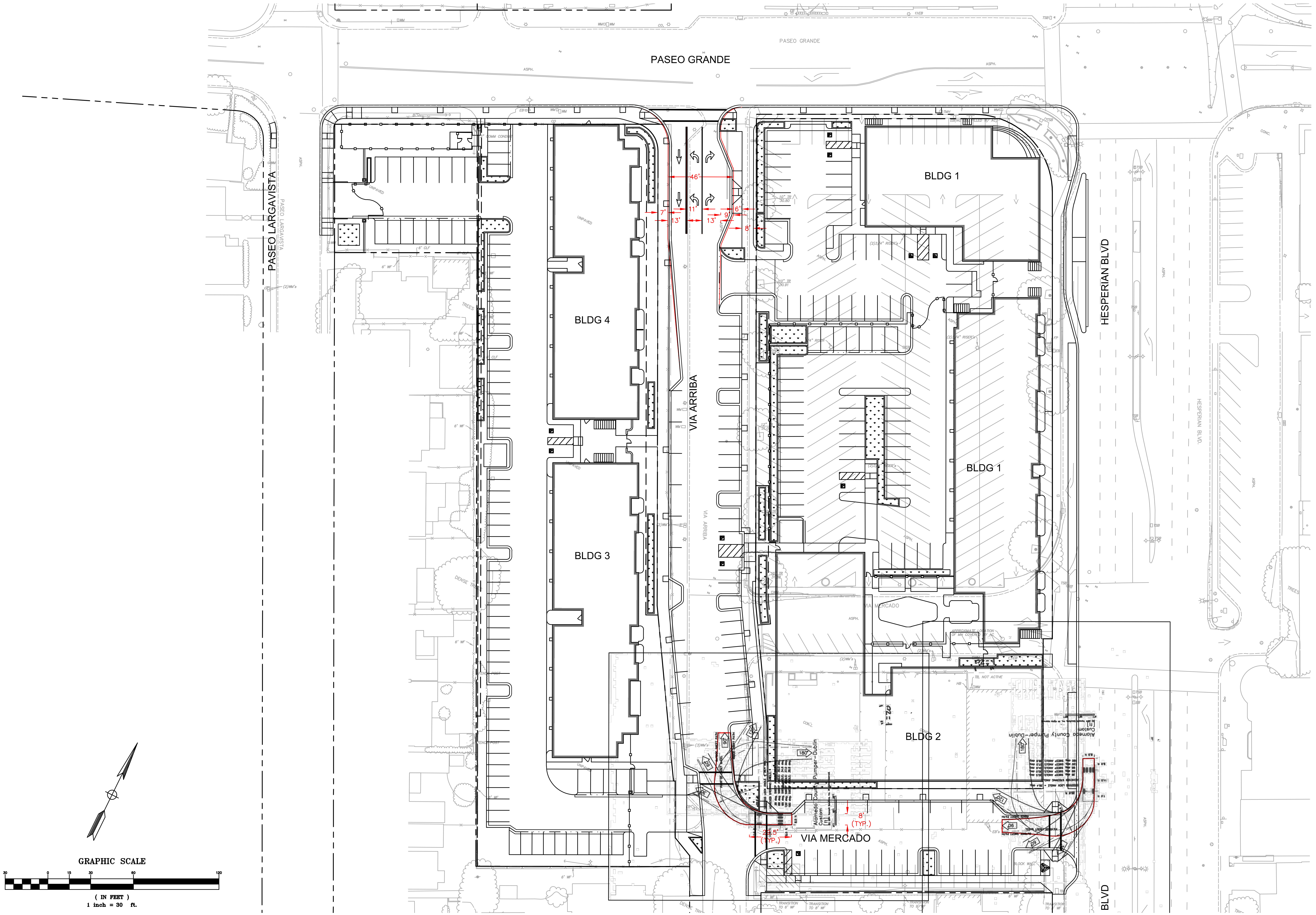
2ND SUBMITTAL 08/15/2018

3RD SUBMITTAL 11/12/2018

4TH SUBMITTAL 01/21/2019

FIRE ACCESS PLAN

A1.1



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VILLAGE GREEN

PROPOSED SITE PLAN

01/07/2019

Appendix I: Shared Parking Analysis Worksheets

Table 1/23/2019

Project: **Village Green Apartments**

Description: **Shared Parking Analysis for TIA**

December

Weekday Estimated Peak-Hour Parking Demand

Projected Parking Supply: 326 Stalls																					Overall Pk	AM Peak Hr	PM Peak Hr	Eve Peak Hr
	Monthly Adj.	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM	7 PM	6 AM	5 PM	7 PM
Community Shopping Center (<400 ksf)	100%	-	1	4	8	15	21	25	28	28	28	26	24	22	21	18	14	8	3	-	21	-	24	21
Employee	100%	1	1	3	5	6	6	7	7	7	7	7	6	6	6	6	5	3	1	-	6	1	6	6
Residential, Rental, Shared Spaces	100%	238	214	202	190	178	166	154	166	166	166	178	202	214	231	233	235	238	238	238	231	238	202	231
Reserved	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Guest	100%	-	2	5	5	5	5	5	5	5	5	5	9	14	23	23	23	23	19	12	23	-	9	23
TOTAL DEMAND	Customer	-	3	9	13	20	26	30	33	33	33	31	33	36	44	41	37	31	22	12	44	-	33	44
