Mission Town Center

Draft Environmental Impact Report

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Appendix 4.8 through 4.10

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APPENDIX 4.8

Transportation Impact Analysis

Mission Town Center

Transportation Impact Analysis

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1. INTRODUCTION

This report presents the results of the transportation impact analysis (TIA) for the proposed Mission Town Center mixed-use development (the "Project") is located in the City of Santa Clara, California. The Project site is located west of El Camino Real between Benton Street and Harrison Street just north of Santa Clara University in Santa Clara, California.

The purpose of the TIA is to address the impacts of Mission Town Center development on the surrounding transportation system including the roadways, transit service, pedestrian facilities and bicycle facilities. The TIA was conducted to address compliance with the City's General Plan and the California Environmental Quality Act (CEQA). It was prepared following guidelines of the City of Santa Clara and the Santa Clara Valley Transportation Authority, the congestion management agency for Santa Clara County.

This section provides background information on the Project including the project description, summary of the study area, overview of traffic forecasting methods, and an introduction to the analysis scenarios.

PROJECT DESCRIPTION

The Project is a mixed-use development on 5.7 acres with approximately 385 residential units and approximately 27,000 square feet of retail/restaurant development. **Figure 1** shows the Project site and surrounding area. The Project also includes approximately 6,000 square feet of amenity space and 4,000 square feet of leasing space; however these portions of the Project are not anticipated to generate additional vehicle trips because they are for internal users therefore, are not considered further in this report. The Project will replace six single family homes, four apartments, approximately 88,000 square feet of warehouse, approximately 5,000 square feet of office, an approximately 3,900 square-foot auto care center, and an approximately 3,900 square feet restaurant. As part of the Project the following streets will be removed and vacated:

- Sherman Street north of Benton Street
- Fremont Street east of The Alameda.

The site will be accessed at the intersection of Benton Street and Sherman Street and at a driveway located on El Camino Real north of Benton Street. **Figure 2** shows the Project site plan.

PROJECT TRANSPORTATION SYSTEM IMPROVEMENTS AND MODIFICATIONS

The Mission Town Center mixed-use development is constructing transportation improvements as part of the Project to provide enhancements for vehicular, transit, pedestrian, and bicycle systems around the Project perimeter and main access roads to the Project site.

The on-site and off-site transportation modifications for vehicle, bicycle, and pedestrian travel include:

Roadway Modifications

- Closure and vacation of Fremont Street east of The Alameda
- Closure and vacation of Sherman Street north of Benton Street

Bicycle and Pedestrian Infrastructure Modifications

- Bicycle lanes will be provided along Benton Street between El Camino Real and The Alameda.
- Bicycle sharrows will be provided on The Alameda between Benton Street and Harrison Street.
- Sidewalks will be provided along all frontage roads adjacent to the Mission Town Center development including Benton Street, The Alameda, and El Camino Real.

STUDY AREA

The list of study intersections and freeway segments was selected by identifying locations where the Project would contribute a noticeable amount of traffic as discussed below.

STUDY INTERSECTIONS

Project impacts on the study area roadway facilities were determined by measuring the effect Project traffic would have on intersections during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. Study intersections were chosen in accordance with *VTA's Transportation Impact Analysis Guidelines* (2014) which suggest that an intersection is evaluated if a Project contributes ten peak hour trips per lane during a peak hour. A total of one project access[1] and 10 existing intersections were selected as study locations in consultation with the City of Santa Clara staff and based on VTA's Transportation Impact Analysis Guidelines (October 2014). The intersection data was collected on April 22, 2015. These locations and the governing jurisdiction are stated in **Table 1-1**.

[1] The north leg of the intersection of Sherman Street and Benton Street will also become a project access.

TABLE 1-1: STUDY INTERSECTIONS

ID	Intersection	Jurisdiction / CMP
1	Lafayette Street and El Camino Real (signal)	Santa Clara CMP
2	Lafayette Street and Lewis Street (signal)	Santa Clara
3	Lafayette Street and Benton Street (signal)	Santa Clara
4	Alviso Street and Harrison Street	Santa Clara
5	The Alameda and Harrison Street	Santa Clara
6	The Alameda and Fremont Street	Santa Clara
7	The Alameda and Benton Street	Santa Clara
8	Sherman Street and Benton Street	Santa Clara
9	El Camino Real and Harrison Street	Santa Clara
10	El Camino Real and Benton Street (signal)	Santa Clara
11	El Camino Real and Project Access - *Proposed*	Santa Clara

Notes:

Congestion Management Program (CMP) indicates the intersection is part of VTA's CMP monitoring program.

Source: Fehr & Peers, 2015.

FREEWAY SEGMENTS

Freeway segments are included for analysis if the Project was expected to add traffic equal to or greater than one percent of the freeway segment's capacity. Based on this criterion, no freeway segments were analyzed for this Project.

ANALYSIS SCENARIOS

This study addresses the Project's impacts on the roadway system and the adjacent bicycle, pedestrian, and transit network. Project impacts were evaluated following the guidelines of the City of Santa Clara and the Santa Clara Valley Transportation Authority (VTA), the congestion management agency for Santa Clara County. Intersection operations were evaluated during the weekday peak hours within the morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak periods for the scenarios detailed in **Table 1-2**: . The exact peak hour within each peak period varies by study intersection, and the intersection's peak hour was evaluated in this analysis. For example, one intersection might have a peak hour of 7:15-8:15 AM and another might have a peak hour of 7:45-8:45 AM.

TABLE 1-2: ANALYSIS SCENARIOS

Scenario	Description
Scenario 1a : Existing Conditions	Existing volumes obtained from new traffic counts.
Scenario 1b: Existing plus Project Conditions	Existing volumes plus traffic generated by the Project.
Scenario 2a: Background (2020) Conditions	Year 2020 traffic volumes based on forecasts from the citywide traffic model, including Association of Bay Area Governments (ABAG) 2020 land use projections with under construction and approved projects, and planned and funded transportation system improvements for 2020 in the Valley Transportation Plan (VTP).
Scenario 2b: Background (2020) plus Project Conditions	Volumes from Scenario 2a plus traffic generated by build-out of the proposed Project and transportation network infrastructure proposed by the Project.
Scenario 3a: Cumulative (2040) Conditions	Year 2040 traffic volumes based on forecasts from the citywide traffic model, including Association of Bay Area Governments (ABAG) 2040 land use projections with under construction, approved and pending projects (including City Place), and planned and funded transportation system improvements for 2040 in the Valley Transportation Plan (VTP).
Scenario 3b: Cumulative (2040) plus Project Conditions	Volumes from Scenario 3a plus traffic generated by build-out of the proposed Project and transportation network infrastructure proposed by the Project.

Source: Fehr & Peers, 2015

REPORT ORGANIZATION

This report is divided into seven additional chapters as described below:

- **Chapter 2 – Analysis Methodology** presents the analysis methods, level of service standards, and significant impact criteria for each jurisdiction for intersections, freeways, ramps, transit, bicycle and pedestrian operations.
- **Chapter 3 – Existing Conditions (Scenario 1a)** describes the transportation system near the Project site, including the surrounding roadway network, morning and evening peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection level of service.
- **Chapter 4 – Project Traffic Estimates** describes the Project trip generation, distribution and assignment methods for intersections.
- **Chapter 5 – Existing Plus Project Conditions (Scenario 1b)** presents the transportation operations with the Project under Existing Conditions.
- **Chapter 6 – Background (2020) Conditions (Scenario 2a/2b)** presents the transportation operations with and without the Project under Background (2020) Conditions.
- **Chapter 7 – Cumulative (2040) Conditions (Scenarios 3a/3b)** presents the transportation operations with and without the Project under Cumulative (2040) Conditions.
- **Chapter 8 – Transportation Impact Assessment** presents the transportation impacts of the Project based on the CEQA significance criteria and associated mitigation measures for each scenario.
- **Chapter 9 – Other Transportation Analysis - Transit, Bicycle and Pedestrian** describes the Quality of Service (QOS) metrics and analysis tools used to evaluate transit, bicycle and pedestrian facilities for Existing, Baseline, and all plus Project scenarios where a vehicular mitigation measure is proposed as described in Chapter 8.
- **Chapter 10 – Other Transportation Analysis - VMT** presents the projected amount of vehicle miles traveled due to Project traffic.
- **Chapter 11 – Other Transportation Analysis – On-Site Evaluation** presents intersection queuing at Project entranceways, on-site circulation, access, and parking.

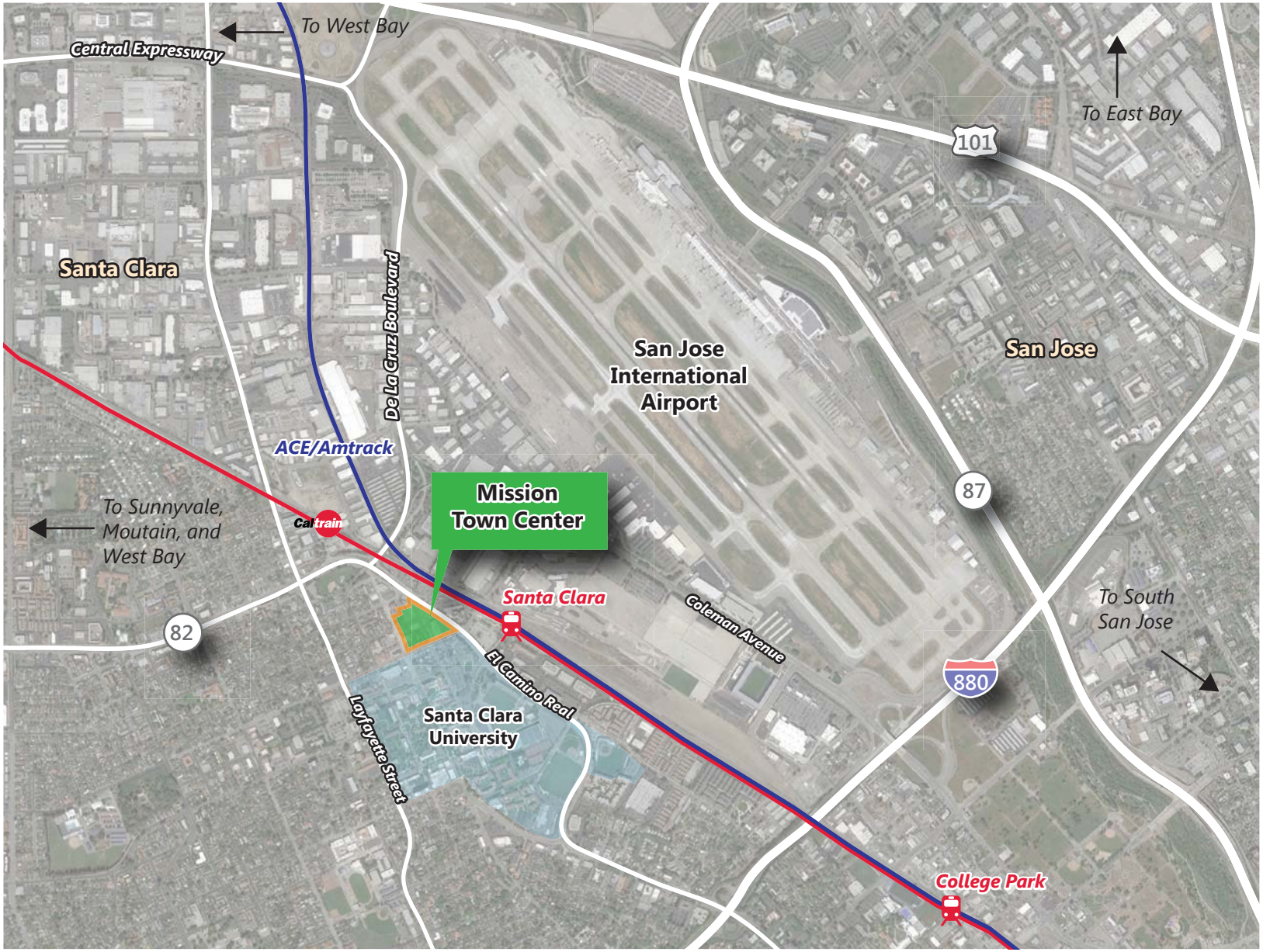


Figure 1

Vicinity Map

Figure 2

Site Plan

Source: MVE Partners, November 2015

2. ANALYSIS METHODOLOGY

ANALYSIS METHODS

The operations of roadway facilities are described with the term level of service ("LOS", a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver). Six levels are defined from LOS A, as the best operating conditions, to LOS F, as the worst operating conditions. LOS E represents "at-capacity" operations. When traffic volumes exceed the intersection capacity, stop-and-go conditions result, and operations are designated as LOS F.

SIGNALIZED INTERSECTION OPERATIONS

The method described in Chapter 16 of the 2000 *Highway Capacity Manual* (HCM) (Special report 209, Transportation Research Board) was used to prepare the level of service calculation for the study intersections. This level of service method, which is approved by the City of Santa Clara and VTA, analyzes a signalized intersection's operation based on average control delay per vehicle. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay is calculated using TRAFFIX analysis software and is correlated to an LOS designation as shown in **Table 2-1**.

TABLE 2-1: SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay per Vehicle (seconds)
A	Operations with very low delay occurring with favorable progression and / or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and / or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and / or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (V / C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V / C ratios. Individual cycle failures are frequent occurrences.	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Traffic Level of Service Analysis Guidelines*, VTA Congestion Management Program, June 2003; and *Highway Capacity Manual*, Transportation Research Board, 2000.

UNSIGNALIZED INTERSECTIONS OPERATIONS

The operations of the unsignalized intersections were evaluated using the method contained in Chapter 17 of the *2000 HCM*. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At two-way or side-street-controlled intersections, the average control delay is calculated for each stopped movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The LOS for side-street-controlled intersections reported in subsequent tables represents the most delayed approach. **Table 2-2** summarizes the relationship between delay and LOS for unsignalized intersections.

TABLE 2-2: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delay.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays.	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Sources: *Traffic Level of Service Analysis Guidelines*, VTA Congestion Management Program, June 2003; *Highway Capacity Manual*, Transportation Research Board, 2000.

Additionally, the City of Santa Clara and adjacent local jurisdictions apply the *California Manual on Uniform Traffic Control Devices* (CA MUTCD) peak-hour volume signal warrant to intersections operating at LOS F.[2]

Warrant 3 – Peak hour vehicle volume

This warrant determines if the minor street traffic suffers undue delay when entering or crossing the major street for a minimum of one hour of an average day. This is based on the major street left turn volume, the higher-volume minor-street approach volume, and calculated delay for vehicles on the higher-volume minor-street approach.

FREEWAY SEGMENT OPERATIONS

Freeway segments in Santa Clara County were not evaluated as part of this analysis as the Project's share of traffic on any freeway in the surrounding area would be less than one percent and the Project is not adjacent to freeway access points.

[2] Signal warrant analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared to a sub-set of the standard traffic signal warrants recommended in the 2012 California *Manual on Uniform Traffic Control Devices* (CA *MUTCD*) guidelines. While satisfying one or more of these warrants could justify the installation of a signal at an intersection, this analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals may lead to certain types of collisions.

SIGNIFICANT IMPACT CRITERIA (CEQA)

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Santa Clara and the surrounding jurisdiction of Santa Clara County. The detailed impact criteria presented below focuses on elements of the CEQA checklist pertaining to roadway system operations and its effects on users, including drivers, pedestrians, bicyclists, transit passengers, and first responders in emergency access vehicles.

SIGNALIZED INTERSECTIONS

Signalized intersection operations and impacts are evaluated based on the appropriate jurisdiction's LOS standards (i.e., minimum threshold for acceptable operations) as shown in **Table 2-3**.

TABLE 2-3: INTERSECTION LOS STANDARDS

Jurisdiction	Intersection LOS Standards	Citation
City of Santa Clara	LOS D for all City controlled signalized intersections, except designated CMP and Expressway intersections (LOS E threshold).	Santa Clara General Plan, pages 5-6 and Appendix Seven page 8.7-3 (2010)
Santa Clara County	LOS E for all Santa Clara County intersections.	Santa Clara County General Plan, pages F-18 and F-19 (1994)
Congestion Management Program (CMP)	LOS E for all CMP intersections.	VTA Congestion Management Program, page 29 (2013)

Sources: Santa Clara, 2010; VTA, 2009; VTA, 2013

City of Santa Clara

Significant impacts at signalized City of Santa Clara intersections would occur when the addition of project traffic causes one of the following:

- Intersection operations to degrade from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F); or
- Exacerbates unacceptable operations (LOS E or F) by increasing the critical delay by more than four seconds and increasing the volume-to-capacity (V/C) ratio by 0.01 or more; or
- An increase in the V/C ratio of 0.01 or more at an intersection with unacceptable operations (LOS E or F) when the change in critical delay is negative (i.e., decreases). This can occur if the critical movements change.

The City of Santa Clara has established a minimum acceptable operation level of LOS D for local streets, and a LOS E standard for CMP designated facilities as defined in **Table 2-3** (*City of Santa Clara General Plan)*

Santa Clara County and Congestion Management Program

The LOS standard for Santa Clara County (*VTA Congestion Management Program*, 2013) expressway and CMP intersections is LOS E. Traffic impacts at these intersections would occur when the addition of traffic associated with a project causes:

- Intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F); or
- Exacerbates unacceptable operations by increasing the average critical delay more than four seconds and increasing the critical volume-to-capacity (V/C) ratio by 0.01 or more at an intersection operating at LOS F; or

The V/C ratio increases by 0.01 or more at an intersection with unacceptable operations (LOS F) when the change in critical delay is negative (i.e., decreases). This can occur if the critical movements change.

UNSIGNALIZED INTERSECTIONS

The City of Santa Clara does not have an officially adopted significance criteria for unsignalized intersections. For purposes of this TIA, significant impacts are defined to occur when the addition of project traffic causes the average intersection delay for all-way stop-controlled intersections or the worst movement / approach for side-street stop-controlled intersections to degrade to LOS F and the intersection satisfies the peak hour warrant from the California Manual of Uniform Traffic Control Devices (CA MUTCD).

FREEWAY SEGMENT

The Study Area does not include freeway segments because the project does not contribute more than one percent of any freeway segments.

TRANSIT

Generally, a project causes a significant impact to transit facilities and services if an element of it conflicts with existing or planned transit services. The evaluation of transit facilities shall consider if:

- A project creates demand for public transit services above the capacity which is provided, or planned;
- A project or project-related mitigation disrupts existing transit services;
- A project or project-related mitigation conflicts with an existing or planned transit facility; or
- A project or project-related mitigation conflicts with transit policies adopted by the City of Santa Clara, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area.

BICYCLE AND PEDESTRIAN

The *City of Santa Clara General Plan* (2010) describes related policies necessary to ensure that pedestrian and bicycle facilities are safe and effective for City residents. Using the *General Plan* as a guide, significant impacts to these facilities would occur when a project or an element of the project:

- Creates a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian accessibility to the site and adjoining areas; or
- Conflicts with an existing or planned pedestrian or bicycle facility; or
- Conflicts with policies related to bicycle and pedestrian activity adopted by the City of Santa Clara for facilities within the City of Santa Clara portion of the Study Area.

SAFETY

Safety of persons traveling by all modes – automobile, foot, and bicycle – is of paramount importance to on-site circulation. The safety of the Project hinges on the design of the infrastructure, on-site circulation facilities, and environment surrounding the site. These facilities include roadways, driveways, parking garages, sidewalks, crosswalks, bicycle lanes, and bicycle parking areas. Access to and from these facilities should be safe and secure for users within a half-mile radius from the Project site.

The Project would create a significant safety impact if the site access and on-site circulation systems are not designed to City of Santa Clara standards and standard engineering practices such that they would create a hazardous condition for vehicles, pedestrians, and / or bicyclists.

3. EXISTING CONDITIONS – SCENARIO 1A

This chapter describes the existing conditions of the roadway facilities, pedestrian and bicycle facilities, and transit service. It also presents existing traffic volumes and operations for the study intersections and freeway segments with the results of the level of service calculations. Existing Conditions is defined as current conditions based on intersection turning movement counts and intersection geometry.

ROADWAY NETWORK

The Project is bounded by Harrison Street to the north, The Alameda to the west, Benton Street to the south and El Camino Real to the east. Primary automobile access to the Project Site is provided by US 101, Central Expressway, De La Cruz Boulevard, Lafayette Street, San Tomas Expressway, El Camino Real, and I-880. **Figure 1** shows the locations of these facilities in relation to the Project site.

US 101 is an eight-lane divided freeway that runs from east San José to San Francisco along the west side of San Francisco Bay, connecting communities along the Peninsula. The freeway is a major commute route in Silicon Valley, providing access to businesses in downtown San José and technology employers within the South Bay and on the Peninsula. One lane in each direction operates as a High Occupancy Vehicle (HOV) lane from 5:00 to 9:00 AM and from 3:00 to 7:00 PM, Monday through Friday. Access to the Project site from US 101 is provided via De La Cruz Boulevard.

Central Expressway is a four-lane expressway located south of US 101 that connects San José to Mountain View. Central Expressway begins at San José International Airport and terminates at San Antonio Road in Mountain View, where it transitions into Alma Street. There are HOV lanes in both directions that operate from 6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM on weekdays only. The posted speed limit on Central Expressway is 50 mph.

De La Cruz Boulevard is a six-lane arterial located north of the Project site. The roadway serves as the Project site's primary connection to US 101 and Central Expressway via Alviso St, El Camino Real, and Lewis St. The posted speed limit is 40 mph.

Coleman Avenue is a six to eight lane arterial located north of the Project site. The roadway connects the project site to downtown San José. The posted speed limit is 35-40 mph.

Lafayette Street is a three-lane roadway with a reversible center lane and parallel parking near the Project site. The posted speed limit is 30 mph. North of El Camino Real the roadway expands to four lanes

and progressively includes a center turn lane and a higher posted speed limit of 40 mph. The roadway connects the Project site with industrial areas and the greater north metro area.

San Tomas Expressway/Montague Expressway is a six-to-eight-lane arterial expressway extending from Highway 17 at its south end to I-880 in the City of San Jose. North of US 101, the roadway is designated as Montague Expressway and extends eastward through San José to the City of Milpitas. In the City of Santa Clara, this facility includes HOV lanes in both directions for buses and carpools. The posted speed limit on San Tomas Expressway is 45 mph.

El Camino Real is a six-lane arterial located adjacent to the Project site. Parallel parking is provided on both sides of the roadway north of the Project site. It begins near San Francisco at Alemany Blvd and continues south to just south of the Project site where it becomes The Alameda. This roadway runs parallel to and between I-280 and US 101 and provides local access to various employers and retail/commercial land uses along the Peninsula. El Camino Real links the Project site to San Tomas Expressway as well as I-880 and downtown San José via The Alameda. The posted speed limit is 40 mph.

Interstate 880 is a six-lane divided freeway that runs from the southwest of the San José metro area to Oakland along the east side of San Francisco Bay. The freeway is a major commute route, providing access to businesses in downtown San José and along the east bay while connecting with I-80 to provide access destinations north of the bay area. Portions of the roadway include additional lane that operates as a High Occupancy Vehicle (HOV) lane from 5:00 to 9:00 AM and from 3:00 to 7:00 PM, Monday through Friday. Access to the Project site from Interstate 880 is provided via El Camino Real/The Alameda.

EXISTING TRANSIT SYSTEM

The study area is serviced by VTA buses including the 32, 60, and 81 and by the 10, 22, and 522 at the Santa Clara Transit Center. The Transit Center is located southeast of the site across El Camino Real. The transit center services several regional carriers, but requires crossing a six-lane arterial to access the transit center from the site. Carriers that service the transit center include: VTA, ACE, Caltrain and Amtrak Capitol Corridor. Additionally this site is a Park & Ride with 289 spaces for vehicles, 18 bike racks and 54 bike lockers. **Figure 1** shows the locations of these facilities in relation to the Project site and **Figure 3** shows the local bus routes that stop adjacent to the site. **Table 3-1** summarizes the transit services located adjacent to the development. The table includes the origins and destinations, operating hours, and headways.

VTA TRANSIT SERVICE

The nearest VTA bus stop to the Project site is located at mid block on Benton St between Sherman St and El Camino Real. VTA local routes that service the Transit Center include: 10, 22, 32, 60, 81, 522 and routes: 32, 60 and 81 traverse the southern end of the site on Benton Street. The 32 connects the site with the San Antonio Transit Center in Los Altos running north of the site along Monroe St, traveling through Sunnyvale, and continuing on Central Expressway. The 60 connects the site to the Winchester LRT station in Campbell to the south and the Old Ironsides LRT station near Great America Park and the Santa Clara Convention Center to the north. The 81 connects the site to the Vallco Shopping Mall in Cupertino to the west and downtown San José to the east.

CALTRAIN AND ACE

Caltrain provides intercity passenger rail service between San Francisco and San José, with extended service to Morgan Hill and Gilroy during weekday commute hours. These services stop at the Santa Clara Transit station located southeast of the Project.

The *Altamont Commuter Express* (ACE) provides passenger rail service between Stockton and San José. These services stop at the Santa Clara Transit station located southeast of the Project.

AMTRAK

The Amtrak Capitol Corridor line connects the Santa Clara station with San José to the south and Auburn to the north passing through Oakland, Berkeley, and Sacramento along the way. Additional bus connections intersect the Capitol Corridor that travel to locations including Monterey, Eureka, Redding, Lake Tahoe, and Reno. Eastbound trains begin on weekdays at 6:46 AM from the Santa Clara station and continue until 7:21 PM with seven trains in total. Westbound trains begin on weekdays at 7:24 AM from the Santa Clara station and continue until 8:42 PM with seven trains in total.

TABLE 3-1: EXISTING TRANSIT SERVICE

Route	From	To	Weekdays		Weekends	
			Operating Hours[1]	Peak Headway[2] (minutes)	Operating Hours[1]	Headway (minutes)[2]
Caltrain						
NB	Santa Clara	San Francisco	4:35 AM – 10:35 PM	30	7:05 AM – 10:35 PM	60
SB	Santa Clara	San José	6:20 AM – 1:25 AM (next day)	30	9:35 AM – 1:31 AM (next day)	60
ACE						
EB	Santa Clara	Stockton	3:40 PM-6:45 PM	60	No Service	
WB	Santa Clara	San Jose	6:30 AM-9:20 AM	25	No Service	
Bus Service VTA						
10 Airport Flyer	San Jose International Airport	Santa Clara Transit Center	5:00 AM – 11:35 PM	15	5:30 AM – 11:35 PM	30 – 60
22	Palo Alto / Eastridge Transit Center		24 hours	15	24 hours	25 - 60
32	San Antonio Transit Center		5:45 AM – 7:15 PM	30	8:50 AM – 5:10 PM	60
60	Winchester/ Old Ironsides Station		6:50 AM - 10:40 AM 6:00 AM – 9:45 PM	15	8:10 AM – 10:15 PM 7:20 AM – 9:20 PM	30-60
81	Vallco / San José		6:30 AM – 7:50 PM 6:40 AM – 8:40 PM	30	9:50 AM – 3:50 PM 9:50 AM – 4:50 PM	60
522	Palo Alto / Eastridge Transit Center		5:10 AM – 10:20 PM 5:40 AM – 10:40 PM	15	8:00 AM – 10:25 PM 8:20 AM – 10:30 PM	15 - 30

Source: Caltrain - http://www.caltrain.com/schedules.html, October 2015; ACE - https://www.acerail.com/, October 2015; VTA - http://www.vta.org/routes/, October 2015; Fehr & Peers, 2015.

EXISTING BICYCLE AND PEDESTRIAN FACILITIES

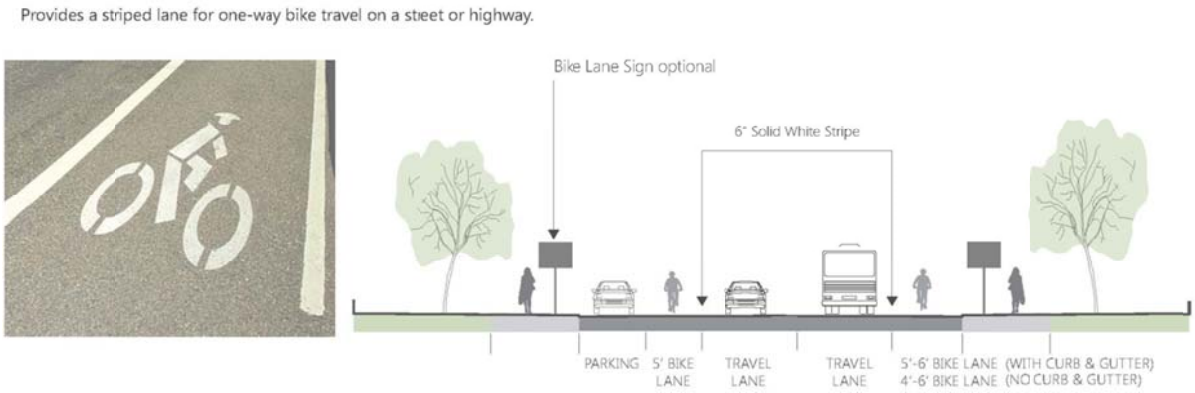
This section summarizes the quality of the pedestrian and bicycle environment in the vicinity of the Project site, in terms of safety, accessibility, and urban design, with a particular emphasis on access to transit stations in the Study Area. Pedestrian and bicycle volumes were collected during the peak morning and evening commute periods at all study intersections during the intersection count dates.

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. Pedestrian access across El Camino Real is currently limited to Palm Drive, Benton Street, Harrison Street, and Lafayette Street. A signed and marked crosswalk is provided for the unsignalized intersection at Harrison Street and marked crosswalks with pedestrian signals are provided at the signalized intersections.

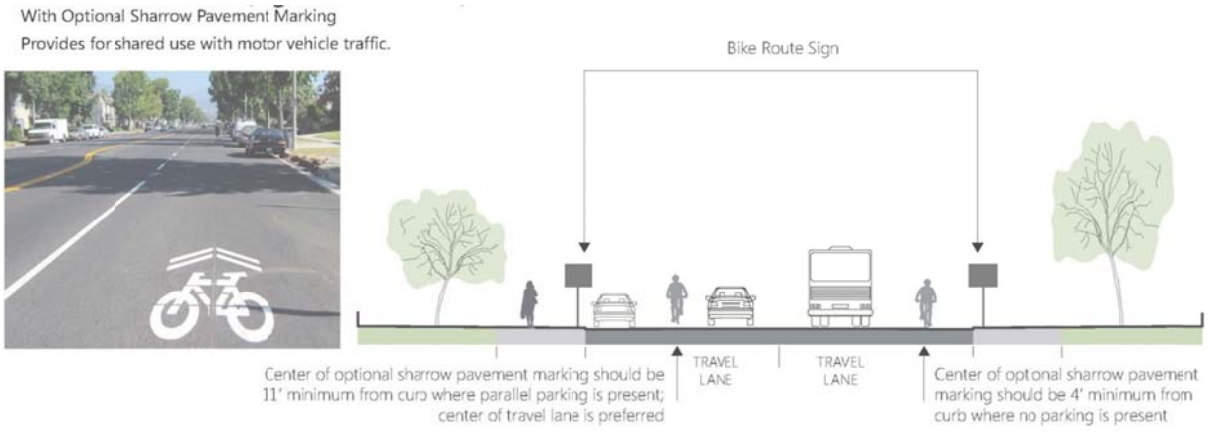
Bikeway planning and design in California typically relies on guidelines and design standards established by California Department of Transportation (Caltrans) in the *Highway Design Manual* (Chapter 1000: Bikeway Planning and Design). Caltrans provides for three distinct types of bikeway facilities, as described below and shown on the accompanying figures.

- *Class I Bikeway (Bike Path)* provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. In general, bike paths serve corridors not served by streets and highways or where sufficient right-of-way exists to allow such facilities to be constructed away from the influence of parallel streets and vehicle conflicts.

- *Class II Bikeways (Bike Lanes)* are lanes for bicyclists generally adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Class III Bikeway (Bike Route)* are designated by signs or pavement markings for shared use with pedestrians or motor vehicles, but have no separated bike right-of-way or lane striping. Bike routes serve either to: a) provide continuity to other bicycle facilities, or b) designate preferred routes through high demand corridors.



The *VTA Bicycle Technical Guidelines* (December 2007) recommends that Caltrans standards regarding bicycle facility dimension be used as a minimum and provides supplemental information and guidance on when and how to better accommodate the many types of bicyclists. **Figure 4** shows the location of the existing bicycle facilities.

No designated bicycle facilities currently access the site. Benton Street is considered an undesignated street that has an intermediate-level rating for bicycling. Homestead Road (west of its intersection with Lafayette Street) represents the only Class II bicycle lane currently provided in the study area.

VTA has adopted the Santa Clara Countywide Bicycle Plan (CBP). The CBP guides the development of major bicycling facilities by identifying Cross County Bicycle Corridors and other projects of countywide or intercity significance.

EXISTING VOLUMES AND LANE CONFIGURATIONS

The existing operations of the study intersections were evaluated for the highest one-hour volume during the weekday morning and evening peak periods. AM and PM peak-hour intersection turning movement counts were conducted on April 22, 2015. Copies of traffic counts are included in **Appendix A**. **Figure 5** presents the existing AM and PM peak-hour turning movement volumes, lane configurations, and traffic control devices at the study intersections.

FIELD OBSERVATIONS

Field observations at the Project site and surrounding study intersections were conducted on Tuesday, April 14th, 2015 to verify signal operations and observe the overall transportation characteristics. Cycle length and intersection phasing was observed at intersections along Lafayette and Benton Street and any additional intersection where signal timing needed to be verified from previous intersection analysis performed in the City of Santa Clara.

EXISTING INTERSECTION AUTO LEVEL OF SERVICE

Existing intersection lane configurations, signal timings, and peak-hour turning movement volumes were used to calculate the levels of service for the key intersections during each peak hour. The results of the LOS analysis using the TRAFFIX software program for Existing Conditions are presented in **Table 3-2. Appendix B** contains the corresponding calculation sheets. The results indicate that all study intersections operate at acceptable service levels (LOS E or better for City intersections) during the AM and PM peak hours.

TABLE 3-2: EXISTING INTERSECTION LEVEL OF SERVICE

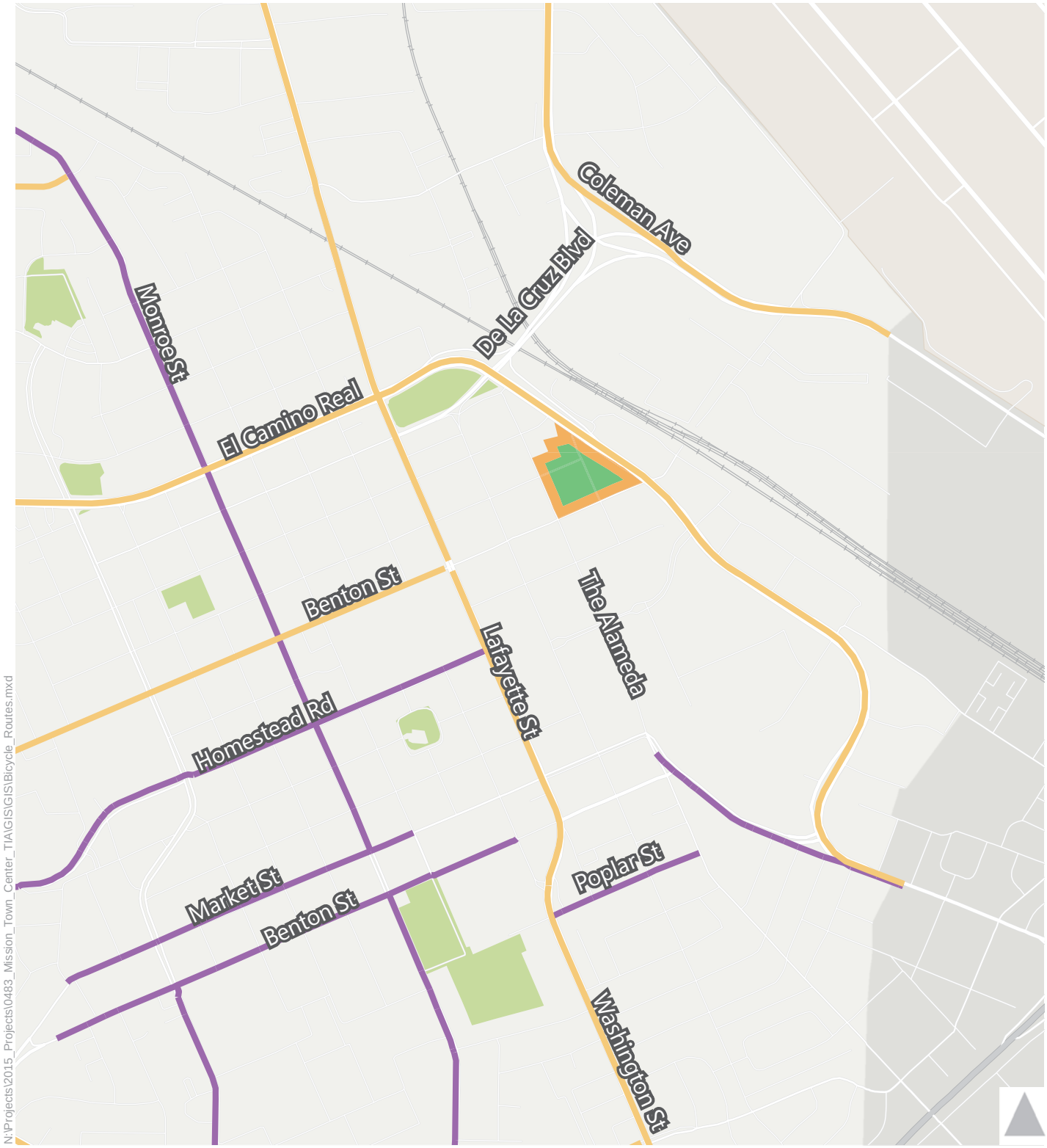
Intersection		Intersection Control	Minimum Acceptable LOS[1]	Peak Hour[2]	Delay[3]	LOS[4]
1	Lafayette St/El Camino Real	Signal	E	AM	43.4	D
				PM	41.1	D
2	Lafayette St/Lewis St	Signal	D	AM	10.5	B
				PM	33.7	C
3	Lafayette St/Benton St	Signal	D	AM	15.4	B
				PM	15.1	B
4	Alviso St/Harrison St	Side-Street Stop Controlled	E (Warrant)	AM	15.5	C
				PM	12.6	B
5	The Alameda/Harrison St	Side-Street Stop Controlled	E (Warrant)	AM	9.3	A
				PM	9.4	A
6	The Alameda/Fremont St	Side-Street Stop Controlled	E (Warrant)	AM	9.1	A
				PM	9.3	A
7	The Alameda/Benton St	Side-Street Stop Controlled	E (Warrant)	AM	10.2	B
				PM	11.2	B
8	Sherman St/Benton St	Side-Street Stop Controlled	E (Warrant)	AM	10.4	B
				PM	12.0	B
9	El Camino Real/Harrison St	Side-Street Stop Controlled	E (Warrant)	AM	10.9	B
				PM	15.5	C
10	El Camino Real/Benton St	Signal	D	AM	17.5	B
				PM	19.8	B
11	El Camino Real/Project Access	Side-Street Stop Controlled	E (Warrant)	AM	N/A	N/A
				PM	N/A	N/A

Notes: N/A indicates the intersection is a project intersection that does not currently exist.

1. Minimum Acceptable Threshold is the threshold between acceptable and unacceptable level of service. For unsignalized intersections, an intersection must be lower than the acceptable LOS threshold and meet a peak hour signal warrant.
2. AM = morning peak hour, PM = afternoon peak hour
3. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
4. LOS = Level of Service calculations conducted using the TRAFFIX level of service analysis software package, which applies the methodology described in the *2000 HCM*.

Source: Fehr & Peers, 2015.

Figure 3
Existing Transit



Class I Bicycle Path
Class II Bicycle Route
Class III Bicycle Lane
Project Site

Figure 4
Existing Bicycle Facilities

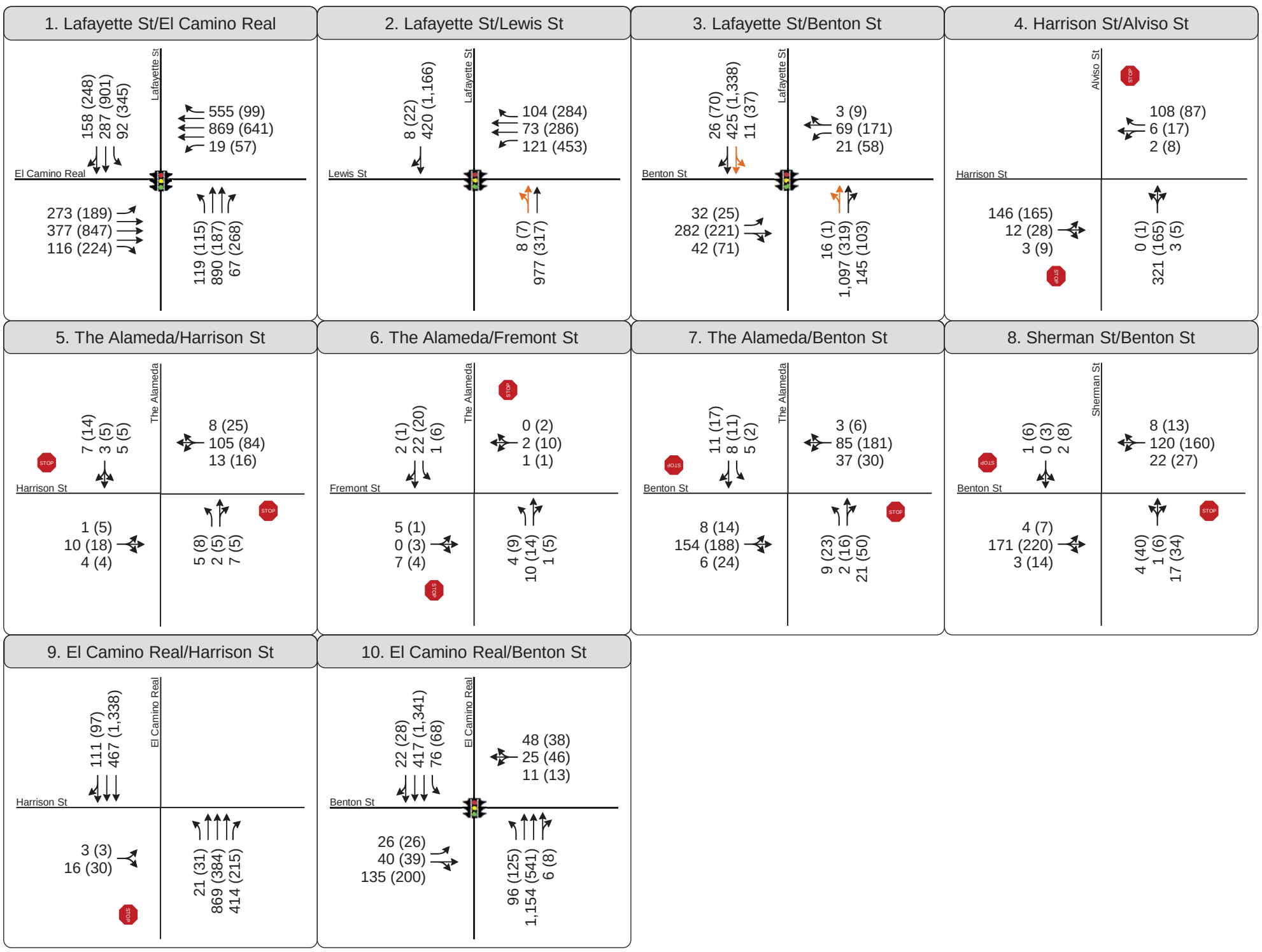


Figure 5

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

4. PROJECT TRAFFIC ESTIMATES

The Project will add vehicle traffic to the surrounding roadways from residents traveling to and from their homes and customers traveling to and from retail uses on the Project site. The process used to estimate the amount of traffic and how the traffic will access the site is described in this chapter. The amount of net new traffic produced by the proposed Project is called "trip generation," and the directions of approach and departure are called "trip distribution." These two steps are combined and the Project traffic is added to individual roadway segments and intersection turning movements in the "trip assignment" step.

TRIP GENERATION

The Project's trip generation is the net new traffic produced by the Project. This is determined by calculating the difference between (a) the number of trips generated by the existing land uses on the Project site, and (b) the number of trips that would be generated by the Project.

Because the Project site and surrounding area contains a mix of land uses, it is appropriate to determine the number of trips generated by the proposed Project and the existing office use by applying the MainStreet trip generation tool, developed by Fehr & Peers with the US Environmental Protection Agency (EPA). MainStreet incorporates research from the Federal Highway Administration (FHWA) about mixed-use developments and trips made by alternate modes and addresses concerns that typical trip generation rates, such as those published in the ITE *Trip Generation Manual,* over estimate trips for mixed use projects. Trip generation rates published by ITE are based on single-use sites and have been shown to overestimate peak traffic generation for mixed-use developments by an average of 35 percent. Unlike the ITE method, MainStreet takes into account development density, scale, design, accessibility, transit proximity, demographics, surrounding land use and mix of internal uses, all of which affect site traffic generation. MainStreet takes statistical mixed-use development research and applies a reduction to the Project trip generation rates, such as those from the ITE *Trip Generation Manual*, based on these site characteristics and the surrounding land use and infrastructure.

Vehicle trip generation for the Project was estimated using a combination of: 1) standard rates developed by the Institute of Transportation Engineers (ITE) and published in *Trip Generation Manual* (9th Edition) and 2) trip generation reduction rates for mixed-use sites produced from the calibrated Fehr & Peers' MainStreet tool based on internal and surrounding land use. A summary of the data and its sources used to determine trip reduction rates can be found in **Table 4-1.**

As this site is located adjacent to transit, mixed-uses, and Santa Clara University its trip generation pattern is likely to deviate from the data collection sites where rates from ITE were drawn. For this reason the MainStreet mixed-use development tool was utilized as part of this analysis. The mixed use trip reductions can be seen in **TABLE 4-2** and yield the final trip generation estimates for both proposed (A) and existing (B) that are subtracted from one another to yield the net new vehicle trips. It should be noted that the existing Mondo Burrito currently opens at 11:00 am and therefore no AM peak hour trips were estimated for this land use.

TABLE 4-1: SUMMARY OF DATA SOURCES FOR MISSION TOWN CENTER TIA MIXED-USE REDUCTIONS (MAINSTREET TOOL)

Input Variable	Existing	Proposed	Source
Geographic			
Project Area (acres)	5.7	5.7	Site Plan
Intersections within or on the Perimeter of Project Site	4	5	Existing (Under Construction) Area, Site Plan
Transit Available at Site	Bus, Rail	Bus, Rail	Existing (Under Construction) Area, Site Plan
Land Use – Surrounding Area			
Employment within One Mile of Project Site	9,104	9,104	VTA 2013 Travel Model
Employment within a 30 Minute Transit Trip	44,122	44,122	VTA 2013 Travel Model
Total Regional Employment	3,475,787	3,475,787	VTA 2013 Travel Model
Site Demographics			
Average Household Size near Project Site	2.69	2.69	City of Santa Clara
Average Vehicle Ownership per Household near Site	1.44	1.44	American Community Survey 2012 – Five Year for Survey for Project Tract
Land Use Inputs			
Single-Family (Dwelling Units)	6	0	Existing Area
Mini Storage (Square Feet)	88,100		Existing Area
Multi-Family (Dwelling Units)	4	385	Existing Area, Site Plan
Office (Square Feet)	5,327	0	Existing Area
Sit Down Restaurant	3,890	0	Existing Area
Auto Care Center (Square Feet)	3,890	0	Existing Area
Retail (Square Feet)	0	27,000	Site Plan

Source: Fehr & Peers, 2015.

In order to calculate the vehicle trip generation attributed to the Project, trip generation rates were first determined using standard ITE trip generation rates**.** Using only ITE trip generation rates, the Project would generate approximately 3,713 daily vehicle trips, 262 AM peak hour vehicle trips (81 inbound and 181 outbound) and 329 PM peak hour vehicle trips (197 inbound and 132 outbound).

Next, the MainStreet tool was used to determine the appropriate reductions to the standard trip generation rates for the Project due to its mixed-use nature and complementary land uses surrounding the Project site. Based on the inputs shown in **Table 4-1**, the MainStreet tool calculated a reduction of 34, 45, and 42 percent for daily, AM peak hour, and PM peak hour, respectively. Based on application of the MainStreet tool, the proposed Project is estimated to generate 2,440 daily vehicle trips, 145 AM peak hour vehicle trips (45 inbound and 100 outbound) and 191 PM peak hour vehicle trips (114 inbound and 77 outbound).

The existing land uses were then accounted for in the Project trip generation. MainStreet was used to determine the trip reduction from the existing land uses trip generation. Although the existing land uses do not exhibit the same mixed-use nature as the development, their close proximity to transit should lower their vehicle trip generation compared to the sample sites used to generate the ITE rate. The methodology was also applied to maintain consistent trip generation methodologies between existing and Project land use. The MainStreet trip reduction from the existing land use is smaller than the proposed land use because there are fewer attractions within walking, bicycling, or transit distance.

The net new trip generation results are summarized in **TABLE 4-2**. The proposed Project is estimated to generate 1,725 net new daily trips, 119 net new AM peak-hour trips (30 inbound and 89 outbound), and 126 net new PM peak hour trips (80 inbound and 46 outbound).

TABLE 4-2: MISSION TOWN CENTER TRIP GENERATION ESTIMATES

Land Use	ITE Code	Size	Units	Trip Rates[3]			Weekday	AM Peak Hour			PM Peak Hour		
				Weekday	AM Peak Hour	PM Peak Hour	Trips	In	Out	Total	In	Out	Total
PROPOSED LAND USES													
Residential - Apartments	220	385.00	du[1]	6.65	Linear Eq.	Linear Eq.	2,560	38	154	192	149	80	229
Retail	820	27.00	ksf[2]	42.70	Log Eq.	3.71	1,153	43	27	70	48	52	100
						Subtotal:	**3,713**	**81**	**181**	**262**	**197**	**132**	**329**
						Mixed Use Trip Reduction:	*34%*	*45%*	*45%*	*45%*	*42%*	*42%*	*42%*
						Proposed Land Use Vehicle Trips (A):	**2,440**	**45**	**100**	**145**	**114**	**77**	**191**
EXISTING LAND USES (TO BE REMOVED FROM SITE)													
Residential - Single Family	210	6.00	du[1]	9.52	0.75	1.00	57	1	4	5	4	2	6
Residential - Apartments	220	4.00	du[1]	6.65	0.51	0.62	27	0	2	2	1	1	2
Mini Warehousing	151	88.10	ksf[2]	2.50	0.14	0.26	220	7	5	12	12	11	23
Office	710	5.33	ksf[2]	11.03	1.56	1.49	59	7	1	8	1	7	8
Sit Down Restaurant	932	3.89	ksf[2]	127.15	10.81	9.85	495	Closed until 11 am			23	15	38
Auto Care Center	942	3.89	ksf[2]	11.88[4]	2.25	3.11	46	6	3	9	6	6	12
						Subtotal:	**877**	**21**	**15**	**36**	**47**	**42**	**89**
						Mixed Use Trip Reduction:	*18%*	*27%*	*27%*	*27%*	*27%*	*27%*	*27%*
						Existing Land Use Vehicle Trips (B):	**715**	**15**	**11**	**26**	**34**	**31**	**65**
						NET NEW VEHICLE TRIPS (A-B):	**1,725**	**30**	**89**	**119**	**80**	**46**	**126**

Notes:

1. Dwelling units
2. 1000 square feet
3. ITE Trip Generation Manual (9th Edition) provides an average rate and a best fit curve equation for trip generation estimates.
4. Sunday daily trip rate used due to lack of weekday daily trip rate.

Source: Fehr & Peers, 2015.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. The directions of approach and departure of Project trips were based on the locations of complementary land uses, existing and future travel patterns in the area, and proposed site access. The trip distribution pattern is shown in **Figure 6**.