	Employee	239	215	205	195	184	172	161	173	173	173	185	208	220	237	239	240	241	239	238	237	239	208	237
	Reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		239	218	214	208	204	198	191	206	206	206	216	241	256	281	280	277	272	261	250	281	239	241	281
																					281	239	241	281

Footnote(s):

December

Weekend Estimated Peak-Hour Parking Demand

																					Overall Pk	AM Peak Hr	PM Peak Hr	Eve Peak Hr
		6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM	7 PM	6 AM	5 PM	7 PM
Community Shopping Center (<400 ksf)	100%	-	2	3	11	19	22	27	30	31	31	30	28	25	23	20	16	11	5	-	23	-	28	23
Employee	100%	1	1	3	6	6	7	8	8	8	8	8	7	6	6	6	5	3	1	-	6	1	7	6
Guest	100%	-	5	5	5	5	5	5	5	5	5	5	9	14	23	23	23	23	19	12	23	-	9	23
TOTAL DEMAND	Customer	-	7	8	16	24	27	32	35	36	36	35	37	39	46	43	39	34	24	12	46	-	37	46
	Employee	239	215	205	196	184	173	162	174	174	174	186	209	220	237	239	240	241	239	238	237	239	209	237
	Reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		239	222	213	212	208	200	194	209	210	210	221	246	259	283	282	279	275	263	250	283	239	246	283
																					283	239	246	283

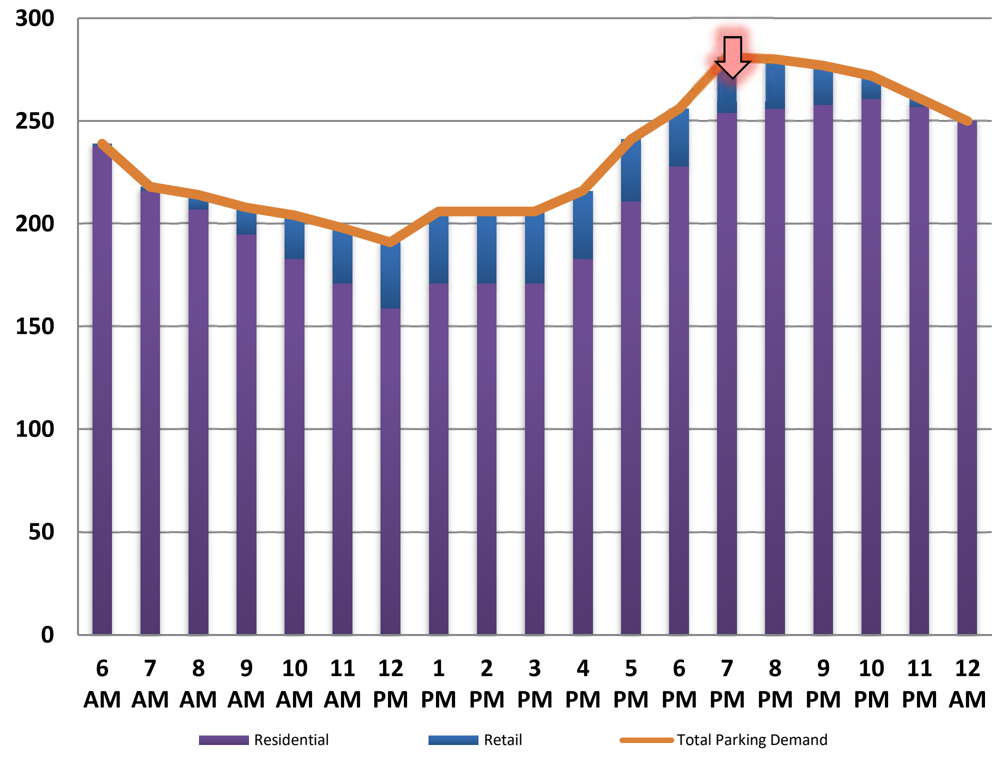
TABLE 1
SHARED PARKING DEMAND SUMMARY (RESIDENTIAL AS APARTMENT) - VILLAGE GREEN APARTMENTS