Project trips were assigned to the roadway network based on the established trip distribution. **Figure 7** shows the AM and PM peak hour project trips assigned to each turning movement at the study intersections.

Figure 6
Project Trip Distribution

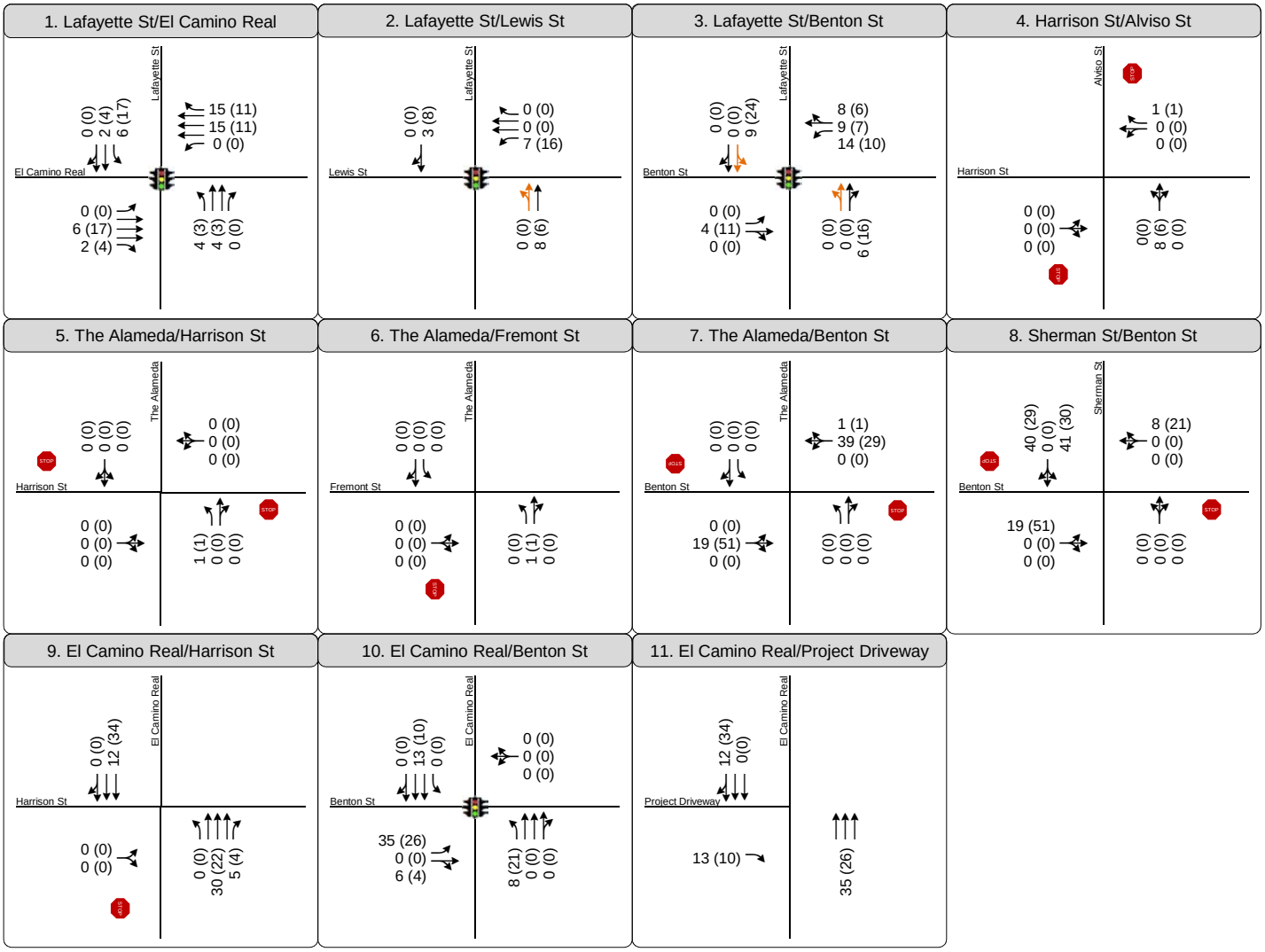


Figure 7

Peak Hour Traffic Volumes and Lane Configurations - Project Trip Assignment

5. EXISTING PLUS PROJECT CONDITIONS – SCENARIO 1B

This scenario evaluates the addition of the Project along with estimated project-generated trips, to existing conditions. Intersection levels of service were calculated with the new traffic added by the proposed Project to evaluate the operating conditions of the intersections and identify potential impacts to the roadway system. The results of the intersection level of service calculations for Existing plus Project Conditions are presented in **Table 5-1.**

Volumes used for analysis under Existing plus Project conditions can be seen on **Figure 8**. The results for Existing Conditions are included for comparison purpose, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratios. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. Project impacts are identified by comparing Existing and Existing plus Project Conditions. Significant impacts are identified based on the impact criteria stated earlier, which includes changes in the LOS from an acceptable to an unacceptable level or changes in critical delay and critical V/C ratio for intersection operating unacceptably[3]. The Project does not have any significant impacts at the study intersections under Existing plus Project Conditions.

SIGNALIZED INTERSECTIONS

The results of the LOS calculations indicate that all signalized intersection operate at acceptable service levels during the AM and PM peak hours under Existing plus Project conditions. **Appendix B** contains the corresponding calculation sheets.

UNSIGNALIZED INTERSECTIONS

Under Existing plus Project Conditions, no unsignalized intersections are projected to operate at unacceptable service levels (LOS F and meet the peak hour signal warrant) during the identified peak hours.

[3] At times, intersections may show a reduction in average delay with the addition of Project traffic, which is counter-intuitive. However, the average delay values in the table are weighted averages. Weighted average delays will be reduced when traffic is added to a movement that has a low delay under Baseline Conditions. Conversely, relatively small volume increases to movements with high delays can substantially increase the weighted average delay.

TABLE 5-1: EXISTING PLUS PROJECT VEHICLE INTERSECTION DELAY AND LOS

Intersection		Int. Control [1]	Minimum Acceptable LOS[2]	Peak Hour[3]	No Project		Plus Project		Difference	
					Delay[4]	LOS[5]	Delay[4]	LOS[5]	Δ in Crit. V/C [6]	Δ in Crit. Delay [7]
1	Lafayette St/El Camino Real	Signal	E	AM	43.4	D	43.6	D	0.011	0.6
				PM	41.1	D	41.3	D	0.004	0.2
2	Lafayette St/Lewis St	Signal	D	AM	10.5	B	10.7	B	0.006	0.3
				PM	33.7	C	35.4	D	0.014	2.8
3	Lafayette St/Benton St	Signal	D	AM	15.4	B	15.6	B	0.004	0.0
				PM	15.1	B	15.4	B	0.012	0.4
4	Alviso St/Harrison St	SSSC	E (Warrant)	AM	15.5	C	15.7	C	N/A	N/A
				PM	12.6	B	12.7	B	N/A	N/A
5	The Alameda/Harrison St	SSSC	E (Warrant)	AM	9.3	A	9.3	A	N/A	N/A
				PM	9.4	A	9.5	A	N/A	N/A
6	The Alameda/Fremont St	SSSC	E (Warrant)	AM	9.1	A	8.6	A	N/A	N/A
				PM	9.3	A	8.8	A	N/A	N/A
7	The Alameda/Benton St	SSSC	E (Warrant)	AM	10.2	B	10.5	B	N/A	N/A
				PM	11.2	B	11.8	B	N/A	N/A
8	Sherman St/Benton St	SSSC	E (Warrant)	AM	10.4	B	10.9	B	N/A	N/A
				PM	12.0	B	12.8	B	N/A	N/A
9	El Camino Real/Harrison St	SSSC	E (Warrant)	AM	10.9	B	11.0	B	N/A	N/A
				PM	15.5	C	15.9	C	N/A	N/A
10	El Camino Real/Benton St	Signal	D	AM	17.5	B	17.9	B	0.003	0.2
				PM	19.8	B	20.1	C	0.011	0.5
11	El Camino Real/Project Access	SSSC	E (Warrant)	AM	N/A	N/A	9.4	A	N/A	N/A
				PM	N/A	N/A	12.1	B	N/A	N/A

Notes: N/A indicates that these parameters is not valid for unsignalized intersections.

1. Signal = Signalized Intersection; SSSC = Side-Street Stop Controlled Intersection.
2. Minimum Acceptable Threshold is the threshold between acceptable and unacceptable level of service. For unsignalized intersections, an intersection must be lower than the acceptable LOS threshold and meet a peak hour signal warrant.
3. AM = morning peak hour, PM = afternoon peak hour.
4. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
5. LOS = Level of Service calculations conducted using the TRAFFIX level of service analysis software package, which applies the methodology described in the *2000 HCM*.
6. Change in critical volume-to-capacity ratio (V/C) between Existing and Existing plus Project Conditions.
7. Change in critical movement delay between Existing and Existing plus Project Conditions.

Bold font indicates unacceptable operations. **Bold and highlighted** indicates a significant impact.

Source: Fehr & Peers, 2015.

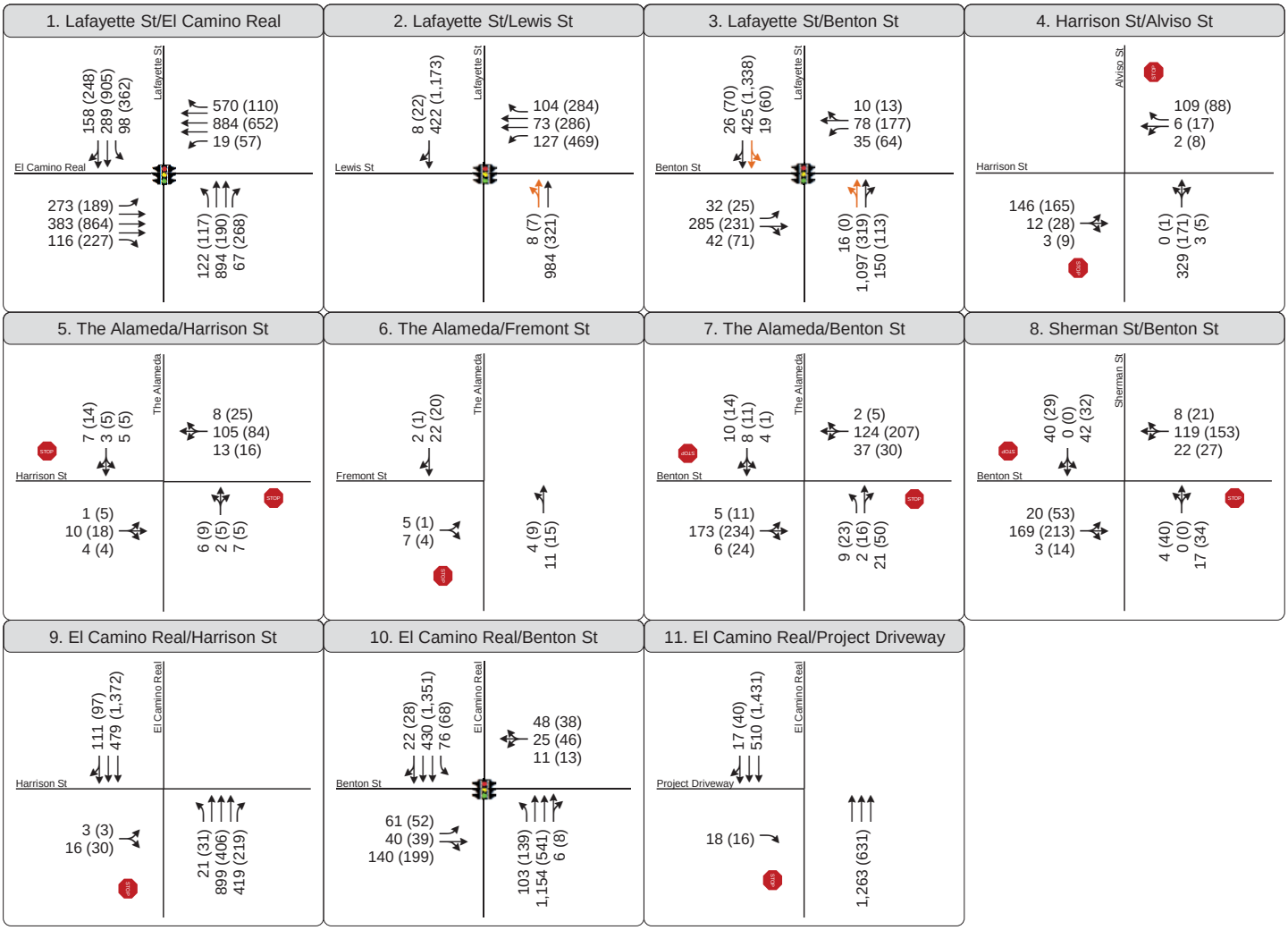


Figure 8

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project

6. BACKGROUND (2020) CONDITIONS - SCENARIO 2A/2B

Year 2020 traffic volumes are based on forecasts from the citywide traffic model, including Association of Bay Area Governments (ABAG) 2020 land use projections with under construction and approved projects, and planned and funded transportation system improvements for 2020 in the Valley Transportation Plan (VTP).

This section presents the results of the level of service calculations under Background (2020) Conditions with and without the Project. Background (2020) without Project Conditions are defined as conditions prior to completion and occupancy of the proposed development.

BACKGROUND NO PROJECT TRAFFIC VOLUMES

Traffic volumes for Background (2020) without Project Conditions are based on forecasts from the citywide traffic model, including Association of Bay Area Governments (ABAG) 2020 land use projections and traffic generated by approved development projects. Planned and funded transportation system improvements for 2020 in the Valley Transportation Plan (VTP) are included in these scenarios. Land use estimates from approved projects that would add traffic to the study intersections were included in the VTA 2020 travel model run to estimate the future travel patterns. **Appendix E** contains a list of approved and not occupied projects that were included in the model. Year 2020 traffic volumes are based on forecasts from the citywide traffic model, including Association of Bay Area Governments (ABAG) 2020 land use projections with under construction and approved projects, and planned and funded transportation system improvements for 2020 in the Valley Transportation Plan (VTP).

The volumes that represent Background (2020) Conditions are shown in **Figure 9**.

BACKGROUND NO PROJECT IMPROVEMENTS

By 2020 bus-only lanes will be designated on El Camino Real. These lanes will be converted from general purpose lanes and therefore only two eastbound/westbound through lanes are assumed at the intersection of El Camino Real and Lafayette Street. No other roadway improvements were identified for the background scenario; therefore, this represents the only change to the existing roadway network used for the background analysis.

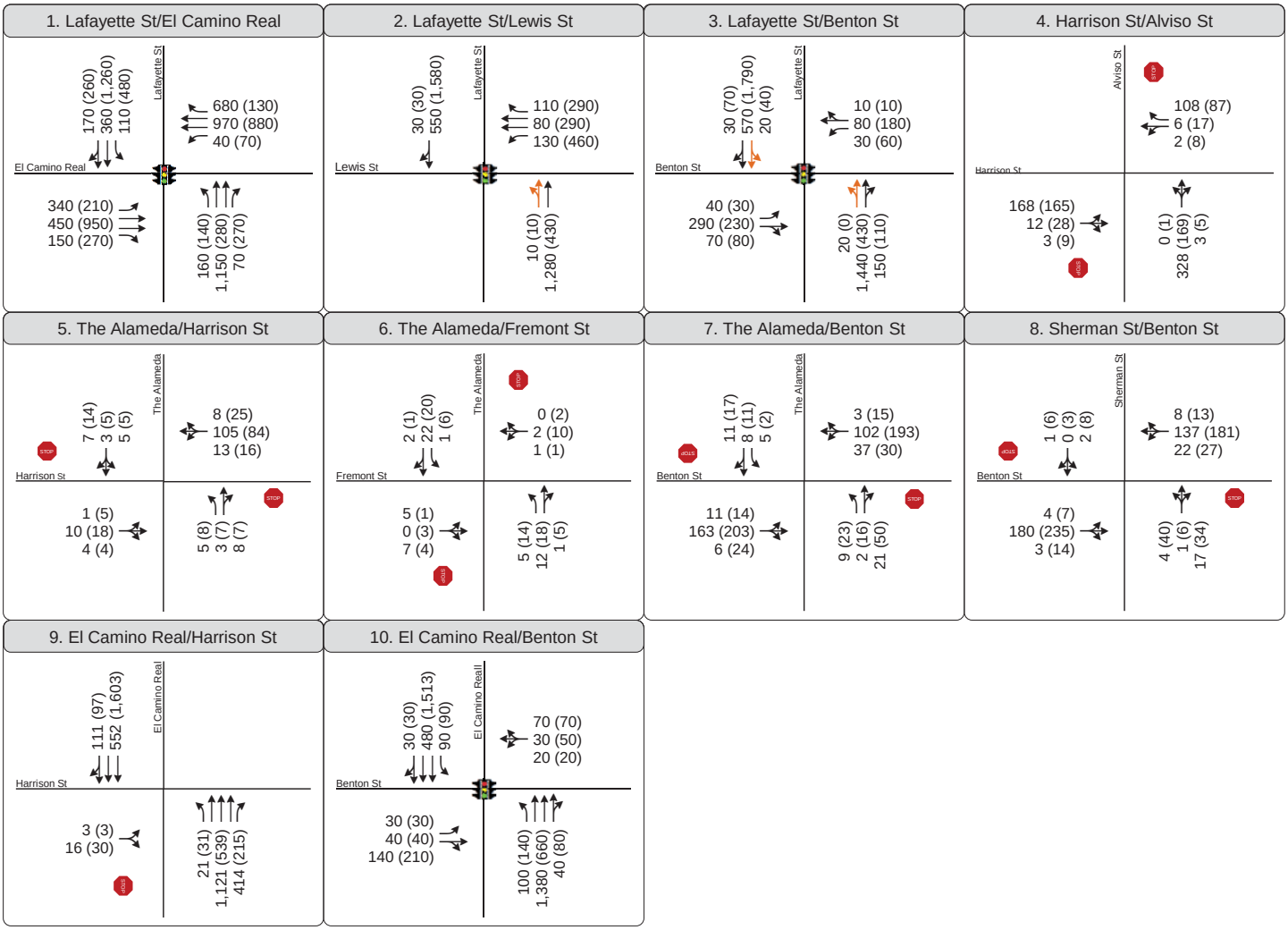


Figure 9

Peak Hour Traffic Volumes and Lane Configurations - Background Conditions

BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

Background (2020) plus Project Conditions are defined as Background (2020) without Project Conditions plus traffic generated by build-out of the Project and transportation network infrastructure proposed by the Project. Trips generated from the proposed Project were added to the Background traffic projections to develop traffic volumes for Background plus Project Conditions. The resulting volumes are shown on **Figure 10**.

BACKGROUND INTERSECTION LEVELS OF SERVICE

Table 6-1 presents the delay and level of service calculation results for the study intersection under Background No Project and Background plus Project Conditions. **Appendix B** contains the corresponding calculation sheets.

SIGNALIZED INTERSECTIONS

Under Background plus Project Conditions, the following signalized intersection is projected to operate at an unacceptable level of service (LOS E or worse for City intersections) during the identified peak hours:

Int. 2 Lafayette St/Lewis St: The addition of project traffic exacerbates unacceptable LOS F operations during the PM peak hour.

UNSIGNALIZED INTERSECTIONS

Under Background plus Project Conditions, no unsignalized intersections are projected to operate at unacceptable service levels (LOS F and meet the peak hour signal warrant) during the identified peak hours.

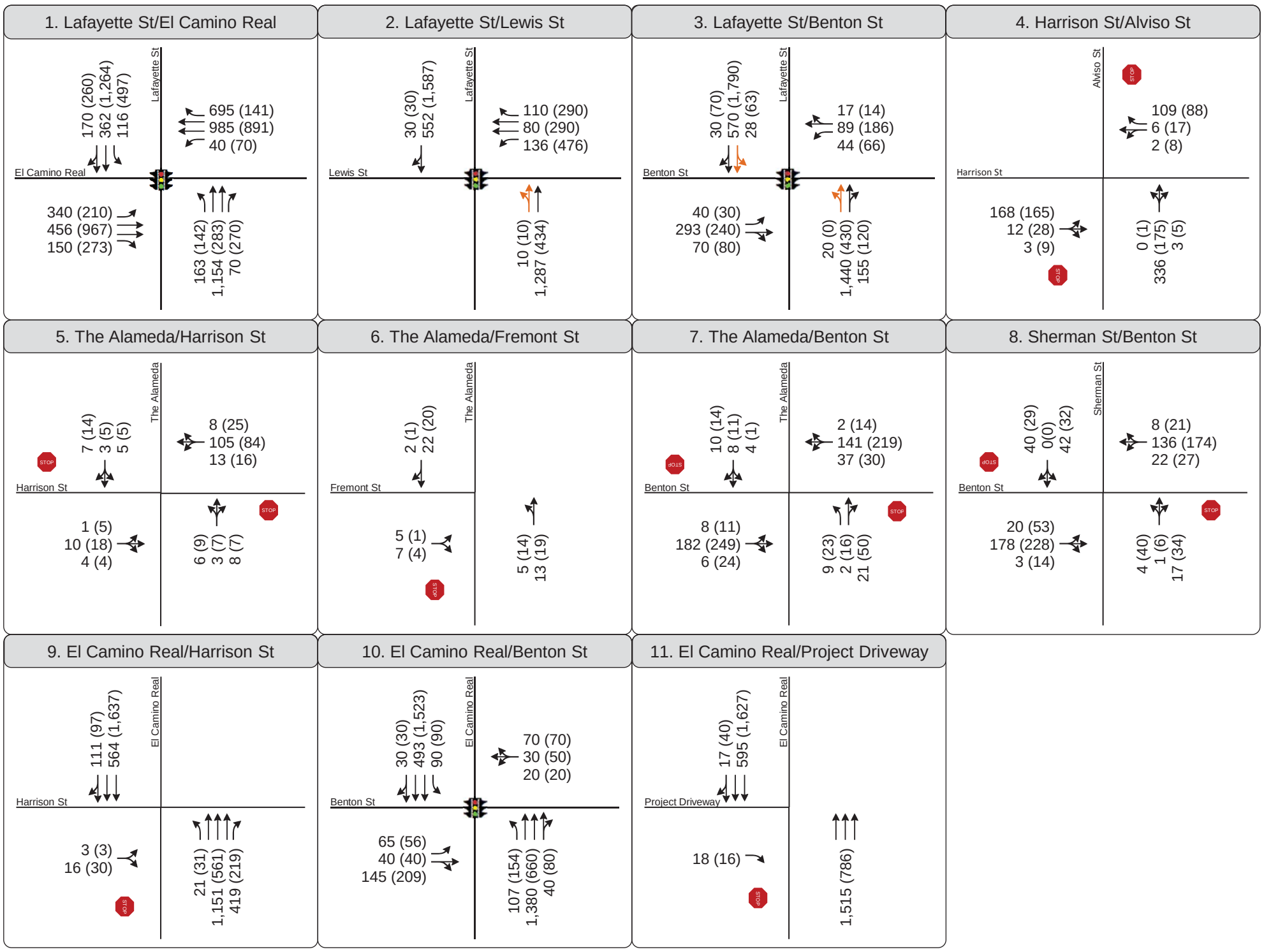


Figure 10

Peak Hour Traffic Volumes and Lane Configurations - Background Plus Project

TABLE 6-1: BACKGROUND PLUS PROJECT VEHICLE INTERSECTION DELAY AND LOS

Intersection		Int. Control[1]	Minimum Acceptable LOS[2]	Peak Hour[3]	No Project		Plus Project		Difference	
					Delay[4]	LOS[5]	Delay[4]	LOS[5]	Δ in Crit. V/C [6]	Δ in Crit. Delay [7]
1	Lafayette St/ El Camino Real	Signal	E	AM	57.0	E	58.3	E	0.010	2.5
				PM	51.7	D	52.3	D	0.005	0.8
2	Lafayette St/ Lewis St	Signal	D	AM	9.6	A	9.8	A	0.005	0.3
				PM	**83.6**	**F**	**87.5**	**F**	**0.013**	**5.9**
3	Lafayette St/ Benton St	Signal	D	AM	16.0	B	16.3	B	0.003	0.1
				PM	15.3	B	15.8	B	0.012	0.5
4	Alviso St/ Harrison St	SSSC	E (Warrant)	AM	16.5	C	16.7	C	N/A	N/A
				PM	12.7	B	12.8	B	N/A	N/A
5	The Alameda/ Harrison St	SSSC	E (Warrant)	AM	9.3	A	9.3	A	N/A	N/A
				PM	9.4	A	9.4	A	N/A	N/A
6	The Alameda/ Fremont St	SSSC	E (Warrant)	AM	9.1	A	8.6	A	N/A	N/A
				PM	9.3	A	8.9	A	N/A	N/A
7	The Alameda/ Benton St	SSSC	E (Warrant)	AM	10.4	B	10.8	B	N/A	N/A
				PM	11.5	B	12.1	B	N/A	N/A
8	Sherman St/ Benton St	SSSC	E (Warrant)	AM	10.6	B	11.2	B	N/A	N/A
				PM	12.4	B	13.6	B	N/A	N/A
9	El Camino Real/ Harrison St	SSSC	E (Warrant)	AM	11.6	B	11.7	B	N/A	N/A
				PM	19.3	C	19.9	C	N/A	N/A
10	El Camino Real/ Benton St	Signal	D	AM	17.1	B	17.4	B	0.003	0.2
				PM	19.9	B	20.2	C	0.010	0.5
11	El Camino Real/ Project Access	SSSC	E (Warrant)	AM	N/A	N/A	9.6	A	N/A	N/A
				PM	N/A	N/A	12.8	B	N/A	N/A

Notes: N/A indicates that these parameters is not valid for unsignalized intersections.

1. Signal = Signalized Intersection; SSSC = Side-Street Stop Controlled Intersection.
2. Minimum Acceptable Threshold is the threshold between acceptable and unacceptable level of service. For unsignalized intersections, an intersection must be lower than the acceptable LOS threshold and meet a peak hour signal warrant.
3. AM = morning peak hour, PM = afternoon peak hour.
4. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
5. LOS = Level of Service calculations conducted using the TRAFFIX level of service analysis software package, which applies the methodology described in the *2000 HCM*.
6. Change in critical volume-to-capacity ratio (V/C) between Background and Background plus Project Conditions.
7. Change in critical movement delay between Background and Background plus Project Conditions.