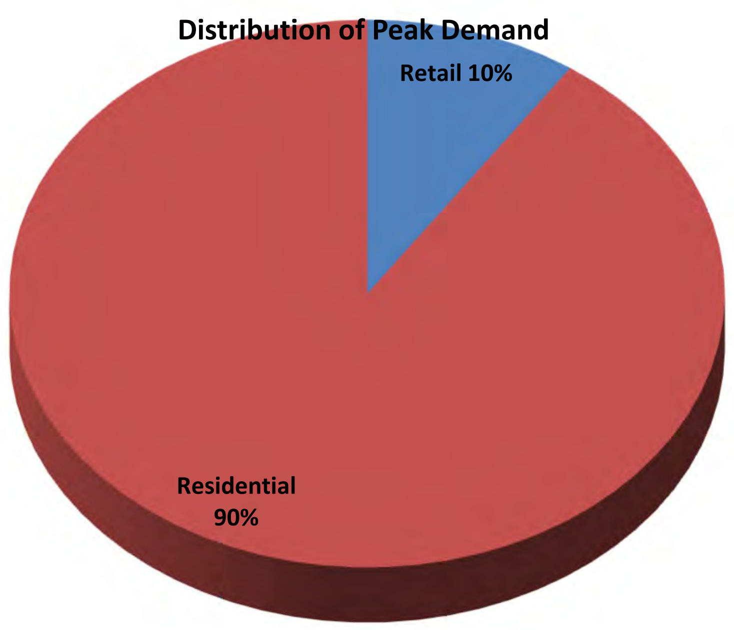
PEAK MONTH: DECEMBER -- PEAK PERIOD: 7 PM, WEEKEND

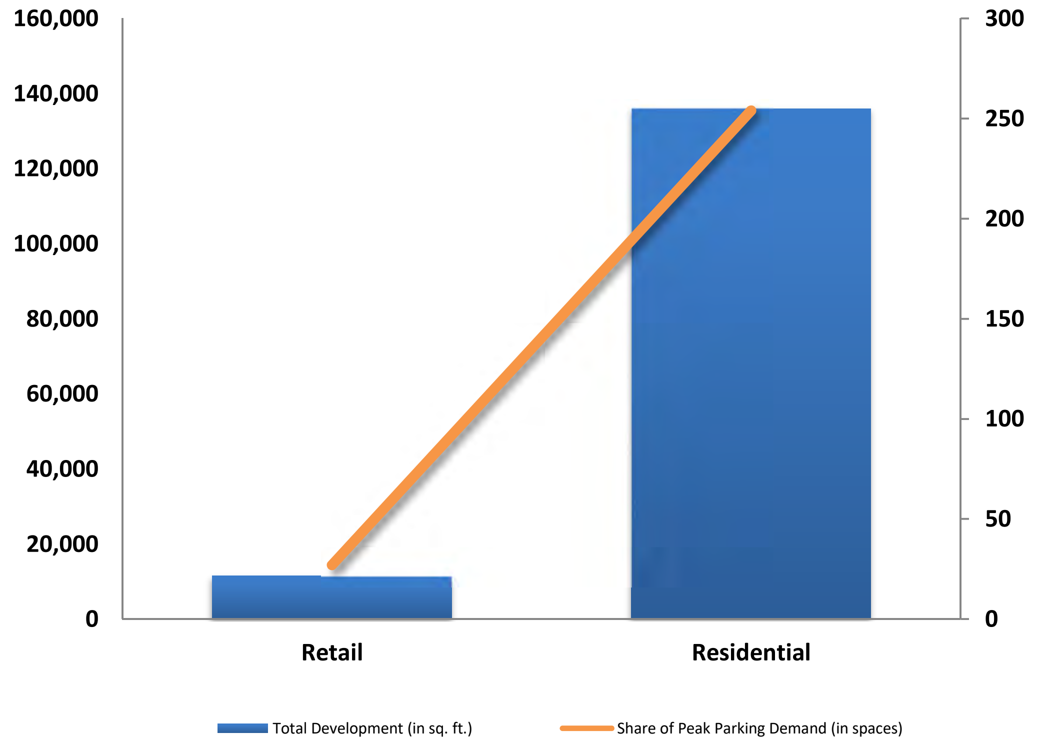
Projected Parking Supply:	326 Stalls		Weekday					Weekend					Weekday			Weekend		
Land Use	Project Data Quantity	Unit	Base Rate	Mode Adj	Non-Captive Ratio	Project Rate	Unit	Base Rate	Mode Adj	Non-Captive Ratio	Project Rate	Unit	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Community Shopping Center (<400 ksf)	11,520	sf GLA	2.90	0.87	0.97	2.45	/ksf GLA	3.20	0.87	0.97	2.70	/ksf GLA	0.75	1.00	21	0.75	1.00	23
Employee			0.70	0.87	0.97	0.59	/ksf GLA	0.80	0.87	0.97	0.68	/ksf GLA	0.95	1.00	6	0.80	1.00	6
Residential, Rental, Shared Spaces	163	units	1.50	1.00	0.97	1.46	/unit	1.50	1.00	0.97	1.46	/unit	0.97	1.00	231	0.97	1.00	231
Reserved		sp/unit	0	1.00	0.97	0	/unit	0.0	1.00	0.97	0.0000	/unit	1.00	1.00	0	1.00	1.00	0
Guest	163	units	0.15	1.00	0.97	0.15	/unit	0.15	1.00	0.97	0.15	/unit	1.00	1.00	23	1.00	1.00	23
													Customer		21	Customer		23
													Employee		6	Employee		6
													Resident		231	Resident		231
													Guest		23	Guest		23
													Total		281	Total		283

TABLE 2
SHARED PARKING BY TIME OF DAY (RESIDENTIAL AS APARTMENT)