Bold font indicates unacceptable operations. **Bold and highlighted** indicates a significant impact.

Source: Fehr & Peers, 2015.

7. CUMULATIVE (2040) CONDITIONS - SCENARIO 3A/3B

Year 2040 traffic volumes based on forecasts from the citywide traffic model that includes the proposed City Place development located near SR 237 and Great America Parkway, including Association of Bay Area Governments (ABAG) 2040 land use projections with under construction, approved and pending projects, and planned and funded transportation system improvements for 2040 in the Valley Transportation Plan (VTP).

This section presents the results of the level of service calculations under Cumulative (2040) Conditions with the proposed City Place development. The City Place project consists of approximately nine million square feet of development on the City-owned golf course and recreational facility located on a closed municipal landfill and surface parking lots. The project would include office buildings, retail and entertainment facilities, residential units, hotels, new open spaces, and new roads. Scenarios 3a and 3b represent Cumulative (2040) Conditions without and with the Project, respectively.

CUMULATIVE NO PROJECT TRAFFIC VOLUMES

Cumulative (2040) without Project Conditions are defined as Year 2040 traffic volumes based on forecasts from the VTA traffic model, which contains Citywide development, including the proposed City Place development, and roadway improvements expected to occur by the Year 2040. Land use estimates from approved and pending projects that would add traffic to the study intersections were also included in the VTA 2040 travel model run to estimate the future travel patterns.

The volumes that represent Cumulative (2040) Conditions are shown on **Figure 11**.

CUMULATIVE NO PROJECT IMPROVEMENTS

Apart from the bus only lanes designated on El Camino Real converted from general purpose lanes no new roadway improvements were identified for the cumulative scenario; therefore, the same roadway network used for the Background analysis was used for the Cumulative analysis.

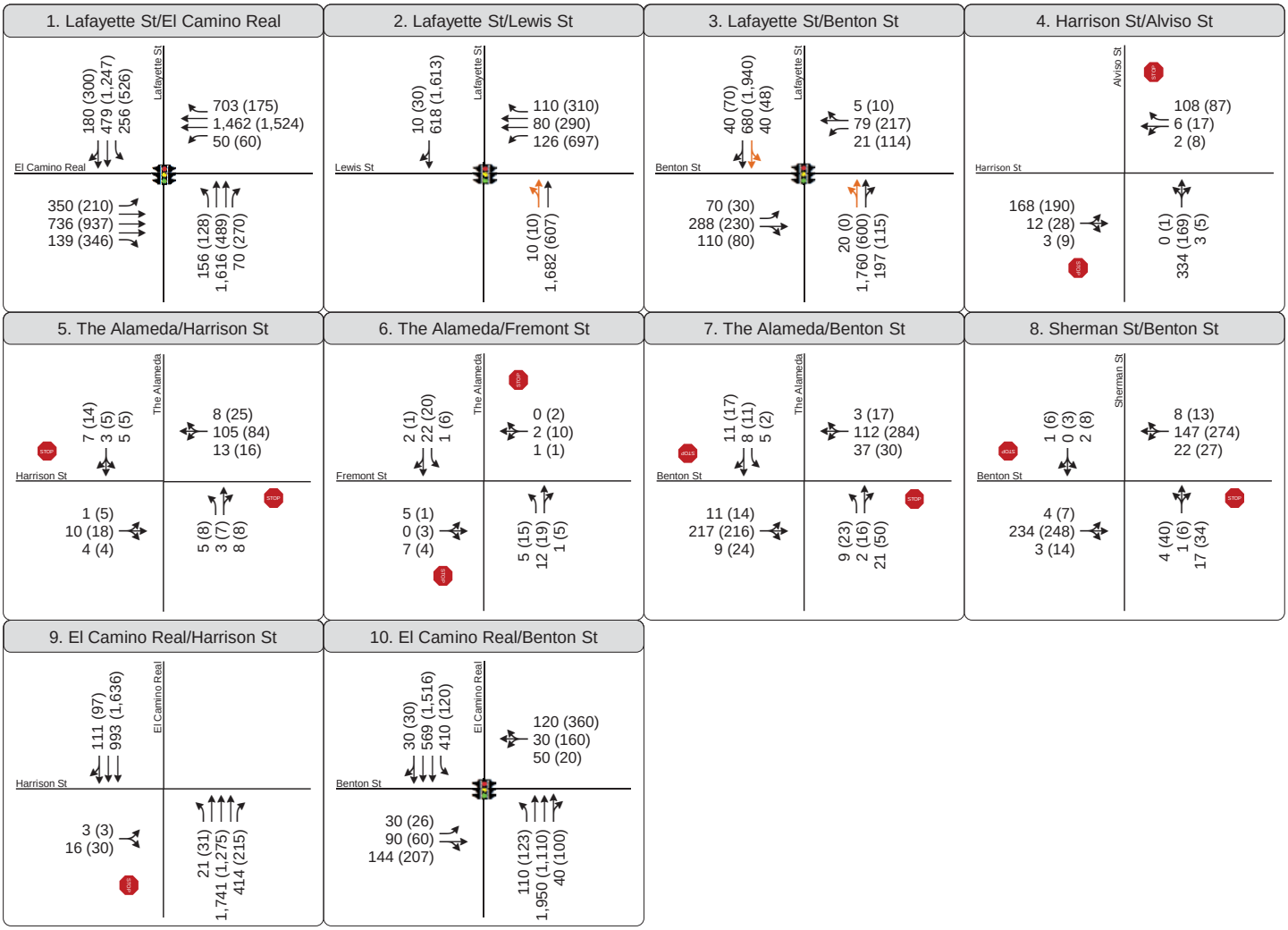


Figure 11

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Conditions

CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES

City Place Cumulative (2040) plus Project Conditions are defined as City Place Cumulative (2040) without Project Conditions plus traffic generated by the build-out of the Project and transportation network infrastructure proposed by the Project. Trips generated from the proposed Project were added to the Cumulative traffic projections to develop traffic volumes for Cumulative plus Project Conditions. The resulting volumes are shown on **Figure 12**.

CUMULATIVE INTERSECTION LEVELS OF SERVICE

Table 7-1 presents the delay and level of service calculation results for the study intersections under Cumulative No Project and Cumulative plus Project Conditions. **Appendix B** contains the corresponding calculation sheets.

SIGNALIZED INTERSECTIONS

Under Cumulative plus Project Conditions, the following signalized intersection is projected to operate at unacceptable service levels (LOS E or worse for City intersections) during the identified peak hours:

Int. 2 Lafayette St/Lewis St: The addition of project traffic exacerbates unacceptable LOS F operations during the PM peak hour.

UNSIGNALIZED INTERSECTIONS

Under Cumulative plus Project Conditions, no unsignalized intersections are projected to operate at unacceptable service levels (LOS F and meet the peak hour signal warrant) during the identified peak hours.

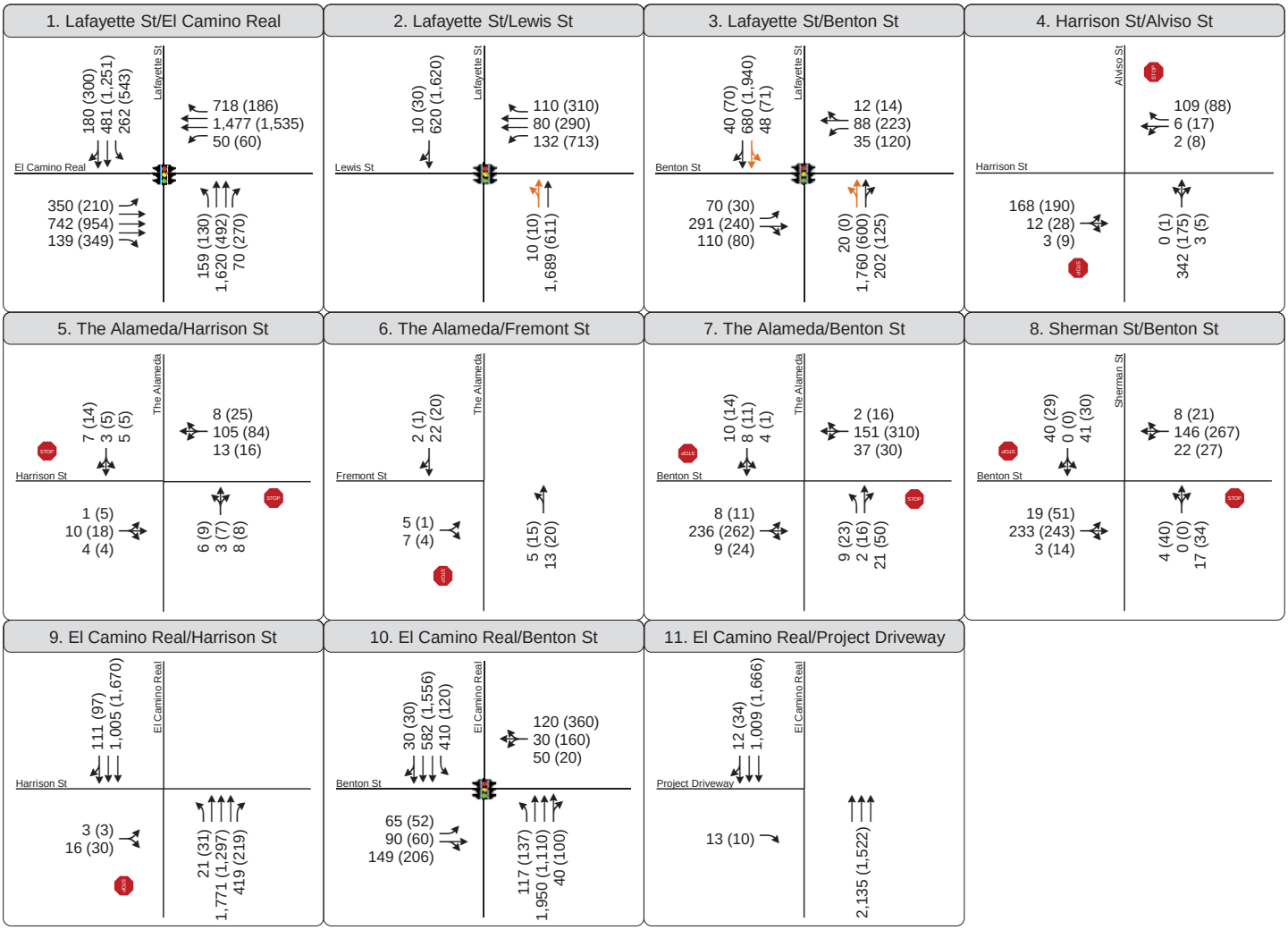


Figure 12

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project

TABLE 7-1: CUMULATIVE PLUS PROJECT VEHICLE INTERSECTION DELAY AND LOS

Intersection		Intersection Control[1]	LOS Thresholds[1]	Peak Hour[2]	No Project		Plus Project		Difference	
					Delay[3]	LOS[4]	Delay[3]	LOS[4]	Critical V/C Difference[5]	Critical Delay Difference[6]
1	Lafayette St/El Camino Real	Signal	E	AM	125.0	F	127.7	F	0.009	4.0
				PM	83.2	F	85.2	F	0.005	2.1
2	Lafayette St/Lewis St	Signal	D	AM	8.5	A	8.7	A	0.006	0.3
				PM	**128.7**	**F**	**132.9**	**F**	**0.014**	**6.1**
3	Lafayette St/Benton St	Signal	D	AM	17.9	B	18.2	B	0.003	0.1
				PM	16.0	B	16.5	B	0.013	0.6
4	Alviso St/Harrison St	SSSC	E (Warrant)	AM	16.6	C	16.9	C	N/A	N/A
				PM	13.1	B	13.3	B	N/A	N/A
5	The Alameda/Harrison St	SSSC	E (Warrant)	AM	9.3	A	9.3	A	N/A	N/A
				PM	9.4	A	9.4	A	N/A	N/A
6	The Alameda/Fremont St	SSSC	E (Warrant)	AM	9.1	A	8.6	A	N/A	N/A
				PM	9.4	A	8.5	A	N/A	N/A
7	The Alameda/Benton St	SSSC	E (Warrant)	AM	10.8	B	11.2	B	N/A	N/A
				PM	12.2	B	12.9	B	N/A	N/A
8	Sherman St/Benton St	SSSC	E (Warrant)	AM	11.1	B	11.7	B	N/A	N/A
				PM	13.5	B	14.6	B	N/A	N/A
9	El Camino Real/Harrison St	SSSC	E (Warrant)	AM	17.2	C	17.5	C	N/A	N/A
				PM	23.4	C	24.4	C	N/A	N/A
10	El Camino Real/Benton St	Signal	D	AM	26.7	C	26.9	C	0.003	0.3
				PM	25.6	C	25.8	C	0.011	0.6
11	El Camino Real/Project Access	SSSC	E (Warrant)	AM	N/A	N/A	10.6	B	N/A	N/A
				PM	N/A	N/A	13.0	B	N/A	N/A

Notes: N/A indicates that these parameters is not valid for unsignalized intersections.

1. Signal = Signalized Intersection; SSSC = Side-Street Stop Controlled Intersection.
2. Minimum Acceptable Threshold is the threshold between acceptable and unacceptable level of service. For unsignalized intersections, an intersection must be lower than the acceptable LOS threshold and meet a peak hour signal warrant.
3. AM = morning peak hour, PM = afternoon peak hour.
4. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
5. LOS = Level of Service calculations conducted using the TRAFFIX level of service analysis software package, which applies the methodology described in the *2000 HCM*.
6. Change in critical volume-to-capacity ratio (V/C) between Cumulative and Cumulative plus Project Conditions.
7. Change in critical movement delay between Cumulative and Cumulative plus Project Conditions.

Bold font indicates unacceptable operations based on City of Santa Clara LOS standards. **Bold and highlighted** indicates significant impacts.

Source: Fehr & Peers, 2015.

8. TRANSPORTATION IMPACT ASSESSMENT (CEQA)

This chapter discusses CEQA-related Project impacts to the study intersections and freeway segments organized as follows:

- The impact criteria are reiterated as stated in **Chapter 2: Analysis Methodology**.
- Impacts and mitigation measures are presented for study intersections. Impact statements are presented including a reference to the jurisdiction whose standards were used.
- Mitigation measures are presented. The acronym "LTS" is used if the mitigation measure reduces the impact to a less-than-significant level. Impacts that would remain significant and unavoidable are designated "SU".

SIGNIFICANT IMPACT CRITERIA (CEQA)

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Santa Clara and the surrounding jurisdiction of Santa Clara County. The detailed impact criteria presented below focuses on elements of the CEQA checklist pertaining to roadway system operations and its effects on users, including drivers, pedestrians, bicyclists, and transit passengers.

SIGNALIZED INTERSECTIONS

Signalized intersection operations and impacts are evaluated based on the appropriate jurisdiction's LOS standards (i.e., minimum threshold for acceptable operations) as shown in **Table 8-1**.

TABLE 8-1: INTERSECTION LOS STANDARDS

Jurisdiction	Intersection LOS Standards	Citation
City of Santa Clara	LOS D for all City controlled signalized intersections, except designated CMP and Expressway intersections (LOS E threshold).	Santa Clara General Plan, pages 5-6 and Appendix Seven page 8.7-3 (2010)
Santa Clara County	LOS E for all Santa Clara County intersections.	Santa Clara County General Plan, pages F-18 and F-19 (1994)
Congestion Management Program (CMP)	LOS E for all CMP intersections.	VTA Congestion Management Program, page 29 (2013)

Source: Fehr & Peers, 2015.

UNSIGNALIZED INTERSECTIONS

Unsignalized study locations are only located within the City of Santa Clara. The City of Santa Clara does not have an officially adopted significance criteria for unsignalized intersections. For purposes of this TIA, significant impacts are defined to occur when the addition of project traffic causes the average intersection delay for all-way stop-controlled intersections or the worst movement / approach for side-street stop-controlled intersections to degrade to LOS F and the intersection satisfies the peak hour warrant from the California Manual of Uniform Traffic Control Devices (CA MUTCD).

INTERSECTION IMPACTS AND MITIGATION MEASURES

Intersection impacts were evaluated under Existing plus Project, Background (2020) plus Project, and Cumulative (2040) plus Project Conditions. Mitigation measures are recommended in this chapter for intersections where the Project would have potentially significant impacts. The Project sponsor (Irvine Company) would be required to construct feasible physical mitigation measures for Project-specific impacts. The Project sponsor (Irvine Company) would be required to share in the cost to construct feasible physical mitigation measures for Project-specific impacts where background conditions without the Project are unacceptable.

EXISTING PLUS PROJECT CONDITIONS

Table 5-1 shows the delays, LOS results, and changes in critical volume-to-capacity ratio and delay used to identify significant intersection impacts under Existing plus Project Conditions. Based on the impact criteria listed in **Chapter 2: Analysis Methodology**, the Project does not have any significant impacts at the study intersections under the Existing plus Project scenario.

BACKGROUND (2020) PLUS PROJECT CONDITIONS

Table 6-1 shows the delays, LOS results, and changes in critical volume-to-capacity ratio and delay used to identify significant intersection impacts under Baseline plus Project Conditions. Based on the impact criteria listed in **Chapter 2: Analysis Methodology**, the Project will have potentially significant impacts at the following intersection:

Int.. 2 Lafayette Street/Lewis Street - During the PM peak hour, the addition of project traffic is projected to further degrade Background LOS F operations at the intersection. The critical delay is projected to increase by more than four seconds and the critical V/C ratios is projected to increase by more than 0.01 between the Background No Project and Background plus Project scenarios. Due to the existing transportation system and reversible lane along Lafayette Street, any change to the intersection alignment

would adversely affect operations along this corridor; therefore the Project's impact would be **significant and unavoidable**.

CUMULATIVE (2040) PLUS PROJECT CONDITIONS

Table 7-1 shows the delays, LOS results, and changes in critical volume-to-capacity ratio and delay used to identify significant intersection impacts under Cumulative plus Project Conditions. Based on the impact criteria listed in **Chapter 2: Analysis Methodology**, the Project will have potentially significant impacts at the following intersection:

Int. 2 Lafayette Street/Lewis Street - During the PM peak hour, the addition of project traffic is projected to further degrade unacceptable LOS F operations at the intersection. The critical delay is projected to increase by more than four seconds and the critical V/C ratio is projected to increase by more than 0.01 between the Cumulative No Project and Cumulative plus Project scenarios. Due to the existing transportation system and reversible lane along Lafayette Street, any change to the intersection alignment would adversely affect operations along this corridor; therefore the Project's impact would be **significant and unavoidable**.

SAFETY

The Project does not produce a significant safety impact because the Project site access and on-site circulation are designed to City of Santa Clara standards and standard engineering practices.

9. OTHER TRANSPORTATION ANALYSIS - TRANSIT, BICYCLE AND PEDESTRIAN

This chapter presents the results of the bicycle, pedestrian, and transit analysis conducted for the Mission Town Center Project. An analysis of the transit, bicycle and pedestrian modes is required in order to satisfy the requirements presented in the Santa Clara Valley Transportation Authority (VTA) Transportation Impact Analysis Guidelines (October 2014). The guidelines state that any project proposing changes to intersection/roadway geometry or signal operations shall include a quality of service (QOS) analysis for bicyclists and pedestrians at the location of the proposed changes. This analysis is not considered an environment impact per CEQA. Thus, the results are provided for informational purposes for the City of Santa Clara.

ANALYSIS METHODOLOGY

This section describes the methods for analyzing the transportation network pertaining to pedestrians, bicyclists and transit passengers.

TRANSIT NETWORK

The VTA TIA Guidelines Section 9.2 requires analysis of transit network performance including transit access and facilities and transit vehicle delay; therefore it is provided in this TIA for informational purposes. An assessment of transit access and facilities near the Project site is provided in **Chapter 3**. The Guidelines state that the transit vehicle delay analysis includes the following components:

- ***A qualitative assessment*** *of additional transit vehicle delay caused by any roadway or intersection geometry changes proposed by the project, taking into account unique considerations of transit vehicles compared to autos (e.g., pulling into and out of stops, longer gaps needed for left turns). These qualitative considerations may also inform the assessment of transit vehicle delay caused by auto congestion;*
- ***A quantitative estimate*** *of additional seconds of transit vehicle delay that will result from automobile congestion caused by the project and any changes to signal operations proposed by the project. This analysis may utilize information produced by the intersection Auto Level of Service (LOS) analysis or other sources, if available.*

There is not a well-established national methodology for quantitatively evaluating transit network performance due to roadway congestion. Increased roadway congestion can affect transit vehicle travel time/speed and service reliability. For the purposes of this study, transit network performance is analyzed during the AM and PM peak hour based on the average transit vehicle delay associated with congestion

at signalized intersections along a specified corridor with and without the Project. The change in average transit vehicle delay will be determined using the following process:

- Review TRAFFIX analysis software output for intersection delay. The average delay, by movement, at each intersection within a study corridor in the transit vehicle path of travel will be determined.
- The transit vehicle average delay due to congestion at intersections will be determined by summing the movement delay for each intersection along the study transit corridor.
- Without and With Project average transit vehicle delay associated with congestion at intersections will be compared. Note that the transit vehicle dwell time at transit stops is not included in the analysis.

The agencies do not have a documented method for determining which transit corridors should be analyzed. For purposes of this study (based on coordination with agency staff), the following routes within one mile of the Project and that have full day service with a frequency of 30 minutes or less are analyzed:

- Route 22 – El Camino Real: Benton Street to Lafayette Street
- Route 32 – Benton Street: Lafayette Street to El Camino Real
- Route 60 – El Camino Real: Benton Street to Lafayette Street
- Route 81 – Benton Street: Lafayette Street to El Camino Real
- Route 522 – El Camino Real: Benton Street to Lafayette Street

The City of Santa Clara and the VTA do not have documented standards related to transit corridor performance associated with congestion resulting from new development projects. Per the VTA TIA Guidelines, i*f increased transit vehicle delay is found, the Lead Agency* [City of Santa Clara] *should work with VTA to identify feasible transit priority measures near the affected facility and include contributions to any applicable projects that improve transit speed and reliability in the TIA*. The Project was considered to have no change to transit vehicle delay if the increase in travel time was less than five seconds or the travel time improved slightly.

BICYCLE AND PEDESTRIAN NETWORK

The VTA TIA Guidelines Section 9.3 requires analysis of bicycle and pedestrian facilities including the effects of site development and roadway improvements on bicycle/pedestrian infrastructure, circulation, quality of service (QOS), and conformance to existing plans and policies; therefore it is provided in this TIA for informational purposes. Further explanation of the bicycle and pedestrian QOS methods evaluated for use in this TIA can be seen in **Appendix F**. An assessment of the effects of site development and roadway improvements, circulation, and conformance to existing plans and policies is provided in **Chapter 3** and **Chapter 13**. The Guidelines state that the QOS analysis includes the following component:

- ***A quantitative analysis*** *is defined as the quality of service (QOS) analysis. The guidelines state that any project proposing changes to intersection/roadway geometry or signal operations shall include a QOS analysis for bicyclists and pedestrians at the location of the proposed changes. A QOS analysis is also recommended along the Project frontages under Existing Conditions. Along with QOS analysis, a descriptive analysis of the Project's effect on pedestrian and bicycle conditions is required.*

The Charlotte Bicycle and Pedestrian LOS and Level of Traffic Stress were chosen to evaluate the QOS at signalized intersections and roadway segments near the Project site. These methods were chosen because they produce meaningful results without extensive data collection or inputs.

The Level of Traffic Stress will be used to evaluate bicycle quality-of-service on roadway segments along the Project frontage. Level of Traffic Stress is a framework developed by Mekuria, Furth, and Nixon for classifying roadways and other bicycling facilities into four categories by the amount of stress that they impose of cyclists using the facility, with LTS1 being the lowest-stress bicycling environment and LTS4 being the highest-stress bicycling environment (Mekuria, Furth, and Nixon 2012).

The Level of Traffic Stress will be used to evaluate bicycle quality-of-service on roadway segments along the Project frontage. Further descriptions of the point system used within the LTS can be found in **Appendix F**.

PLANNED IMPROVEMENTS

PLANNED PUBLIC TRANSIT SERVICE

VTA's VTP 2040 and the Santa Clara Valley Transportation Authority Short Range Transit Plan include various long-term and short-term transit improvements within the vicinity of the Mission Town Center site. These include Bus Rapid Transit (BRT) projects along nearby corridors, upgrades and improvements to Caltrain, and the potential construction of California High Speed Rail along the Caltrain right-of-way. Although these transit services will not be constructed and in operation by the projected Project opening date and are therefore not included in the analysis of Background (or Cumulative) conditions, they represent future transit service for the Mission Town Center Site.

El Camino Real BRT

Along El Camino Real, current plans include BRT service with transit signal priority and headways between 10 and 15 minutes. Service between that Palo Alto Transit Center and HP Pavilion/Diridon Station in San Jose is scheduled to begin sometime in 2016. The closest BRT stop to the Mission Town Center site would

be the Santa Clara Transit Center. The BRT plans would occur in conjunction with bicycle and pedestrian improvements along the entire El Camino Real corridor as a part of the Grand Boulevard Initiative.

PROJECT SPECIFIC IMPROVEMENTS

Existing transit stops in the Project area typical exhibit only the minimum amount of amenities required by VTA standards (i.e. benches).

The Project will generate demand for transit services, and as such is prepared to provide additional amenities at transit stops adjacent to the Project site. The additional amenities may include:

- Bus pull-outs;
- Benches;
- Shelter;
- Lighting;
- Landscaping.

These amenities would increase the attractiveness of VTA transit within the surrounding community, helping reduce vehicle trips to and through the area. Amenities such as shelters, effective lighting, and benches that complement the surrounding architecture and landscape would be consistent with VTA designs and plans to improve street frontages in the Project area and mitigate the effects of the non-significant increase delays to transit operations on Benton Street and other roadways with transit services.

PLANNED BICYCLE AND PEDESTRIAN IMPROVEMENTS

The City of Santa Clara and Santa Clara County have identified several bicycle infrastructure improvements near the Project site, listed below by bicycle facility class.

City of Santa Clara Bicycle and Pedestrian Plans

The City of Santa Clara Final Bicycle Plan Update (2009) provides a bikeway planning and design tool that contains the policy vision, design guidance, and specific recommendations for active transportation facilities. The following corridors near the Project site have been identified as routes of significance through the City of Santa Clara:

- Benton Street – Monroe Street to El Camino Real
- Market Street – Monroe Street to The Alameda

The City of Santa Clara does not currently have a standalone pedestrian plan. However, the General Plan (2010) does identify potential improvements to the pedestrian environment.

Santa Clara Countywide Bicycle Plan (2010)

The Santa Clara Countywide Bicycle Plan combined local and county plans into a 20-year County bicycle corridor network and expenditure plan. The following corridors near the Project site have been identified as routes of countywide or intercity significance:

- El Camino Real – Halford Avenue to The Alameda
- Brokaw Rd – Pedestrian and Bicycle connection between Railroad Avenue and Brokaw Road
- Homestead Road – Lawrence Expressway to Monroe Street
- Benton Street – Monroe Street to Railroad Avenue

ANALYSIS SCENARIOS

This section states the results of the transit vehicle delay analysis and the pedestrian and bicycle QOS analysis.

EXISTING PLUS PROJECT CONDITIONS (SCENARIO 2B)

This section presents the results of the quality-of-service and transit delay analysis under Existing Conditions with and without the Project. Existing Conditions is defined as conditions prior to completion and occupancy of the proposed development.

Transit Vehicle Delay

The Project will add traffic to El Camino Real and Benton Street which could impede operations of VTA's bus routes listed in **Table 3-1**. The additional delay to transit service in the area due to implementation of the Project can be found in **Table 9-1**.

TABLE 9-1: EXISTING PLUS PROJECT TRANSIT ROUTE DELAY

Route		Direction	Peak Hour	Change in Route Average Travel Time plus Project (seconds)[1]
22	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
32	San Antonio Transit Center to Santa Clara Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
60	Winchester Transit Center to Great America	Northbound	AM PM	No Change
		Southbound	AM PM	No Change
81	Vallco to San Jose State University	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
522	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change

Notes:

1. The Project was considered to have no change if the increase in travel time was less than five seconds or the travel time improved slightly (due to changes in signal timing, critical movement changes, etc.).

Source: Fehr & Peers, 2015.

The results indicate that no transit route is delayed by more than 1.2 seconds during typical peak traffic hours due to the Project; therefore the Project does not substantially increase transit delay. As described in the Project description, the Project will enhance the transit stop adjacent to the Project site on Benton Street.

Bicycle and Pedestrian Analysis

The Charlotte Bicycle and Pedestrian LOS will be used to evaluate signalized intersections at any intersection where a mitigation measure is proposed. This methodology was developed in Charlotte, North Carolina and is based on a point system. Points are awarded for design and operations features depending on whether they improve or worsen conditions for bicyclists or pedestrians at signalized intersections. The LOS is determined by the sum of the points with LOS A receiving the highest points and LOS F receiving the lowest points. Further descriptions of the point system used within the Charlotte Bicycle and Pedestrian LOS can be found in **Appendix F**.

There were no signalized study intersection impacts or proposed project improvements under Existing plus Project Conditions. However, bike lanes will be provided along Benton Street as part of the Project. **Table 9-2** shows the bicycle Level of Traffic Stress (LTS) along the project frontage on Benton Street. Two roadway segments were evaluated using the Bicycle Level of Traffic Stress (LTS) analysis tool under Existing and Existing plus Project Conditions to compare existing roadway conditions to the Project proposed roadway improvements. The Background and Cumulative Conditions were not analyzed because the methodology does not account for changes in traffic volume and therefore the results remain the same as in the Existing and Existing Plus Project Conditions.

Level of Traffic Street methodology classifies roadway segments into one of four levels of traffic stress, which are termed as LTS1 through LTS4. The Levels of Traffic Stress correspond to how much stress various groups of cyclists will tolerate as follows:

- LTS1: most children can tolerate and feel safe while bicycling;
- LTS2: the mainstream adult population will tolerate and feel safe while bicycling;
- LTS3: cyclists who are considered "enthused and confident" but still prefer having their own dedicated space for riding will tolerate and feel safe while bicycling;
- LTS4: a level tolerated only be those characterized as "strong and fearless", which comprises just 0.5 percent of the population. The high-stress streets that LTS4 groups will ride are those with high speed limits, multiple travel lanes, limited or non-existent bike lanes and signage, and large distances to cross at intersections.

TABLE 9-2: EXISTING BICYCLE AND PEDESTRIAN QOS

Roadway	Bicycle LOS	
	Existing (Scenario 1a)	Existing plus Project (Scenario 1b)
Benton: The Alameda - Sherman Street	1	1
Benton: Sherman Street - El Camino Real	1	1

Notes:
Bold indicates a roadway segment only tolerated by those characterized as "strong and fearless". LTS numbers are further defined in **Appendix F**.
Source: Fehr & Peers, 2015.

BACKGROUND (2020) PLUS PROJECT CONDITIONS (SCENARIO 3B)

This section presents the results of the quality-of-service and transit delay analysis under Background (2020) Conditions with and without the Project.

Transit Vehicle Delay

The Project will add traffic to El Camino Real and Benton Street which could impede operations of VTA's bus routes listed in **Table 3-1**. The additional delay to transit service in the area due to implementation of the Project can be found in **Table 9-3**.

TABLE 9-3: BACKGROUND (2020) PLUS PROJECT TRANSIT ROUTE DELAY

Route		Direction	Peak Hour	Additional Route Average Delay plus Project[1]
22	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
32	San Antonio Transit Center to Santa Clara Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
60	Winchester Transit Center to Great America	Northbound	AM PM	No Change
		Southbound	AM PM	No Change
81	Vallco to San Jose State University	Westbound	AM PM	No Change
		Southbound	AM PM	No Change
522	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change

Notes:

1. The Project was considered to have no change if the increase in travel time was less than five seconds or the travel time improved slightly (due to changes in signal timing, critical movement changes, etc.).

Source: Fehr & Peers, 2015.

The results indicate that no transit route is delayed by more than 1.4 seconds during typical peak traffic hours due to the Project; therefore the Project does not substantially increase transit delay. As described in the Project description, the Project will enhance the transit stop adjacent to the Project site on Benton Street.

Bicycle and Pedestrian Analysis

The Project has impacts at Lafayette Street and Lewis Street under Background (2020) plus Project Conditions as shown in **Chapter 8**. However, the Project does not propose a mitigation measure at this intersection and was therefore not evaluated for bicycle and pedestrian quality-of-service.

CUMULATIVE (2040) PLUS PROJECT CONDITIONS (SCENARIO 4B)

This section presents the results of the quality-of-service and transit delay analysis under Cumulative (2040) Conditions with and without the project.

Transit Vehicle Delay

The Project will add traffic to El Camino Real and Benton Street which could impede operations of VTA's bus routes listed in **Table 3-1**. The additional delay to transit service in the area due to implementation of the Project can be found in **Table 9-4**.

TABLE 9-4: CUMULATIVE (2040) PLUS PROJECT TRANSIT ROUTE DELAY

Route		Direction	Peak Hour	Additional Route Average Delay plus Project[1]
22	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
32	San Antonio Transit Center to Santa Clara Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change
60	Winchester Transit Center to Great America	Northbound	AM PM	No Change
		Southbound	AM PM	No Change
81	Vallco to San Jose State University	Westbound	AM PM	No Change
		Southbound	AM PM	No Change
522	Palo Alto to Eastridge Transit Center	Westbound	AM PM	No Change
		Eastbound	AM PM	No Change

Notes:

1. The Project was considered to have no change if the increase in travel time was less than five seconds or the travel time improved slightly (due to changes in signal timing, critical movement changes, etc.).

Source: Fehr & Peers, 2015.

The results indicate that no transit route is delayed by more than 3.4 seconds during typical peak traffic hours due to the Project; therefore the Project does not substantially increase transit delay.

Bicycle and Pedestrian Analysis

The Project has impacts at Lafayette Street and Lewis Street under Cumulative (2040) plus Project Conditions as shown in **Chapter 8**. However, the Project does not propose a mitigation measure at this intersection and was therefore not evaluated for bicycle and pedestrian quality-of-service.

10. OTHER TRANSPORTATION ANALYSIS - VMT

The VMT estimates for the Mission Town Center project can be found in the greenhouse gas emissions section of the Environmental Impact Report (EIR).

11. OTHER TRANSPORTATION ANALYSIS – ON-SITE EVALUATION

This chapter analyzes site access and internal circulation for vehicles, pedestrians, and bicycles based on the site plan presented on **Figure 2**. The site access and on-site circulation is considered adequate with several recommended changes described below. These recommendations address on-site vehicle circulation issues to reduce driver confusion.

VEHICLE SITE ACCESS AND QUEUING

The following two intersections provide access to the Mission Town Center Development and were evaluated using the TRAFFIX 8.0 software to evaluate delay and LOS:

- Intersection 8 - Sherman Street / Benton Street
- Intersection 11 - El Camino Real / Project Access.

Intersections were evaluated based on proposed intersection lane configurations, and peak hour turning movement volumes. Delay and LOS for signalized intersections was presented for each project scenario in this report and summarized in **Table 11-1**. No intersection sees unacceptable delay with LOS B conditions or better.

TABLE 11-1: PROJECT ACCESS VEHICLE DELAY AND LOS

Intersection		Intersection Control	Peak Hour	Existing plus Project		Background 2040 plus Project		Cumulative 2040 plus Project	
				Delay	LOS	Delay	LOS	Delay	LOS
8	Sherman Street and Benton Street	Side-Street Stop Controlled	AM PM	10.9 12.8	B B	11.2 13.6	B B	11.7 14.6	B B
11	El Camino Real and Project Access	Side-Street Stop Controlled	AM PM	9.4 12.1	A B	9.6 12.8	A B	10.6 13.0	B B

Source: Fehr & Peers, 2015.

Three methods were utilized to evaluate the 95th percentile queues at left turning locations into the site in the Existing plus Project and Cumulative (2040) plus Project scenarios:

- Traffix 8
- Synchro 8
- A uniform arrival method.

The first two methods represent industry standard software applications while the third assumed uniform arrival times and incorporated worst case delay to calculate the number of vehicles expected to be queued. All three methods produced consistent results that suggest 95th percentile queues will not exceed three vehicles. The low queues for the eastbound left turn movement predicted are due to common gaps in the westbound traffic stream along Benton Street from low volume and platooning caused by the traffic signal at El Camino Real.

ON-SITE CIRCULATION

Access to the Mission Town Center site will be provided along Benton Street and El Camino Real. As mentioned in **Chapter 1** the project has several transportation improvements including closure of Sherman Street and Fremont Street between Benton Street and The Alameda, an enhanced bus pull out on Benton Street near El Camino Real, and bike lanes on Benton Street along the project frontage. The internal circulation for the proposed residential and parking areas was reviewed and the recommendations are listed below.

1. Provide adequate sight distance at garage exit ramps.
2. Stripe garage ramps with double yellow centerline to delineate the separation of entering and exiting traffic.
3. Install stop sign, legend, and bar at the garage exit ramps.
4. Provide overhead cover for all outdoor bicycle racks.

The project site will provide adequate throat lengths (length of driveway upstream of intersection) to accommodate vehicles without causing them to stop abruptly upon entering the site or slow them down at exits.

PARKING

The Santa Clara City Code requires that parking for each residential unit shall be one space for each studio, one and one-half space for each one bedroom unit, and two spaces for each two-plus bedroom unit (Santa Clara City Code Section 18.22.040) ten percent of which should be allocated for visitor parking (Santa Clara City Code 18.54.080). For retail development, one space is required for each 200 square feet of gross floor area (Santa Clara City Code 18.74.020). For outdoor retail/restaurant development, one space is required for every three chairs (Santa Clara City Code 18.74.020). On-street parking along the public street shall not be counted towards the on-site development parking requirements. Parking shall be prohibited in specific locations related to driveway vision triangles, intersection corner vision triangles, and fire hydrants. The residential parking summary is presented in **Table 11-2** and the retail parking summary is presented in **Table 11-3**.

Vehicle parking requirements set by the City are met under the current design.

Bicycle parking supply recommendations are provided in the VTA Bicycle Technical Guidelines (2012). The VTA guidelines recommend one Class I bicycle parking space is provided for every three dwelling units and one Class II bicycle parking space is provided for every 15 dwelling units. For retail sales one Class I bicycle parking space is recommended per 30 employees and one Class II space is recommended per 6,000 sq. feet. **Table 11-2** and **Table 11-3** summarize the amount of bicycle parking provided for the residential development and retail, respectively.

Bicycle parking recommendations established by VTA are met under the current design.

TABLE 11-2: RESIDENTIAL PARKING SUMMARY

Parking	Required/Recommended Parking	Provided
Vehicle	662	674
Class 1 Bicycle Parking	129[1]	129
Class 2 Bicycle Parking	26[1]	26

Note: **Bold text** indicates that the parking provided does not meet City requirements.

1. Bicycle Parking Supply is recommended by VTA

Source: Fehr & Peers, 2015.

TABLE 11-3: RETAIL PARKING SUMMARY

Parking	Required/Recommended Parking	Parking Provided
Vehicle	165	165
Class 1 Bicycle Parking	1/30 employees[1]	4
Class 2 Bicycle Parking	5[1]	6

Notes:

1. Bicycle Parking Supply is recommended by VTA

Source: Fehr & Peers, 2015

APPENDIX A: EXISTING TRAFFIC COUNTS

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					BENTON ST Westbound					EL CAMINO REAL Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	3	238	16	1	258	2	4	1	0	7	1	117	28	4	150	35	4	8	2	49	464
04:15 PM	2	252	21	2	277	13	7	5	2	27	3	100	26	1	130	26	5	9	1	41	475
04:30 PM	9	263	16	1	289	10	11	4	0	25	1	109	11	6	127	29	10	5	2	46	487
04:45 PM	7	285	16	8	316	11	13	5	1	30	2	121	38	3	164	40	6	4	3	53	563
Total	21	1038	69	12	1140	36	35	15	3	89	7	447	103	14	571	130	25	26	8	189	1989
05:00 PM	6	315	9	1	331	4	7	4	1	16	4	144	30	5	183	52	10	8	1	71	601
05:15 PM	5	365	15	1	386	10	8	1	0	19	1	136	34	4	175	62	6	5	2	75	655
05:30 PM	12	341	24	4	381	6	7	3	1	17	2	139	37	0	178	49	6	6	7	68	644
05:45 PM	5	320	20	2	347	18	24	5	1	48	1	122	24	11	158	37	17	7	0	61	614
Total	28	1341	68	8	1445	38	46	13	3	100	8	541	125	20	694	200	39	26	10	275	2514
Grand Total	49	2379	137	20	2585	74	81	28	6	189	15	988	228	34	1265	330	64	52	18	464	4503
Apprch %	1.9	92	5.3	0.8		39.2	42.9	14.8	3.2		1.2	78.1	18	2.7		71.1	13.8	11.2	3.9		
Total %	1.1	52.8	3	0.4	57.4	1.6	1.8	0.6	0.1	4.2	0.3	21.9	5.1	0.8	28.1	7.3	1.4	1.2	0.4	10.3	

	EL CAMINO REAL Southbound				BENTON ST Westbound				EL CAMINO REAL Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	315	9	330	4	7	4	15	**4**	**144**	30	**178**	52	10	**8**	70	593
05:15 PM	5	**365**	15	**385**	10	8	1	19	1	136	34	171	**62**	6	5	**73**	**648**
05:30 PM	**12**	341	**24**	377	6	7	3	16	2	139	**37**	178	49	6	6	61	632
05:45 PM	5	320	20	345	**18**	**24**	**5**	**47**	1	122	24	147	37	**17**	7	61	600
Total Volume	28	1341	68	1437	38	46	13	97	8	541	125	674	200	39	26	265	2473
% App. Total	1.9	93.3	4.7		39.2	47.4	13.4		1.2	80.3	18.5		75.5	14.7	9.8		
PHF	.583	.918	.708	.933	.528	.479	.650	.516	.500	.939	.845	.947	.806	.574	.813	.908	.954

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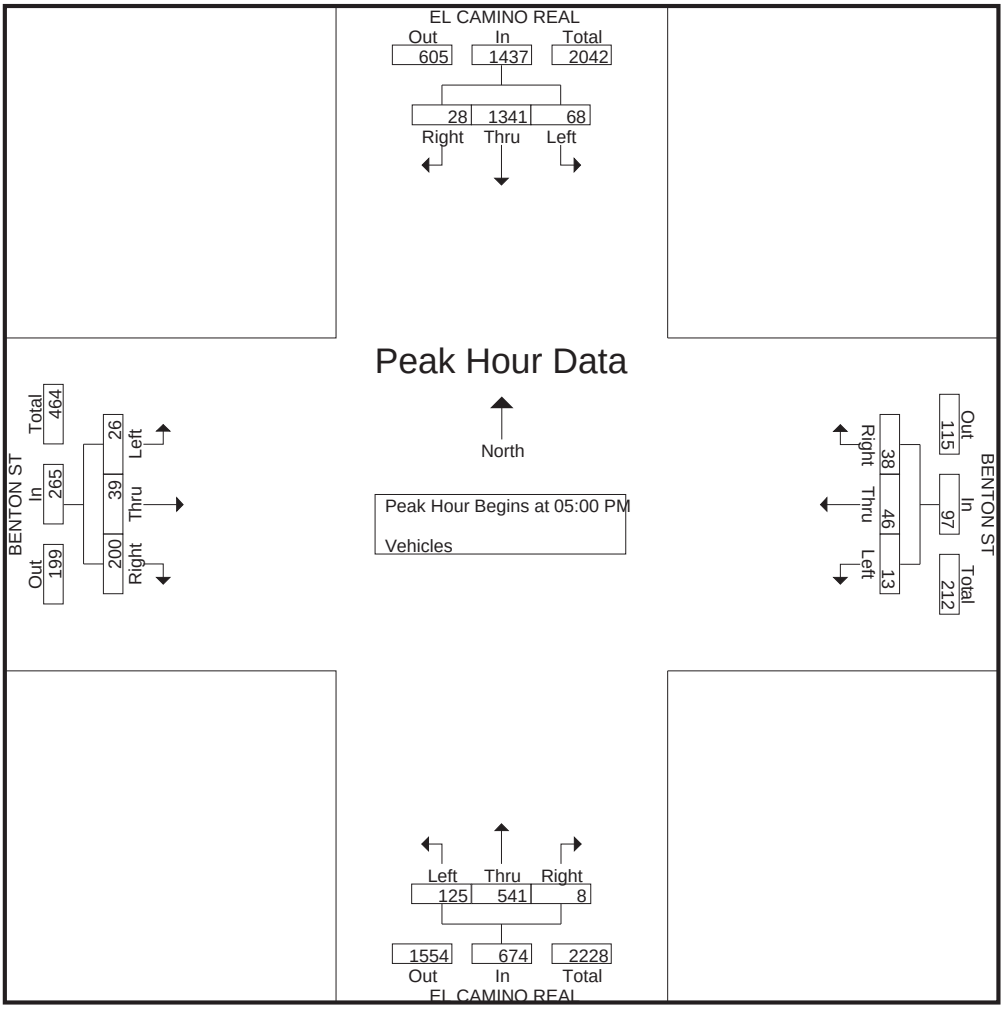

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					BENTON ST Westbound					EL CAMINO REAL Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	6	58	11	4	79	9	8	3	0	20	2	201	23	2	228	6	10	3	1	20	347
07:15 AM	2	61	9	3	75	9	6	1	1	17	6	254	5	6	271	15	9	4	0	28	391
07:30 AM	4	82	9	0	95	14	2	0	4	20	3	277	26	2	308	23	6	4	2	35	458
07:45 AM	3	90	17	1	111	12	6	2	2	22	2	296	37	8	343	24	22	3	1	50	526
Total	15	291	46	8	360	44	22	6	7	79	13	1028	91	18	1150	68	47	14	4	133	1722
08:00 AM	9	110	10	0	129	9	6	2	1	18	1	296	18	2	317	29	11	9	1	50	514
08:15 AM	5	112	29	1	147	13	7	2	0	22	0	293	27	3	323	27	13	6	1	47	539
08:30 AM	5	86	20	6	117	14	5	6	0	25	3	271	23	9	306	29	13	4	2	48	496
08:45 AM	3	109	17	2	131	12	7	1	0	20	2	294	28	1	325	50	3	7	0	60	536
Total	22	417	76	9	524	48	25	11	1	85	6	1154	96	15	1271	135	40	26	4	205	2085
Grand Total	37	708	122	17	884	92	47	17	8	164	19	2182	187	33	2421	203	87	40	8	338	3807
Apprch %	4.2	80.1	13.8	1.9		56.1	28.7	10.4	4.9		0.8	90.1	7.7	1.4		60.1	25.7	11.8	2.4		
Total %	1	18.6	3.2	0.4	23.2	2.4	1.2	0.4	0.2	4.3	0.5	57.3	4.9	0.9	63.6	5.3	2.3	1.1	0.2	8.9	

	EL CAMINO REAL Southbound				BENTON ST Westbound				EL CAMINO REAL Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**9**	110	10	129	9	6	2	17	1	**296**	18	315	29	11	**9**	49	510
08:15 AM	5	**112**	**29**	**146**	13	**7**	2	22	0	293	27	320	27	**13**	6	46	**534**
08:30 AM	5	86	20	111	**14**	5	**6**	**25**	**3**	271	23	297	29	13	4	46	479
08:45 AM	3	109	17	129	12	7	1	20	2	294	**28**	**324**	**50**	3	7	**60**	533
Total Volume	22	417	76	515	48	25	11	84	6	1154	96	1256	135	40	26	201	2056
% App. Total	4.3	81	14.8		57.1	29.8	13.1		0.5	91.9	7.6		67.2	19.9	12.9		
PHF	.611	.931	.655	.882	.857	.893	.458	.840	.500	.975	.857	.969	.675	.769	.722	.838	.963

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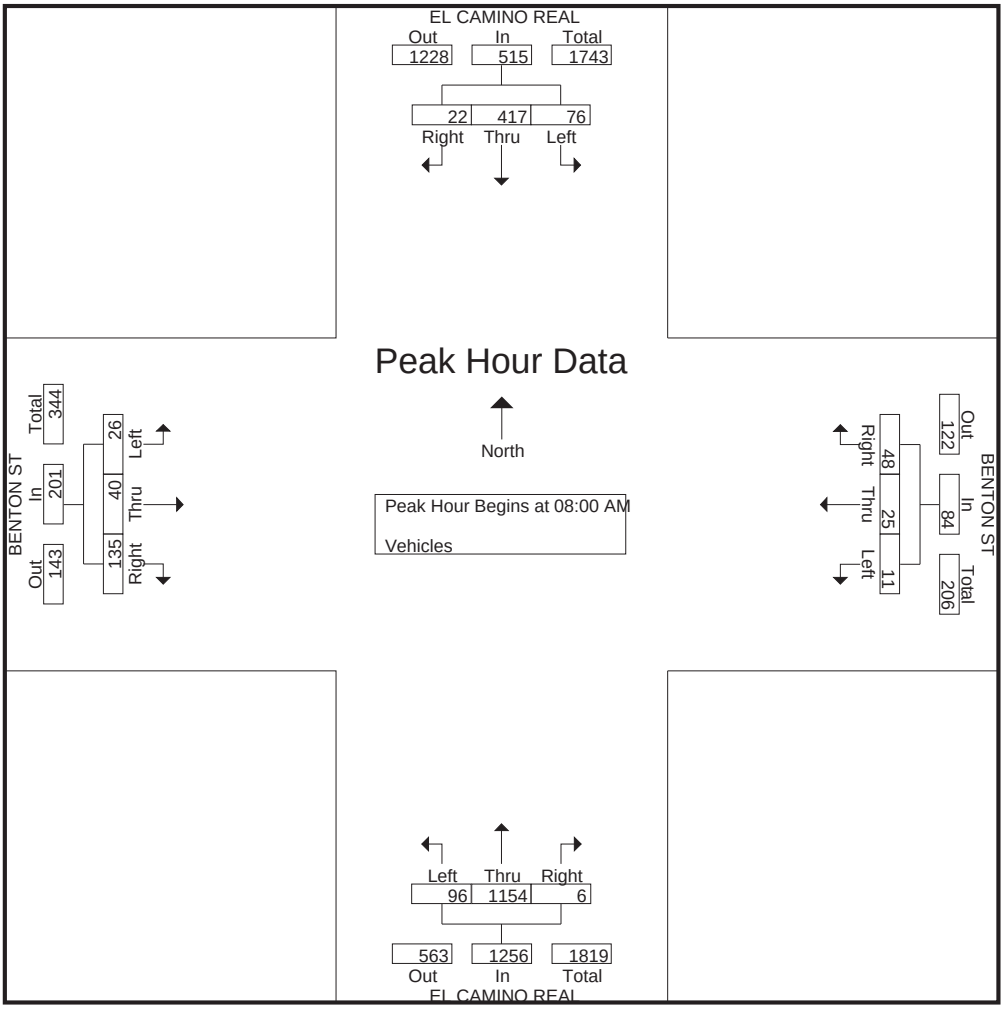

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DE LA CRUZ BLVD RAMP Westbound					EL CAMINO REAL Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	24	248	0	0	272	0	0	0	0	0	44	77	12	0	133	8	0	0	2	10	415
04:15 PM	23	276	0	0	299	0	0	0	0	0	48	66	8	0	122	7	0	2	0	9	430
04:30 PM	24	276	0	0	300	0	0	0	0	0	37	95	5	0	137	4	0	1	2	7	444
04:45 PM	19	318	0	0	337	0	0	0	1	1	40	93	9	0	142	3	0	0	1	4	484
Total	90	1118	0	0	1208	0	0	0	1	1	169	331	34	0	534	22	0	3	5	30	1773
05:00 PM	31	309	0	0	340	0	0	0	3	3	61	93	9	0	163	2	0	2	2	6	512
05:15 PM	23	342	0	0	365	0	0	0	2	2	47	98	5	0	150	7	0	1	1	9	526
05:30 PM	24	360	0	0	384	0	0	0	6	6	58	108	6	3	175	9	0	0	1	10	575
05:45 PM	19	327	0	0	346	0	0	0	1	1	49	85	11	1	146	12	0	0	1	13	506
Total	97	1338	0	0	1435	0	0	0	12	12	215	384	31	4	634	30	0	3	5	38	2119
Grand Total	187	2456	0	0	2643	0	0	0	13	13	384	715	65	4	1168	52	0	6	10	68	3892
Apprch %	7.1	92.9	0	0		0	0	0	100		32.9	61.2	5.6	0.3		76.5	0	8.8	14.7		
Total %	4.8	63.1	0	0	67.9	0	0	0	0.3	0.3	9.9	18.4	1.7	0.1	30	1.3	0	0.2	0.3	1.7	