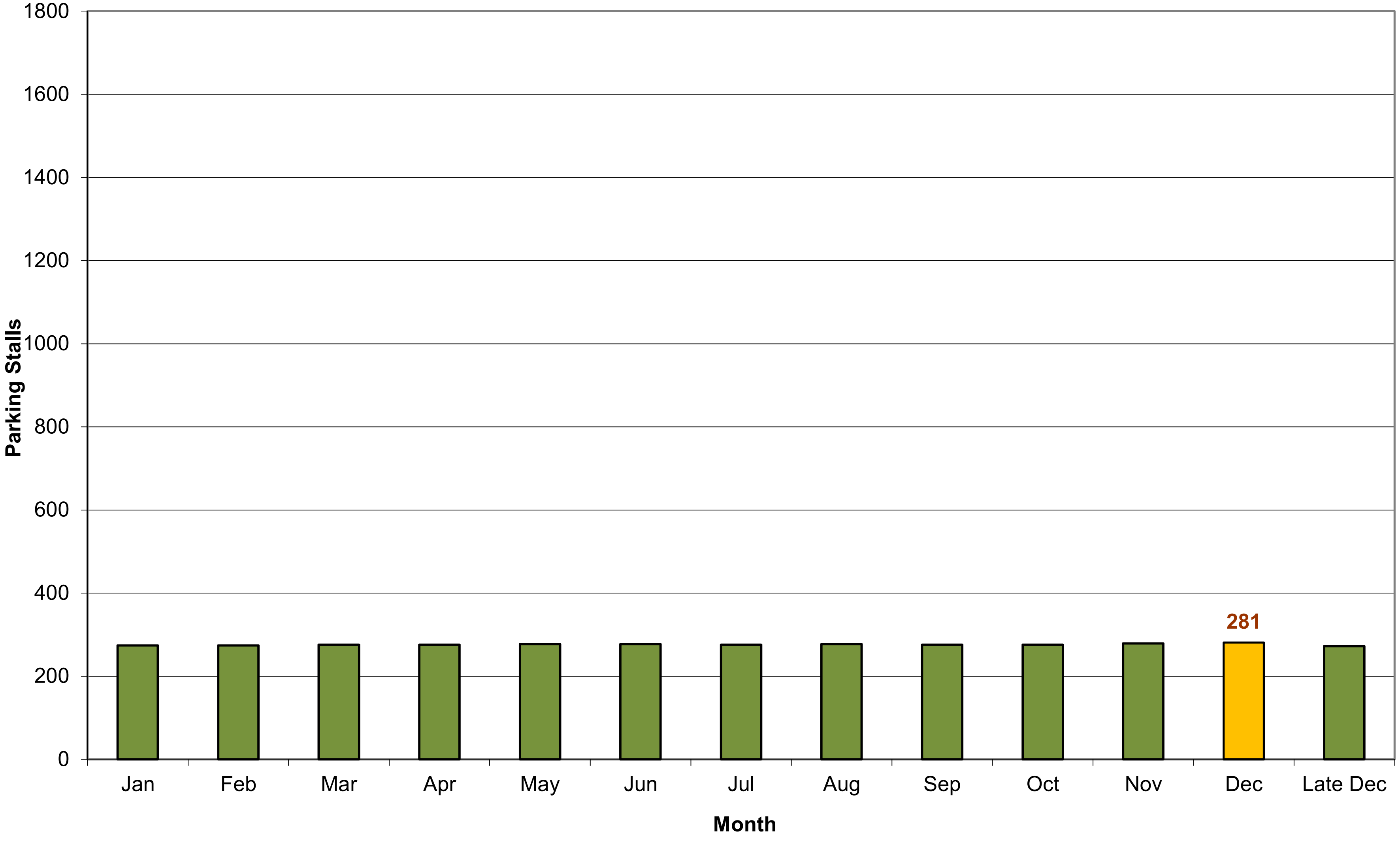
Total Development (sf)	Land Use	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
11,520	Retail	1	2	7	13	21	27	32	35	35	35	33	30	28	27	24	19	11	4	0
	Quality Restaurant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Family Restaurant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fast Food Restaurant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	*Total Restaurant*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
136,013	Residential	238	216	207	195	183	171	159	171	171	171	183	211	228	254	256	258	261	257	250
	Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11,520	*Subtotal Non-Residential*	*1*	*2*	*7*	*13*	*21*	*27*	*32*	*35*	*35*	*35*	*33*	*30*	*28*	*27*	*24*	*19*	*11*	*4*	*0*
136,013	*Subtotal Residential*	*238*	*216*	*207*	*195*	*183*	*171*	*159*	*171*	*171*	*171*	*183*	*211*	*228*	*254*	*256*	*258*	*261*	*257*	*250*
147,533	**TOTAL**	**239**	**218**	**214**	**208**	**204**	**198**	**191**	**206**	**206**	**206**	**216**	**241**	**256**	**281**	**280**	**277**	**272**	**261**	**250**