	EL CAMINO REAL Southbound				DE LA CRUZ BLVD RAMP Westbound				EL CAMINO REAL Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**31**	309	0	340	0	0	0	0	**61**	93	9	163	2	0	**2**	4	507
05:15 PM	23	342	0	365	0	0	0	0	47	98	5	150	7	0	1	8	523
05:30 PM	24	**360**	0	**384**	0	0	0	0	58	**108**	6	**172**	9	0	0	9	**565**
05:45 PM	19	327	0	346	0	0	0	0	49	85	**11**	145	**12**	0	0	**12**	503
Total Volume	97	1338	0	1435	0	0	0	0	215	384	31	630	30	0	3	33	2098
% App. Total	6.8	93.2	0		0	0	0		34.1	61	4.9		90.9	0	9.1		
PHF	.782	.929	.000	.934	.000	.000	.000	.000	.881	.889	.705	.916	.625	.000	.375	.688	.928

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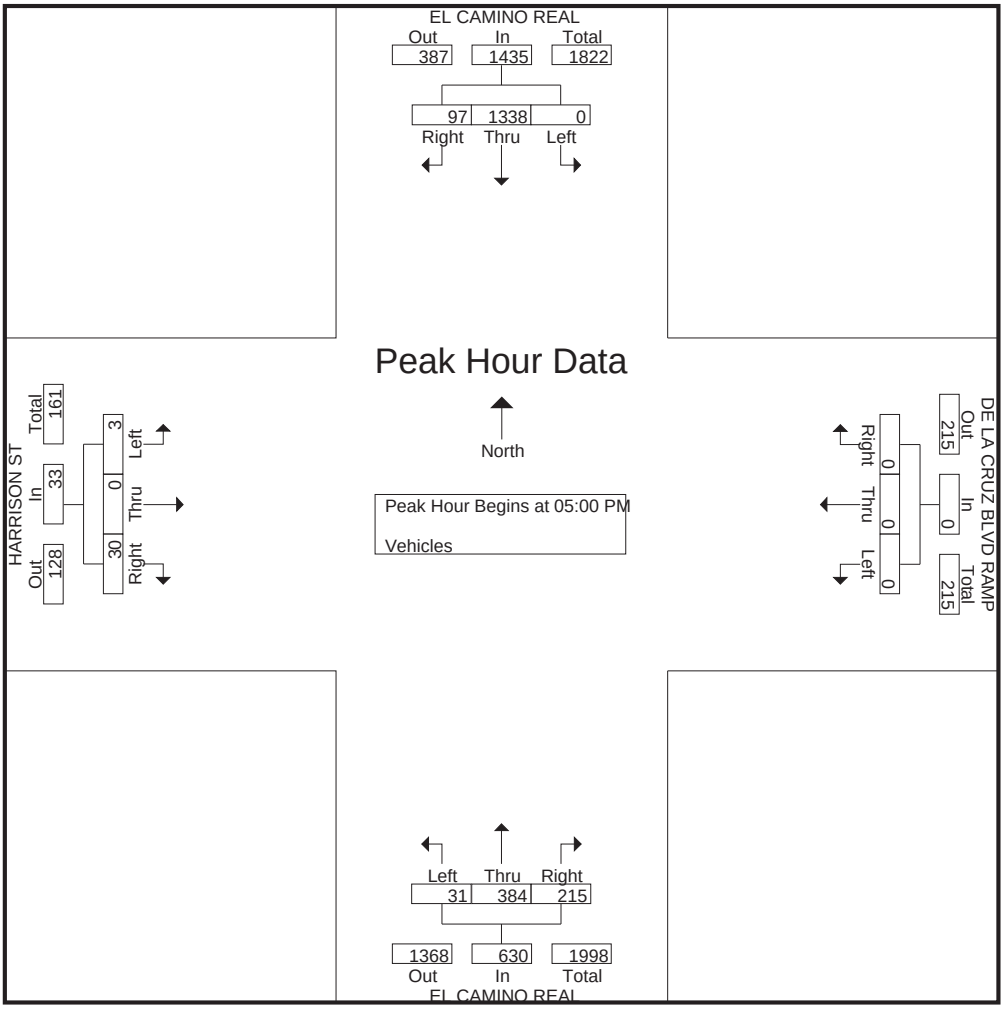

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DE LA CRUZ BLVD RAMP Westbound					EL CAMINO REAL Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	74	0	0	78	0	0	0	1	1	55	157	7	0	219	4	0	0	1	5	303
07:15 AM	11	59	0	0	70	0	0	0	2	2	69	179	3	0	251	4	0	0	1	5	328
07:30 AM	20	92	0	0	112	0	0	0	2	2	101	202	4	0	307	3	0	1	1	5	426
07:45 AM	28	105	0	0	133	0	0	0	3	3	90	214	6	3	313	2	0	0	2	4	453
Total	63	330	0	0	393	0	0	0	8	8	315	752	20	3	1090	13	0	1	5	19	1510
08:00 AM	25	123	0	0	148	0	0	0	3	3	87	244	1	2	334	2	0	1	1	4	489
08:15 AM	29	130	0	0	159	0	0	0	0	0	114	195	5	0	314	7	0	1	1	9	482
08:30 AM	29	100	0	0	129	0	0	0	0	0	101	227	4	2	334	4	0	1	0	5	468
08:45 AM	28	114	0	0	142	0	0	0	0	0	112	203	11	0	326	3	0	0	0	3	471
Total	111	467	0	0	578	0	0	0	3	3	414	869	21	4	1308	16	0	3	2	21	1910
Grand Total	174	797	0	0	971	0	0	0	11	11	729	1621	41	7	2398	29	0	4	7	40	3420
Apprch %	17.9	82.1	0	0		0	0	0	100		30.4	67.6	1.7	0.3		72.5	0	10	17.5		
Total %	5.1	23.3	0	0	28.4	0	0	0	0.3	0.3	21.3	47.4	1.2	0.2	70.1	0.8	0	0.1	0.2	1.2	

	EL CAMINO REAL Southbound				DE LA CRUZ BLVD RAMP Westbound				EL CAMINO REAL Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	25	123	0	148	0	0	0	0	87	**244**	1	**332**	2	0	**1**	3	**483**
08:15 AM	**29**	**130**	0	**159**	0	0	0	0	**114**	195	5	314	**7**	0	1	**8**	481
08:30 AM	29	100	0	129	0	0	0	0	101	227	4	332	4	0	1	5	466
08:45 AM	28	114	0	142	0	0	0	0	112	203	**11**	326	3	0	0	3	471
Total Volume	111	467	0	578	0	0	0	0	414	869	21	1304	16	0	3	19	1901
% App. Total	19.2	80.8	0		0	0	0		31.7	66.6	1.6		84.2	0	15.8		
PHF	.957	.898	.000	.909	.000	.000	.000	.000	.908	.890	.477	.982	.571	.000	.750	.594	.984

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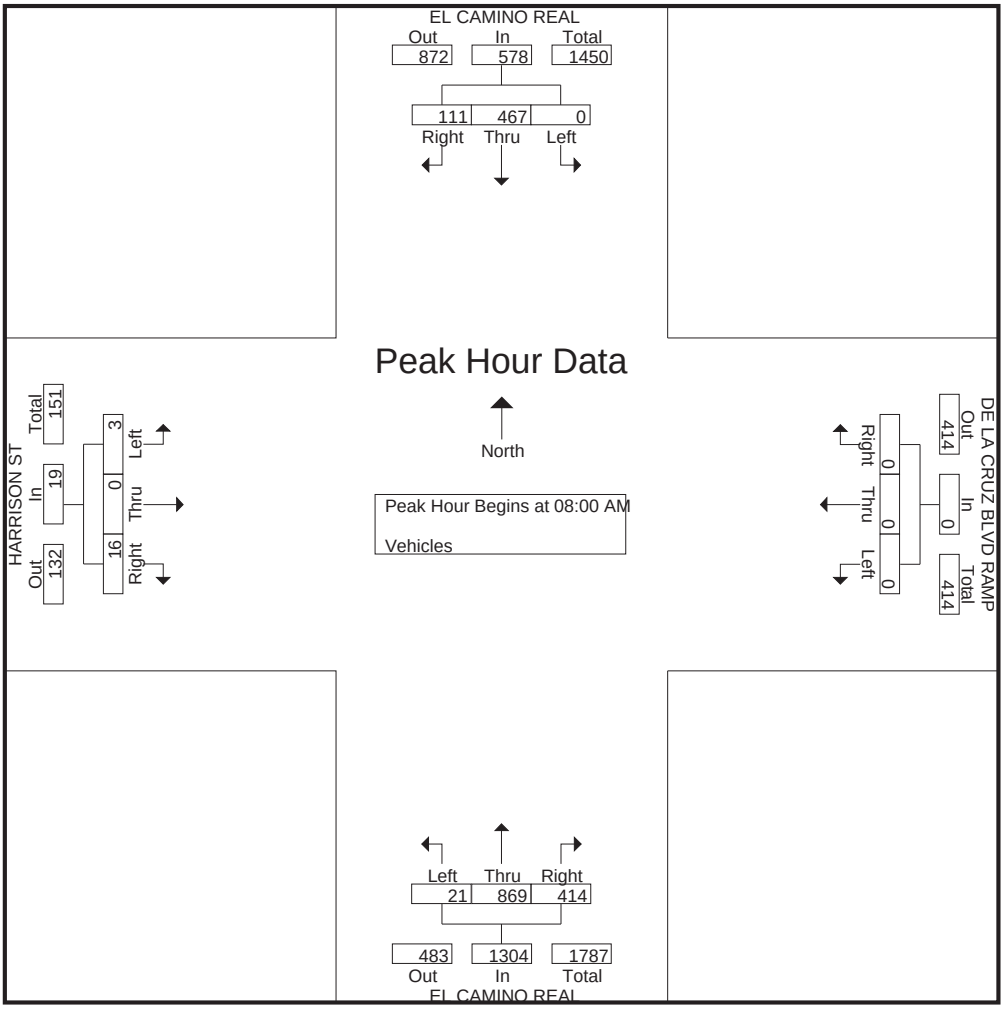

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Groups Printed- Vehicles

	SHERMAN ST Southbound					BENTON ST Westbound					SHERMAN ST Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	0	1	1	3	1	32	3	2	38	6	2	6	2	16	2	40	0	1	43	100
04:15 PM	2	0	1	0	3	2	34	1	1	38	7	0	2	8	17	1	33	0	3	37	95
04:30 PM	0	0	0	1	1	0	23	4	1	28	4	0	4	2	10	1	40	0	1	42	81
04:45 PM	1	0	4	1	6	1	47	7	0	55	10	0	5	4	19	1	39	2	1	43	123
Total	4	0	6	3	13	4	136	15	4	159	27	2	17	16	62	5	152	2	6	165	399
05:00 PM	2	0	3	1	6	3	37	4	1	45	8	0	9	7	24	1	53	1	4	59	134
05:15 PM	0	1	1	1	3	3	36	8	2	49	15	1	7	4	27	3	58	0	4	65	144
05:30 PM	1	1	0	2	4	4	39	13	1	57	5	4	16	3	28	4	59	3	7	73	162
05:45 PM	3	1	4	0	8	3	48	2	4	57	6	1	8	5	20	6	50	3	4	63	148
Total	6	3	8	4	21	13	160	27	8	208	34	6	40	19	99	14	220	7	19	260	588
Grand Total	10	3	14	7	34	17	296	42	12	367	61	8	57	35	161	19	372	9	25	425	987
Apprch %	29.4	8.8	41.2	20.6		4.6	80.7	11.4	3.3		37.9	5	35.4	21.7		4.5	87.5	2.1	5.9		
Total %	1	0.3	1.4	0.7	3.4	1.7	30	4.3	1.2	37.2	6.2	0.8	5.8	3.5	16.3	1.9	37.7	0.9	2.5	43.1	

	SHERMAN ST Southbound				BENTON ST Westbound				SHERMAN ST Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	0	3	5	3	37	4	44	8	0	9	17	1	53	1	55	121
05:15 PM	0	**1**	1	2	3	36	8	47	**15**	1	7	23	3	58	0	61	133
05:30 PM	1	1	0	2	**4**	39	**13**	**56**	5	**4**	**16**	**25**	4	**59**	**3**	**66**	**149**
05:45 PM	**3**	1	**4**	**8**	3	**48**	2	53	6	1	8	15	**6**	50	3	59	135
Total Volume	6	3	8	17	13	160	27	200	34	6	40	80	14	220	7	241	538
% App. Total	35.3	17.6	47.1		6.5	80	13.5		42.5	7.5	50		5.8	91.3	2.9		
PHF	.500	.750	.500	.531	.813	.833	.519	.893	.567	.375	.625	.800	.583	.932	.583	.913	.903

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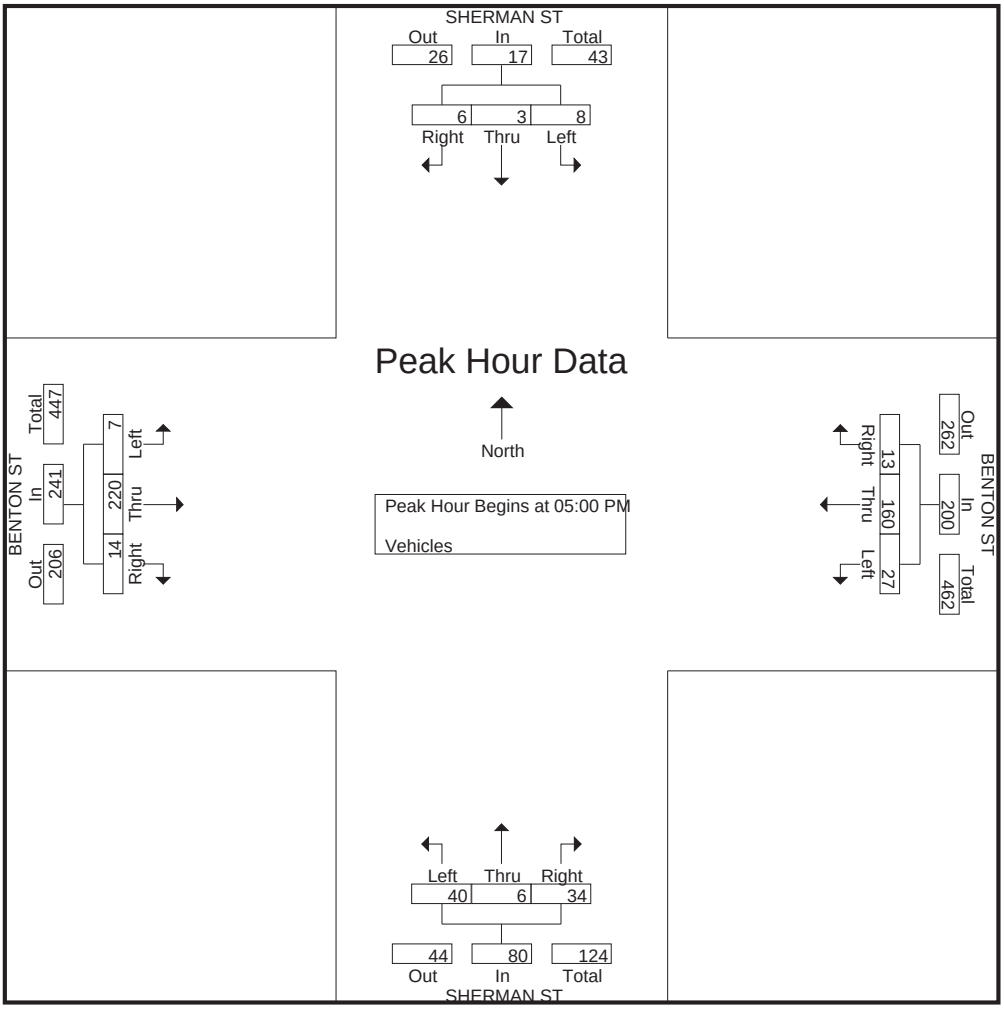

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Groups Printed- Vehicles

	SHERMAN ST Southbound					BENTON ST Westbound					SHERMAN ST Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	25	8	0	36	2	0	0	3	5	0	15	1	0	16	57
07:15 AM	1	0	1	2	4	0	14	0	1	15	2	0	0	2	4	0	27	0	0	27	50
07:30 AM	1	0	0	0	1	0	28	4	0	32	2	0	0	4	6	0	29	0	1	30	69
07:45 AM	0	0	0	4	4	0	39	6	1	46	2	0	0	7	9	1	45	1	3	50	109
Total	2	0	1	6	9	3	106	18	2	129	8	0	0	16	24	1	116	2	4	123	285
08:00 AM	0	0	0	0	0	1	28	6	0	35	6	0	3	3	12	0	42	0	0	42	89
08:15 AM	0	0	0	0	0	4	31	2	2	39	5	1	1	1	8	1	41	2	0	44	91
08:30 AM	1	0	2	6	9	3	22	8	2	35	4	0	0	3	7	1	43	1	1	46	97
08:45 AM	0	0	0	2	2	0	34	1	1	36	4	0	2	4	10	0	51	0	1	52	100
Total	1	0	2	8	11	8	115	17	5	145	19	1	6	11	37	2	177	3	2	184	377
Grand Total	3	0	3	14	20	11	221	35	7	274	27	1	6	27	61	3	293	5	6	307	662
Apprch %	15	0	15	70		4	80.7	12.8	2.6		44.3	1.6	9.8	44.3		1	95.4	1.6	2		
Total %	0.5	0	0.5	2.1	3	1.7	33.4	5.3	1.1	41.4	4.1	0.2	0.9	4.1	9.2	0.5	44.3	0.8	0.9	46.4	

	SHERMAN ST Southbound				BENTON ST Westbound				SHERMAN ST Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	**39**	6	**45**	2	0	0	2	**1**	**45**	1	**47**	**94**
08:00 AM	0	0	0	0	1	28	6	35	**6**	0	**3**	**9**	0	42	0	42	86
08:15 AM	0	0	0	0	**4**	31	2	37	5	**1**	1	7	1	41	**2**	44	88
08:30 AM	**1**	0	**2**	**3**	3	22	**8**	33	4	0	0	4	1	43	1	45	85
Total Volume	1	0	2	3	8	120	22	150	17	1	4	22	3	171	4	178	353
% App. Total	33.3	0	66.7		5.3	80	14.7		77.3	4.5	18.2		1.7	96.1	2.2		
PHF	.250	.000	.250	.250	.500	.769	.688	.833	.708	.250	.333	.611	.750	.950	.500	.947	.939

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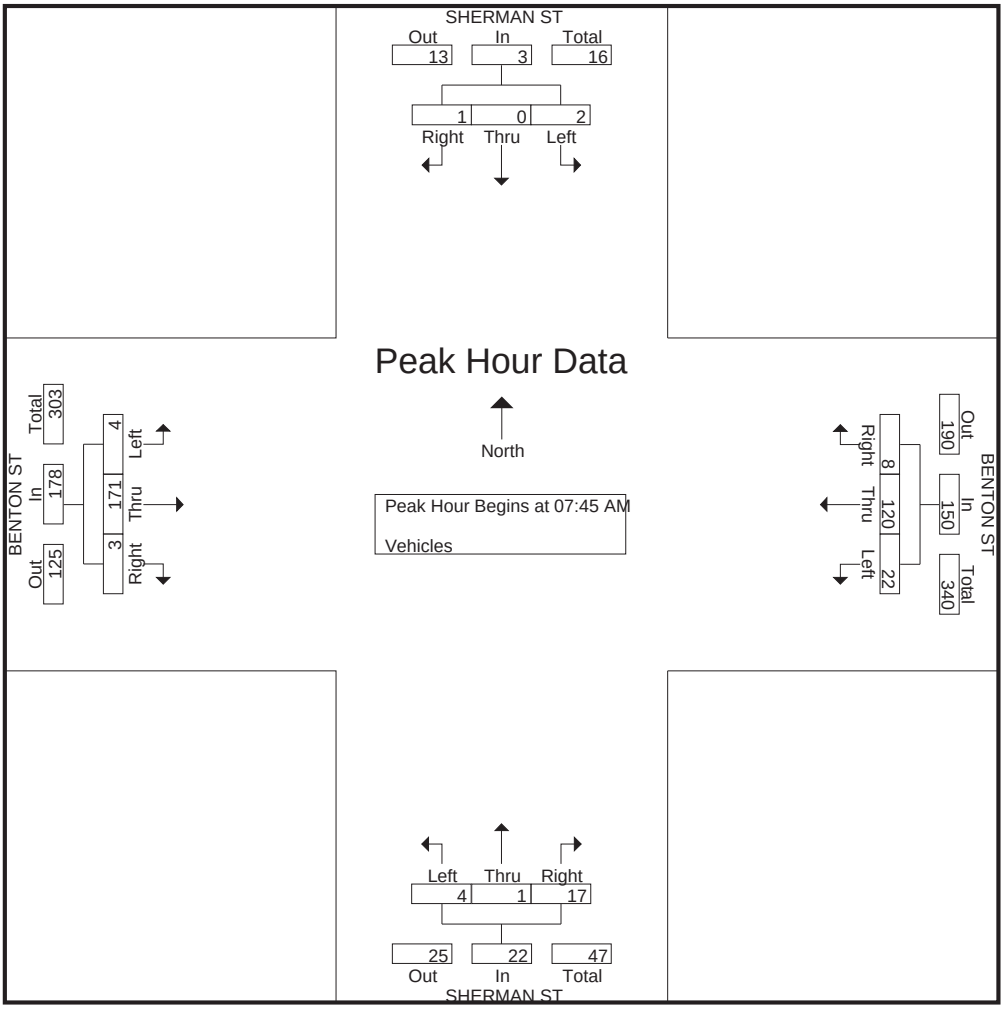

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Groups Printed- Vehicles

	THE ALAMEDA Southbound					BENTON ST Westbound					THE ALAMEDA Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	5	3	3	2	13	1	29	7	3	40	9	2	1	5	17	3	27	5	10	45	115
04:15 PM	5	1	2	0	8	2	37	3	6	48	3	1	2	6	12	2	28	1	6	37	105
04:30 PM	6	0	0	0	6	0	29	3	3	35	8	0	2	3	13	0	33	3	3	39	93
04:45 PM	4	2	0	0	6	4	40	7	4	55	4	0	3	3	10	2	39	3	6	50	121
Total	20	6	5	2	33	7	135	20	16	178	24	3	8	17	52	7	127	12	25	171	434
05:00 PM	8	3	0	4	15	1	45	7	1	54	8	9	6	6	29	4	47	4	5	60	158
05:15 PM	3	2	0	2	7	0	42	2	2	46	17	1	8	3	29	7	47	7	8	69	151
05:30 PM	3	5	1	7	16	3	40	15	8	66	14	5	4	3	26	10	40	2	6	58	166
05:45 PM	3	1	1	0	5	2	54	6	5	67	11	1	5	4	21	3	54	1	6	64	157
Total	17	11	2	13	43	6	181	30	16	233	50	16	23	16	105	24	188	14	25	251	632
Grand Total	37	17	7	15	76	13	316	50	32	411	74	19	31	33	157	31	315	26	50	422	1066
Apprch %	48.7	22.4	9.2	19.7		3.2	76.9	12.2	7.8		47.1	12.1	19.7	21		7.3	74.6	6.2	11.8		
Total %	3.5	1.6	0.7	1.4	7.1	1.2	29.6	4.7	3	38.6	6.9	1.8	2.9	3.1	14.7	2.9	29.5	2.4	4.7	39.6	

	THE ALAMEDA Southbound				BENTON ST Westbound				THE ALAMEDA Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**8**	3	0	**11**	1	45	7	53	8	**9**	6	23	4	47	4	55	**142**
05:15 PM	3	2	0	5	0	42	2	44	**17**	1	**8**	**26**	7	47	**7**	**61**	136
05:30 PM	3	**5**	**1**	9	**3**	40	**15**	58	14	5	4	23	**10**	40	2	52	142
05:45 PM	3	1	1	5	2	**54**	6	**62**	11	1	5	17	3	**54**	1	58	142
Total Volume	17	11	2	30	6	181	30	217	50	16	23	89	24	188	14	226	562
% App. Total	56.7	36.7	6.7		2.8	83.4	13.8		56.2	18	25.8		10.6	83.2	6.2		
PHF	.531	.550	.500	.682	.500	.838	.500	.875	.735	.444	.719	.856	.600	.870	.500	.926	.989

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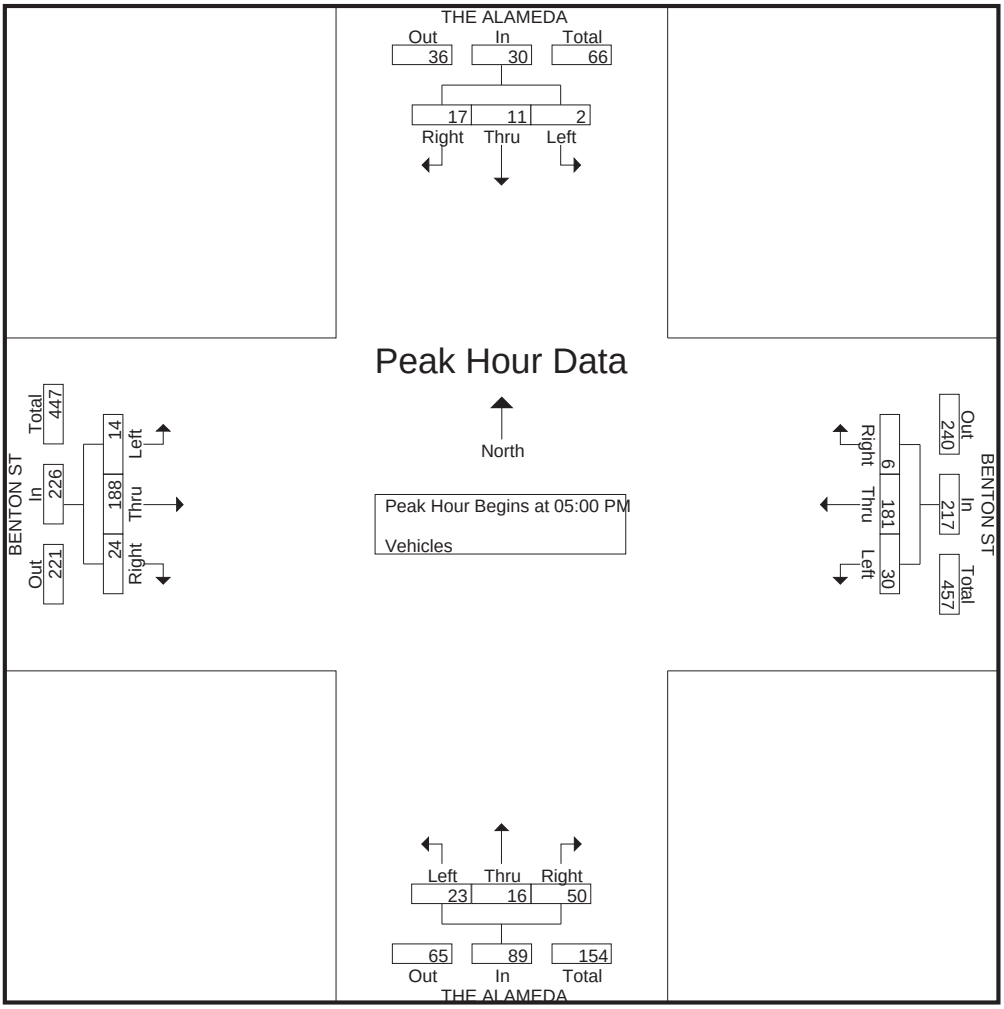

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Groups Printed- Vehicles

	THE ALAMEDA Southbound					BENTON ST Westbound					THE ALAMEDA Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	0	1	0	5	0	13	12	0	25	1	0	2	3	6	0	16	1	3	20	56
07:15 AM	1	4	1	1	7	1	8	6	2	17	6	0	2	0	8	2	19	2	0	23	55
07:30 AM	1	5	2	0	8	1	23	4	1	29	5	0	3	1	9	2	21	0	1	24	70
07:45 AM	4	6	2	5	17	2	26	11	2	41	4	0	4	6	14	2	44	1	6	53	125
Total	10	15	6	6	37	4	70	33	5	112	16	0	11	10	37	6	100	4	10	120	306
08:00 AM	2	1	2	0	5	0	20	11	2	33	10	0	0	5	15	2	30	1	2	35	88
08:15 AM	4	1	0	0	5	1	23	6	3	33	5	1	2	2	10	2	38	3	1	44	92
08:30 AM	1	0	1	2	4	0	16	9	0	25	2	1	3	3	9	0	42	3	3	48	86
08:45 AM	3	2	1	3	9	1	28	6	2	37	6	1	1	6	14	2	44	3	6	55	115
Total	10	4	4	5	23	2	87	32	7	128	23	3	6	16	48	6	154	10	12	182	381
Grand Total	20	19	10	11	60	6	157	65	12	240	39	3	17	26	85	12	254	14	22	302	687
Apprch %	33.3	31.7	16.7	18.3		2.5	65.4	27.1	5		45.9	3.5	20	30.6		4	84.1	4.6	7.3		
Total %	2.9	2.8	1.5	1.6	8.7	0.9	22.9	9.5	1.7	34.9	5.7	0.4	2.5	3.8	12.4	1.7	37	2	3.2	44	

	THE ALAMEDA Southbound				BENTON ST Westbound				THE ALAMEDA Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**4**	**6**	**2**	**12**	**2**	**26**	**11**	**39**	4	0	**4**	8	**2**	**44**	1	**47**	**106**
08:00 AM	2	1	2	5	0	20	11	31	**10**	0	0	**10**	2	30	1	33	79
08:15 AM	4	1	0	5	1	23	6	30	5	**1**	2	8	2	38	**3**	43	86
08:30 AM	1	0	1	2	0	16	9	25	2	1	3	6	0	42	3	45	78
Total Volume	11	8	5	24	3	85	37	125	21	2	9	32	6	154	8	168	349
% App. Total	45.8	33.3	20.8		2.4	68	29.6		65.6	6.2	28.1		3.6	91.7	4.8		
PHF	.688	.333	.625	.500	.375	.817	.841	.801	.525	.500	.563	.800	.750	.875	.667	.894	.823

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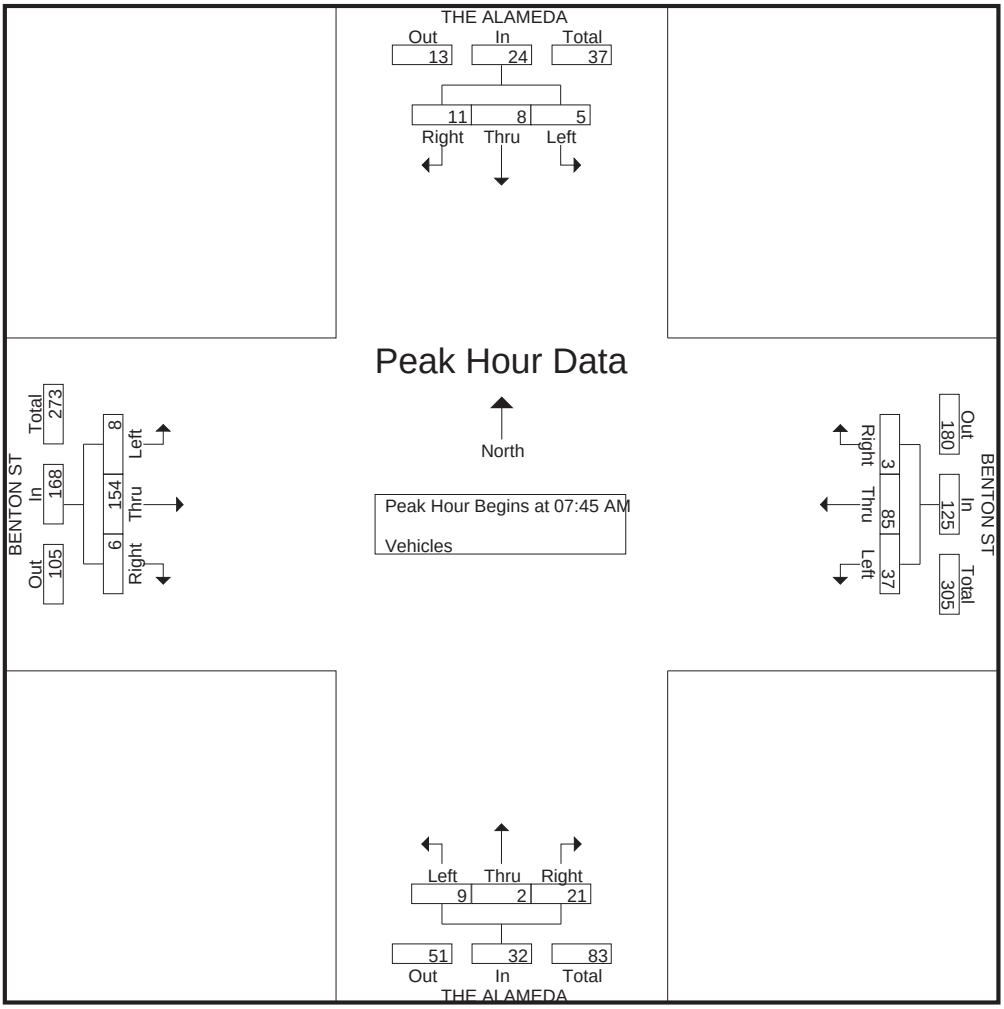

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Groups Printed- Vehicles

	THE ALAMEDA Southbound					FREMONT ST Westbound					THE ALAMEDA Northbound					FREMONT ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	6	1	0	7	1	1	2	1	5	1	5	2	0	8	2	0	1	2	5	25
04:15 PM	0	4	1	0	5	0	0	1	1	2	1	2	1	0	4	2	2	0	4	8	19
04:30 PM	0	4	1	0	5	0	3	0	1	4	0	0	0	1	1	0	0	0	0	0	10
04:45 PM	0	3	2	0	5	0	3	0	1	4	1	1	3	0	5	2	2	0	0	4	18
Total	0	17	5	0	22	1	7	3	4	15	3	8	6	1	18	6	4	1	6	17	72
05:00 PM	0	8	4	7	19	2	2	0	3	7	0	6	3	1	10	1	1	0	5	7	43
05:15 PM	1	4	0	0	5	0	2	0	5	7	2	3	1	0	6	0	0	1	1	2	20
05:30 PM	0	5	0	0	5	0	3	1	5	9	2	4	2	1	9	1	0	0	2	3	26
05:45 PM	0	3	0	1	4	1	1	1	1	4	1	0	0	1	2	1	1	1	2	5	15
Total	1	20	4	8	33	3	8	2	14	27	5	13	6	3	27	3	2	2	10	17	104
Grand Total	1	37	9	8	55	4	15	5	18	42	8	21	12	4	45	9	6	3	16	34	176
Apprch %	1.8	67.3	16.4	14.5		9.5	35.7	11.9	42.9		17.8	46.7	26.7	8.9		26.5	17.6	8.8	47.1		
Total %	0.6	21	5.1	4.5	31.2	2.3	8.5	2.8	10.2	23.9	4.5	11.9	6.8	2.3	25.6	5.1	3.4	1.7	9.1	19.3	

	THE ALAMEDA Southbound				FREMONT ST Westbound				THE ALAMEDA Northbound				FREMONT ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	3	2	5	0	**3**	0	3	1	1	**3**	5	**2**	**2**	0	**4**	17
05:00 PM	0	**8**	**4**	**12**	**2**	2	0	**4**	0	**6**	3	**9**	1	1	0	2	**27**
05:15 PM	**1**	4	0	5	0	2	0	2	**2**	3	1	6	0	0	**1**	1	14
05:30 PM	0	5	0	5	0	3	**1**	4	2	4	2	8	1	0	0	1	18
Total Volume	1	20	6	27	2	10	1	13	5	14	9	28	4	3	1	8	76
% App. Total	3.7	74.1	22.2		15.4	76.9	7.7		17.9	50	32.1		50	37.5	12.5		
PHF	.250	.625	.375	.563	.250	.833	.250	.813	.625	.583	.750	.778	.500	.375	.250	.500	.704

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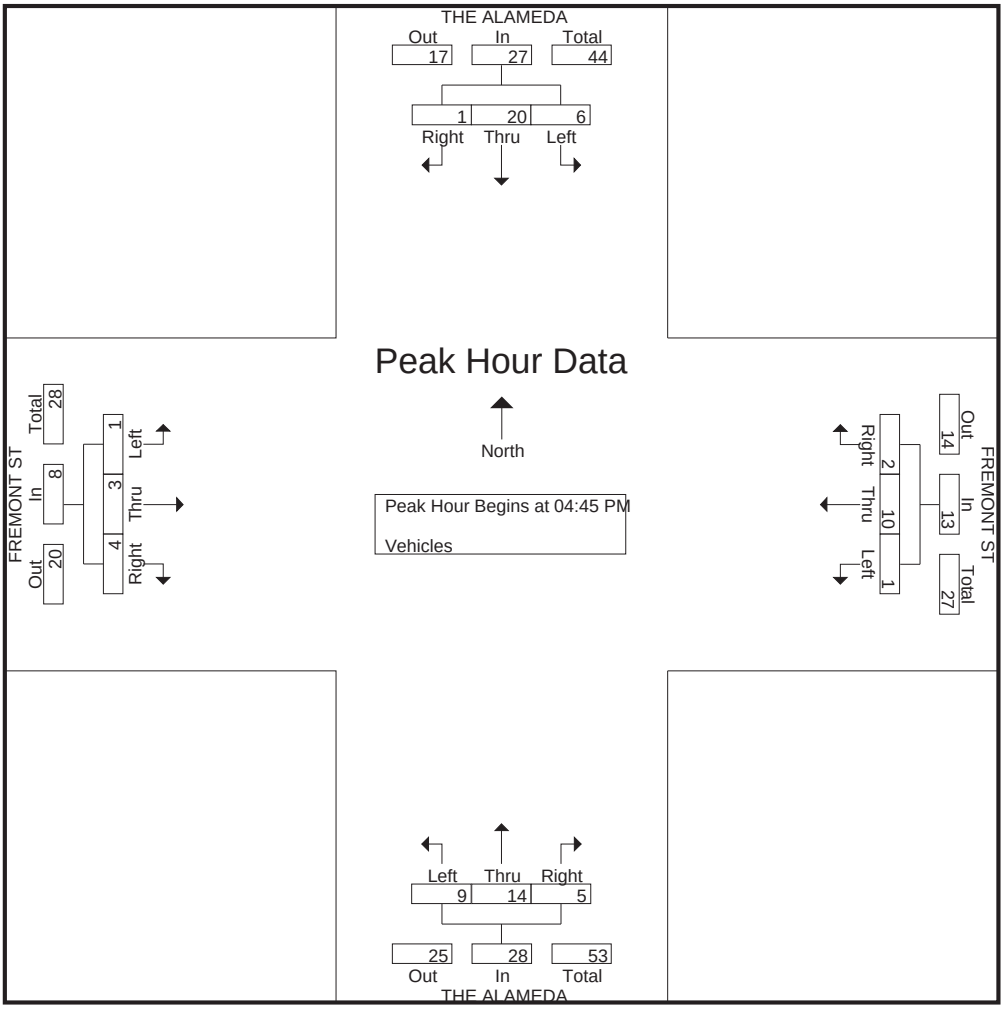

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Groups Printed- Vehicles

	THE ALAMEDA Southbound					FREMONT ST Westbound					THE ALAMEDA Northbound					FREMONT ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
07:15 AM	0	4	0	0	4	0	0	0	0	0	0	0	1	2	3	2	3	0	2	7	14
07:30 AM	1	8	0	0	9	0	0	0	2	2	0	0	1	0	1	0	0	0	0	0	12
07:45 AM	1	9	0	0	10	0	0	0	1	1	0	3	1	0	4	3	0	1	2	6	21
Total	3	23	0	0	26	0	0	0	3	3	0	3	3	2	8	6	3	1	4	14	51
08:00 AM	0	4	0	0	4	0	1	0	0	1	0	1	1	1	3	2	0	1	0	3	11
08:15 AM	1	6	1	0	8	0	1	0	0	1	0	5	0	0	5	1	0	1	2	4	18
08:30 AM	0	3	0	0	3	0	0	1	0	1	1	1	2	1	5	1	0	2	0	3	12
08:45 AM	0	3	0	1	4	1	1	0	1	3	0	3	1	1	5	1	0	0	3	4	16
Total	1	16	1	1	19	1	3	1	1	6	1	10	4	3	18	5	0	4	5	14	57
Grand Total	4	39	1	1	45	1	3	1	4	9	1	13	7	5	26	11	3	5	9	28	108
Apprch %	8.9	86.7	2.2	2.2		11.1	33.3	11.1	44.4		3.8	50	26.9	19.2		39.3	10.7	17.9	32.1		
Total %	3.7	36.1	0.9	0.9	41.7	0.9	2.8	0.9	3.7	8.3	0.9	12	6.5	4.6	24.1	10.2	2.8	4.6	8.3	25.9	

	THE ALAMEDA Southbound				FREMONT ST Westbound				THE ALAMEDA Northbound				FREMONT ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**1**	**9**	0	**10**	0	0	0	0	0	3	1	4	**3**	0	1	**4**	**18**
08:00 AM	0	4	0	4	0	**1**	0	**1**	0	1	1	2	2	0	1	3	10
08:15 AM	1	6	**1**	8	0	1	0	1	0	**5**	0	**5**	1	0	1	2	16
08:30 AM	0	3	0	3	0	0	**1**	1	**1**	1	**2**	4	1	0	**2**	3	11
Total Volume	2	22	1	25	0	2	1	3	1	10	4	15	7	0	5	12	55
% App. Total	8	88	4		0	66.7	33.3		6.7	66.7	26.7		58.3	0	41.7		
PHF	.500	.611	.250	.625	.000	.500	.250	.750	.250	.500	.500	.750	.583	.000	.625	.750	.764

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File Name : 6AM FINAL
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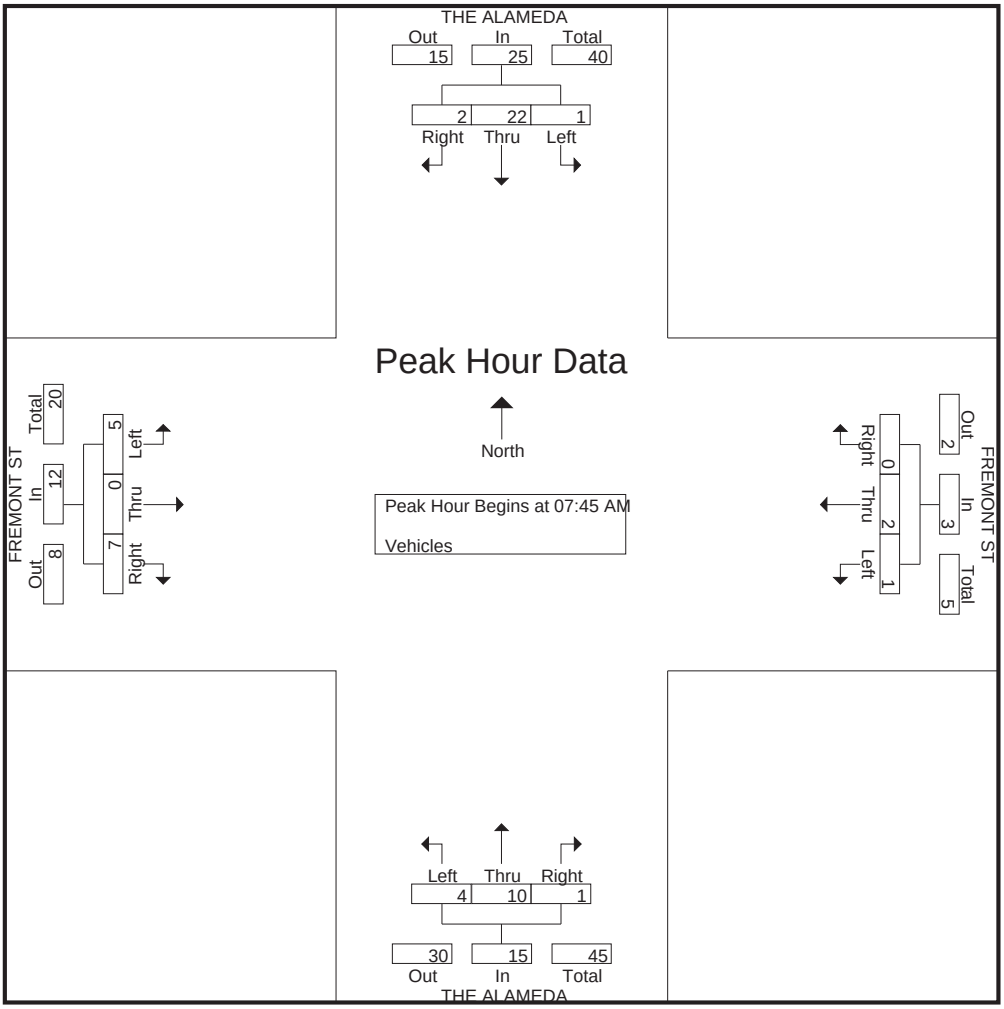

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File Name : 5PM FINAL
Site Code : 00000005
Start Date : 4/22/2015
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Groups Printed- Vehicles

	THE ALAMEDA Southbound					HARRISON ST Westbound					THE ALAMEDA Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	4	3	0	2	9	3	28	3	2	36	4	0	4	0	8	1	5	2	2	10	63
04:15 PM	2	1	4	0	7	5	20	3	1	29	1	0	0	1	2	1	5	0	2	8	46
04:30 PM	4	3	1	1	9	7	21	2	3	33	1	0	0	2	3	0	2	2	0	4	49
04:45 PM	6	2	1	3	12	3	18	3	3	27	2	1	0	0	3	2	1	0	0	3	45
Total	16	9	6	6	37	18	87	11	9	125	8	1	4	3	16	4	13	4	4	25	203
05:00 PM	2	2	0	0	4	7	28	8	0	43	1	3	4	0	8	1	1	2	1	5	60
05:15 PM	6	1	3	0	10	7	15	3	1	26	1	1	2	0	4	2	5	1	0	8	48
05:30 PM	4	1	0	0	5	4	23	4	3	34	2	0	1	0	3	0	6	2	0	8	50
05:45 PM	2	1	2	0	5	7	18	1	0	26	1	1	1	1	4	1	6	0	0	7	42
Total	14	5	5	0	24	25	84	16	4	129	5	5	8	1	19	4	18	5	1	28	200
Grand Total	30	14	11	6	61	43	171	27	13	254	13	6	12	4	35	8	31	9	5	53	403
Apprch %	49.2	23	18	9.8		16.9	67.3	10.6	5.1		37.1	17.1	34.3	11.4		15.1	58.5	17	9.4		
Total %	7.4	3.5	2.7	1.5	15.1	10.7	42.4	6.7	3.2	63	3.2	1.5	3	1	8.7	2	7.7	2.2	1.2	13.2	

	THE ALAMEDA Southbound				HARRISON ST Westbound				THE ALAMEDA Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	**2**	0	4	**7**	**28**	**8**	**43**	1	**3**	**4**	**8**	1	1	**2**	4	**59**
05:15 PM	**6**	1	**3**	**10**	7	15	3	25	1	1	2	4	**2**	5	1	**8**	47
05:30 PM	4	1	0	5	4	23	4	31	**2**	0	1	3	0	**6**	2	8	47
05:45 PM	2	1	2	5	7	18	1	26	1	1	1	3	1	6	0	7	41
Total Volume	14	5	5	24	25	84	16	125	5	5	8	18	4	18	5	27	194
% App. Total	58.3	20.8	20.8		20	67.2	12.8		27.8	27.8	44.4		14.8	66.7	18.5		
PHF	.583	.625	.417	.600	.893	.750	.500	.727	.625	.417	.500	.563	.500	.750	.625	.844	.822

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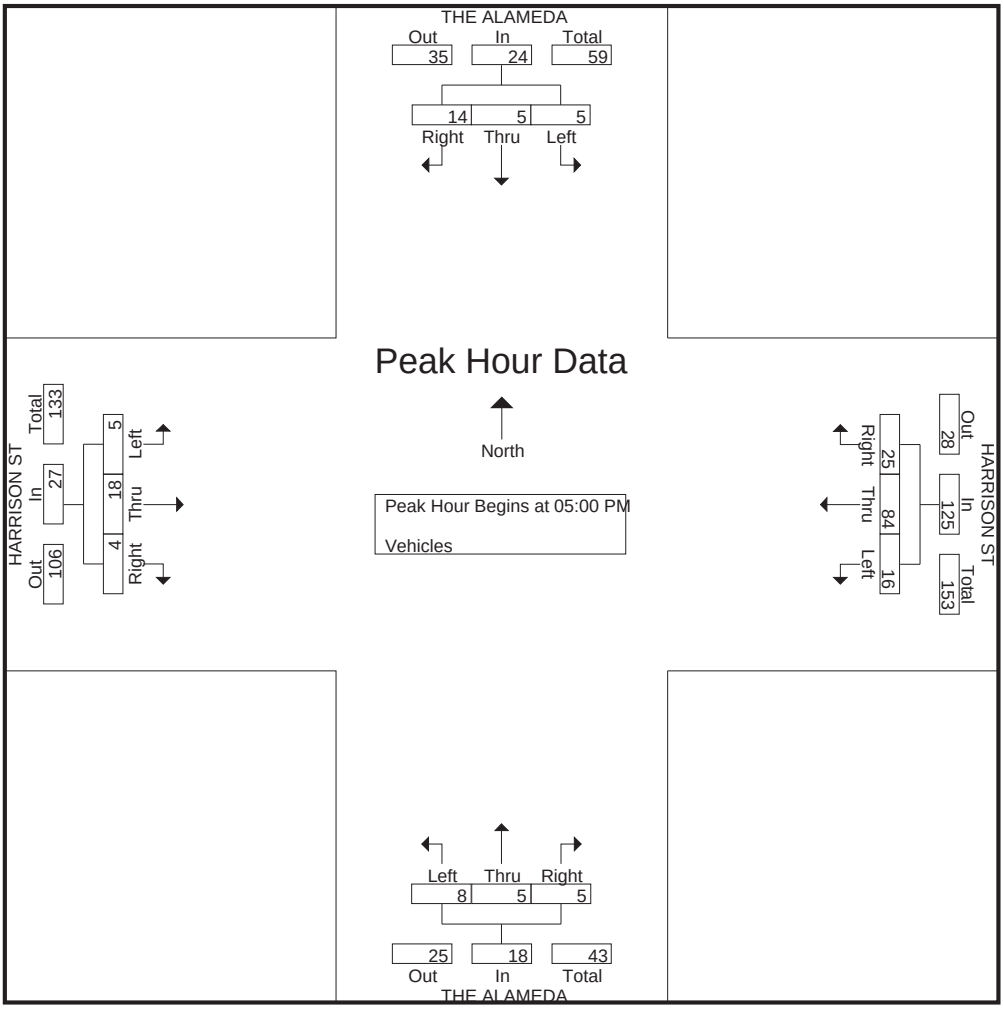

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File Name : 5AM FINAL
Site Code : 00000005
Start Date : 4/22/2015
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Groups Printed- Vehicles