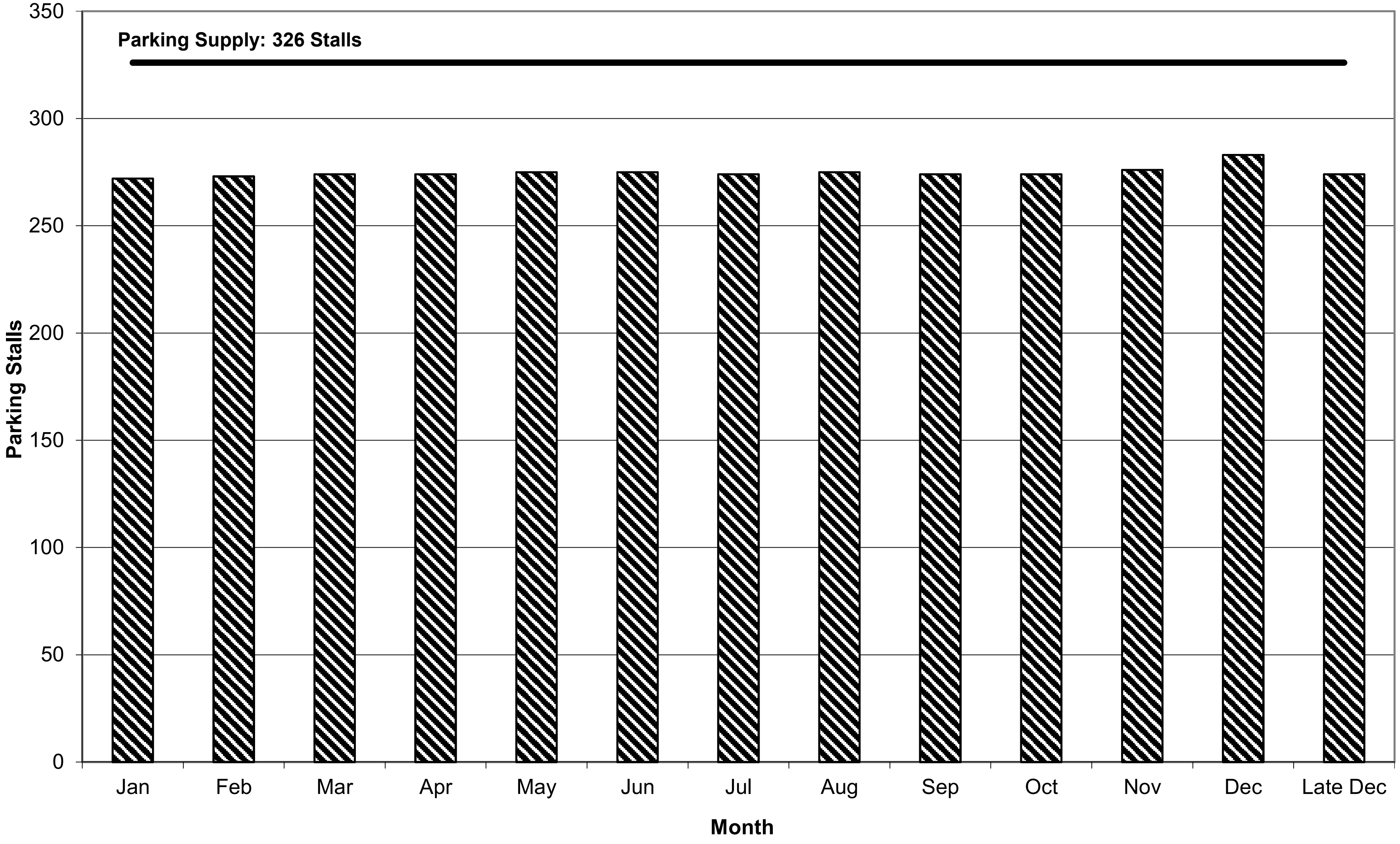




WEEKDAY MONTH-BY-MONTH ESTIMATED PARKING DEMAND
(RESIDENTIAL AS APARTMENT)



WEEKEND MONTH-BY-MONTH ESTIMATED PARKING DEMAND



PEAK MONTH DAILY PARKING DEMAND BY HOUR