	THE ALAMEDA Southbound					HARRISON ST Westbound					THE ALAMEDA Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	0	0	0	1	1	8	4	0	13	0	0	0	0	0	0	5	0	0	5	19
07:15 AM	1	0	2	0	3	2	6	3	0	11	0	0	0	0	0	1	2	0	0	3	17
07:30 AM	0	1	0	0	1	1	15	5	0	21	0	0	0	1	1	0	2	0	0	2	25
07:45 AM	0	3	1	0	4	0	23	7	0	30	1	1	0	0	2	0	1	2	0	3	39
Total	2	4	3	0	9	4	52	19	0	75	1	1	0	1	3	1	10	2	0	13	100
08:00 AM	1	0	0	0	1	1	25	3	0	29	1	0	0	1	2	1	2	0	0	3	35
08:15 AM	2	2	3	0	7	2	27	4	0	33	0	2	1	0	3	2	5	1	0	8	51
08:30 AM	3	1	1	0	5	4	23	2	0	29	3	0	2	1	6	1	2	0	1	4	44
08:45 AM	1	0	1	0	2	1	30	4	1	36	3	0	2	0	5	0	1	0	2	3	46
Total	7	3	5	0	15	8	105	13	1	127	7	2	5	2	16	4	10	1	3	18	176
Grand Total	9	7	8	0	24	12	157	32	1	202	8	3	5	3	19	5	20	3	3	31	276
Apprch %	37.5	29.2	33.3	0		5.9	77.7	15.8	0.5		42.1	15.8	26.3	15.8		16.1	64.5	9.7	9.7		
Total %	3.3	2.5	2.9	0	8.7	4.3	56.9	11.6	0.4	73.2	2.9	1.1	1.8	1.1	6.9	1.8	7.2	1.1	1.1	11.2	

	THE ALAMEDA Southbound				HARRISON ST Westbound				THE ALAMEDA Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	0	0	1	1	25	3	29	1	0	0	1	1	2	0	3	34
08:15 AM	2	**2**	**3**	**7**	2	27	**4**	33	0	**2**	1	3	**2**	**5**	**1**	**8**	**51**
08:30 AM	**3**	1	1	5	**4**	23	2	29	**3**	0	**2**	**5**	1	2	0	3	42
08:45 AM	1	0	1	2	1	**30**	4	**35**	3	0	2	5	0	1	0	1	43
Total Volume	7	3	5	15	8	105	13	126	7	2	5	14	4	10	1	15	170
% App. Total	46.7	20	33.3		6.3	83.3	10.3		50	14.3	35.7		26.7	66.7	6.7		
PHF	.583	.375	.417	.536	.500	.875	.813	.900	.583	.250	.625	.700	.500	.500	.250	.469	.833

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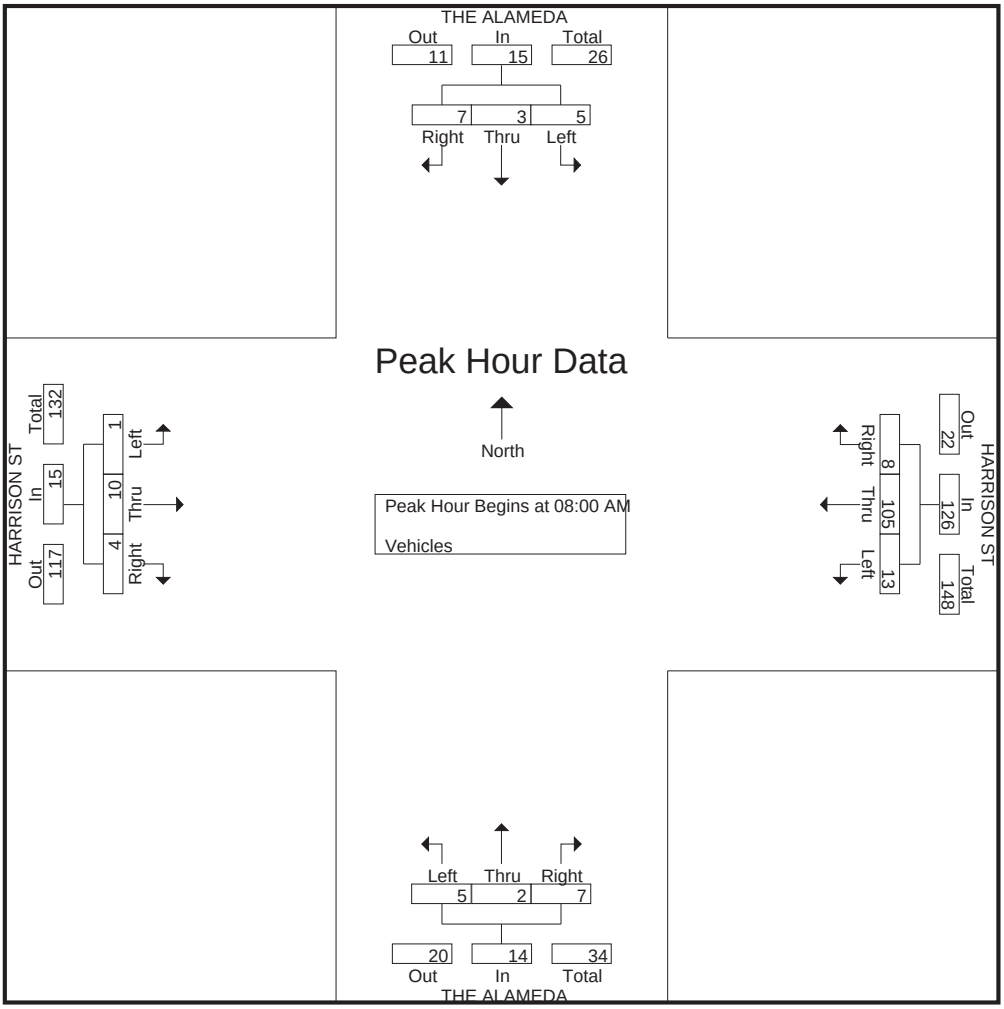

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File Name : 4PM FINAL
Site Code : 00000004
Start Date : 4/22/2015
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Groups Printed- Vehicles

	ALVISO ST Southbound					HARRISON ST Westbound					ALVISO ST Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	1	1	23	7	2	0	32	1	29	2	0	32	0	7	46	2	55	120
04:15 PM	0	0	0	1	1	16	5	0	1	22	1	29	0	1	31	1	6	48	0	55	109
04:30 PM	0	0	0	1	1	23	4	0	0	27	0	42	1	1	44	3	3	48	1	55	127
04:45 PM	0	0	0	0	0	17	2	2	0	21	0	31	1	0	32	2	3	32	0	37	90
Total	0	0	0	3	3	79	18	4	1	102	2	131	4	2	139	6	19	174	3	202	446
05:00 PM	0	0	0	0	0	29	2	1	0	32	0	39	0	0	39	2	4	44	0	50	121
05:15 PM	0	0	0	0	0	17	4	1	1	23	2	39	0	0	41	2	6	40	0	48	112
05:30 PM	0	0	0	2	2	22	6	2	0	30	2	54	1	0	57	2	9	45	0	56	145
05:45 PM	0	0	0	0	0	19	5	4	0	28	1	33	0	0	34	3	9	36	0	48	110
Total	0	0	0	2	2	87	17	8	1	113	5	165	1	0	171	9	28	165	0	202	488
Grand Total	0	0	0	5	5	166	35	12	2	215	7	296	5	2	310	15	47	339	3	404	934
Apprch %	0	0	0	100		77.2	16.3	5.6	0.9		2.3	95.5	1.6	0.6		3.7	11.6	83.9	0.7		
Total %	0	0	0	0.5	0.5	17.8	3.7	1.3	0.2	23	0.7	31.7	0.5	0.2	33.2	1.6	5	36.3	0.3	43.3	

	ALVISO ST Southbound				HARRISON ST Westbound				ALVISO ST Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	**29**	2	1	**32**	0	39	0	39	2	4	44	50	121
05:15 PM	0	0	0	0	17	4	1	22	**2**	39	0	41	2	6	40	48	111
05:30 PM	0	0	0	0	22	**6**	2	30	2	**54**	**1**	**57**	2	**9**	**45**	**56**	**143**
05:45 PM	0	0	0	0	19	5	**4**	28	1	33	0	34	**3**	9	36	48	110
Total Volume	0	0	0	0	87	17	8	112	5	165	1	171	9	28	165	202	485
% App. Total	0	0	0		77.7	15.2	7.1		2.9	96.5	0.6		4.5	13.9	81.7		
PHF	.000	.000	.000	.000	.750	.708	.500	.875	.625	.764	.250	.750	.750	.778	.917	.902	.848

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File Name : 4PM FINAL
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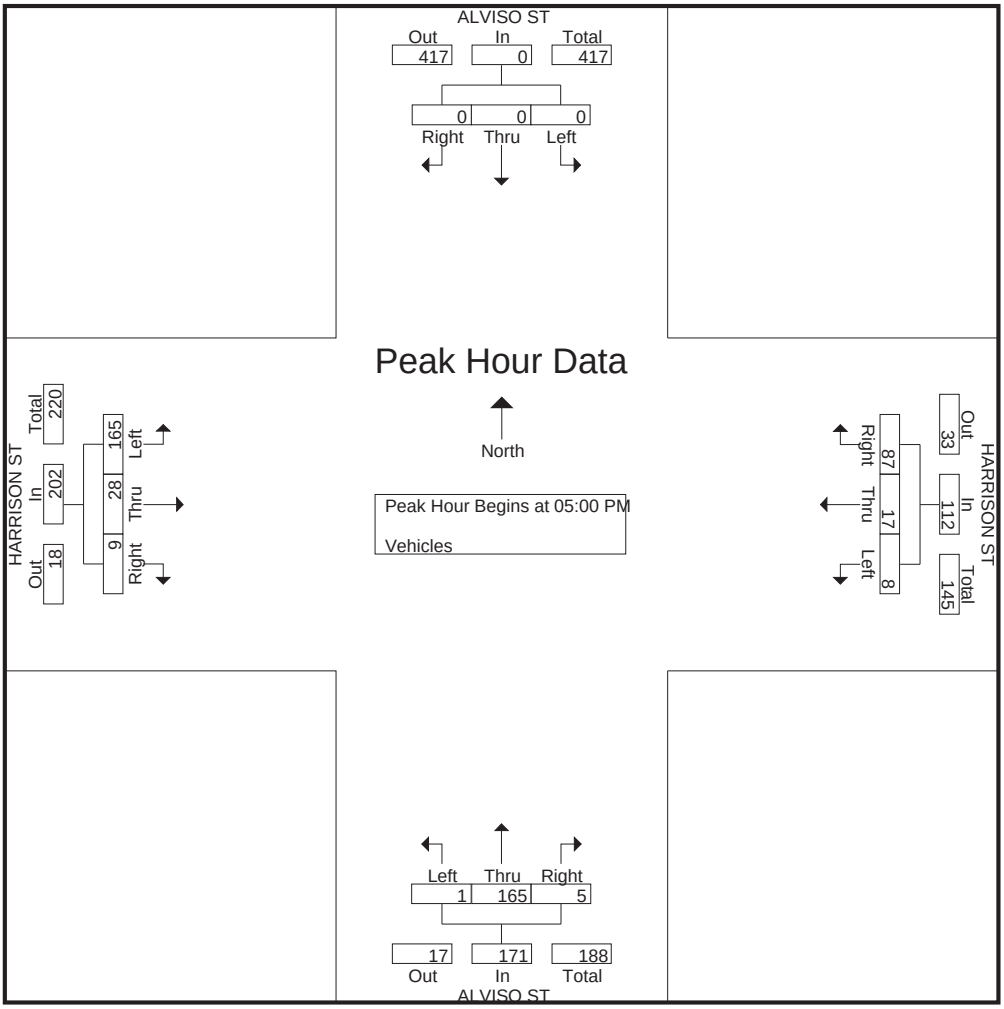

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File Name : 4AM FINAL
Site Code : 00000004
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Groups Printed- Vehicles

	ALVISO ST Southbound					HARRISON ST Westbound					ALVISO ST Northbound					HARRISON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	9	2	0	0	11	1	43	0	0	44	1	3	25	0	29	84
07:15 AM	0	0	0	1	1	8	0	0	0	8	0	51	0	0	51	1	3	28	0	32	92
07:30 AM	0	0	0	0	0	16	0	0	0	16	0	63	0	1	64	0	3	32	0	35	115
07:45 AM	0	0	0	0	0	21	1	2	0	24	0	74	0	0	74	2	0	39	0	41	139
Total	0	0	0	1	1	54	3	2	0	59	1	231	0	1	233	4	9	124	0	137	430
08:00 AM	0	0	0	0	0	27	0	1	0	28	0	85	0	0	85	1	4	27	0	32	145
08:15 AM	0	0	0	0	0	27	2	0	0	29	1	89	0	1	91	1	7	46	0	54	174
08:30 AM	0	0	0	0	0	24	2	0	0	26	2	70	0	1	73	1	1	42	0	44	143
08:45 AM	0	0	0	0	0	30	2	1	0	33	0	77	0	0	77	0	0	31	0	31	141
Total	0	0	0	0	0	108	6	2	0	116	3	321	0	2	326	3	12	146	0	161	603
Grand Total	0	0	0	1	1	162	9	4	0	175	4	552	0	3	559	7	21	270	0	298	1033
Apprch %	0	0	0	100		92.6	5.1	2.3	0		0.7	98.7	0	0.5		2.3	7	90.6	0		
Total %	0	0	0	0.1	0.1	15.7	0.9	0.4	0	16.9	0.4	53.4	0	0.3	54.1	0.7	2	26.1	0	28.8	

	ALVISO ST Southbound				HARRISON ST Westbound				ALVISO ST Northbound				HARRISON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	27	0	**1**	28	0	85	0	85	**1**	4	27	32	145
08:15 AM	0	0	0	0	27	**2**	0	29	1	**89**	0	**90**	1	**7**	**46**	**54**	**173**
08:30 AM	0	0	0	0	24	2	0	26	**2**	70	0	72	1	1	42	44	142
08:45 AM	0	0	0	0	**30**	2	1	**33**	0	77	0	77	0	0	31	31	141
Total Volume	0	0	0	0	108	6	2	116	3	321	0	324	3	12	146	161	601
% App. Total	0	0	0		93.1	5.2	1.7		0.9	99.1	0		1.9	7.5	90.7		
PHF	.000	.000	.000	.000	.900	.750	.500	.879	.375	.902	.000	.900	.750	.429	.793	.745	.868

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File Name : 4AM FINAL
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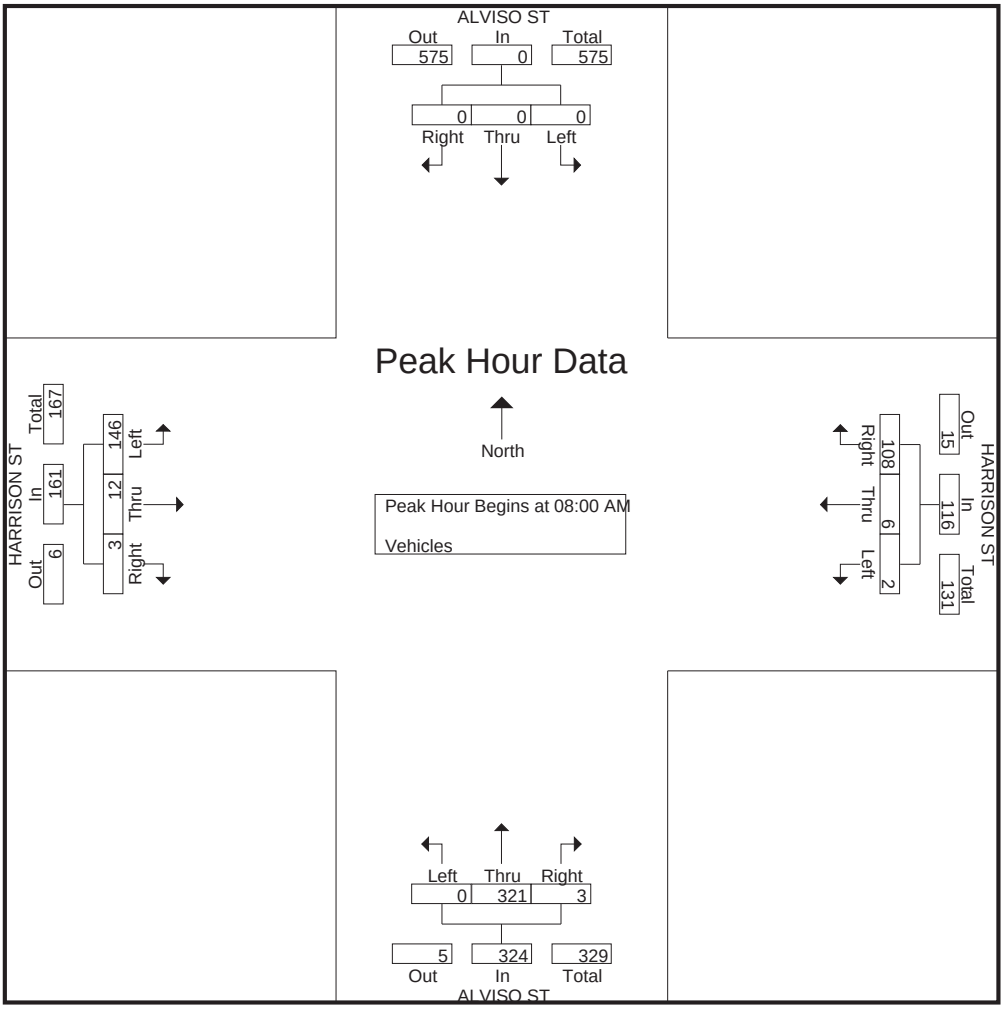

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File Name : 3PM FINAL
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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					BENTON ST Westbound					LAFAYETTE ST Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	9	240	3	2	254	2	28	9	1	40	20	59	2	0	81	14	30	5	7	56	431
04:15 PM	8	237	4	2	251	4	30	16	3	53	13	61	1	4	79	18	39	9	7	73	456
04:30 PM	15	280	11	4	310	5	25	10	4	44	25	60	0	4	89	17	39	5	1	62	505
04:45 PM	14	299	6	4	323	3	27	10	4	44	14	74	0	6	94	17	46	6	0	69	530
Total	46	1056	24	12	1138	14	110	45	12	181	72	254	3	14	343	66	154	25	15	260	1922
05:00 PM	13	325	11	3	352	2	39	14	4	59	20	89	0	1	110	12	48	8	4	72	593
05:15 PM	19	328	8	3	358	3	52	16	6	77	25	64	0	4	93	19	66	4	2	91	619
05:30 PM	18	349	4	4	375	1	32	13	7	53	31	93	1	5	130	21	53	8	2	84	642
05:45 PM	20	336	14	8	378	3	48	15	0	66	27	73	0	1	101	19	54	5	5	83	628
Total	70	1338	37	18	1463	9	171	58	17	255	103	319	1	11	434	71	221	25	13	330	2482
Grand Total	116	2394	61	30	2601	23	281	103	29	436	175	573	4	25	777	137	375	50	28	590	4404
Apprch %	4.5	92	2.3	1.2		5.3	64.4	23.6	6.7		22.5	73.7	0.5	3.2		23.2	63.6	8.5	4.7		
Total %	2.6	54.4	1.4	0.7	59.1	0.5	6.4	2.3	0.7	9.9	4	13	0.1	0.6	17.6	3.1	8.5	1.1	0.6	13.4	

	LAFAYETTE ST Southbound				BENTON ST Westbound				LAFAYETTE ST Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	13	325	11	349	2	39	14	55	20	89	0	109	12	48	**8**	68	581
05:15 PM	19	328	8	355	**3**	**52**	**16**	**71**	25	64	0	89	19	**66**	4	**89**	604
05:30 PM	18	**349**	4	**371**	1	32	13	46	**31**	**93**	**1**	**125**	**21**	53	8	82	**624**
05:45 PM	**20**	336	**14**	370	3	48	15	66	27	73	0	100	19	54	5	78	614
Total Volume	70	1338	37	1445	9	171	58	238	103	319	1	423	71	221	25	317	2423
% App. Total	4.8	92.6	2.6		3.8	71.8	24.4		24.3	75.4	0.2		22.4	69.7	7.9		
PHF	.875	.958	.661	.974	.750	.822	.906	.838	.831	.858	.250	.846	.845	.837	.781	.890	.971

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File Name : 3PM FINAL
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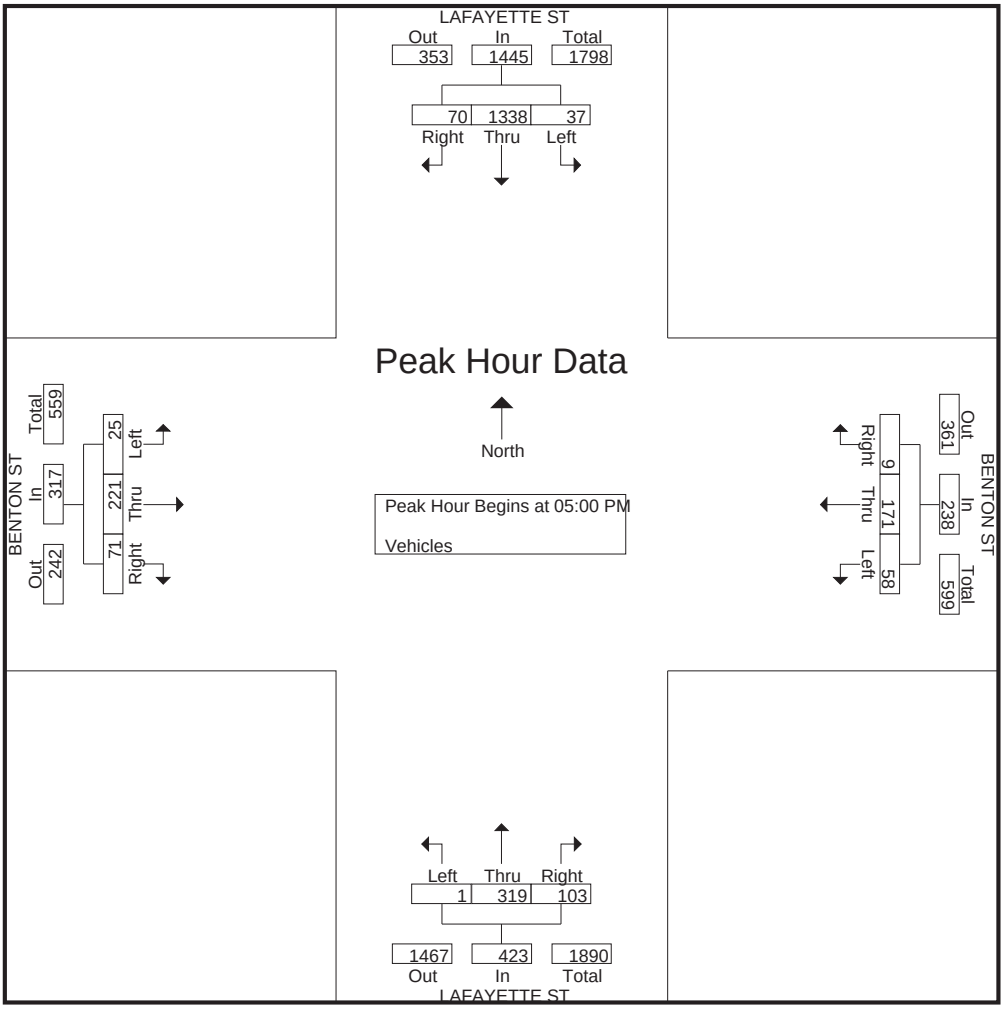

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File Name : 3AM FINAL
Site Code : 00000003
Start Date : 4/22/2015
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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					BENTON ST Westbound					LAFAYETTE ST Northbound					BENTON ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	40	2	1	45	2	15	2	1	20	17	155	1	3	176	6	34	7	1	48	289
07:15 AM	7	56	1	0	64	1	9	1	1	12	22	178	1	0	201	6	43	3	1	53	330
07:30 AM	8	82	0	4	94	4	13	5	0	22	19	201	3	1	224	10	51	6	1	68	408
07:45 AM	6	112	3	3	124	3	24	6	2	35	41	256	4	5	306	10	80	7	2	99	564
Total	23	290	6	8	327	10	61	14	4	89	99	790	9	9	907	32	208	23	5	268	1591
08:00 AM	8	145	0	1	154	0	18	7	1	26	39	279	3	4	325	11	63	7	0	81	586
08:15 AM	9	79	3	0	91	0	18	4	1	23	32	309	4	3	348	12	71	11	2	96	558
08:30 AM	3	89	5	0	97	0	9	4	1	14	33	253	5	2	293	9	68	7	1	85	489
08:45 AM	8	61	5	5	79	0	22	4	2	28	27	250	11	2	290	8	77	7	1	93	490
Total	28	374	13	6	421	0	67	19	5	91	131	1091	23	11	1256	40	279	32	4	355	2123
Grand Total	51	664	19	14	748	10	128	33	9	180	230	1881	32	20	2163	72	487	55	9	623	3714
Apprch %	6.8	88.8	2.5	1.9		5.6	71.1	18.3	5		10.6	87	1.5	0.9		11.6	78.2	8.8	1.4		
Total %	1.4	17.9	0.5	0.4	20.1	0.3	3.4	0.9	0.2	4.8	6.2	50.6	0.9	0.5	58.2	1.9	13.1	1.5	0.2	16.8	

	LAFAYETTE ST Southbound				BENTON ST Westbound				LAFAYETTE ST Northbound				BENTON ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	6	112	3	121	**3**	**24**	6	**33**	**41**	256	4	301	10	**80**	7	**97**	552
08:00 AM	8	**145**	0	**153**	0	18	**7**	25	39	279	3	321	11	63	7	81	**580**
08:15 AM	**9**	79	3	91	0	18	4	22	32	**309**	4	**345**	**12**	71	**11**	94	552
08:30 AM	3	89	**5**	97	0	9	4	13	33	253	**5**	291	9	68	7	84	485
Total Volume	26	425	11	462	3	69	21	93	145	1097	16	1258	42	282	32	356	2169
% App. Total	5.6	92	2.4		3.2	74.2	22.6		11.5	87.2	1.3		11.8	79.2	9		
PHF	.722	.733	.550	.755	.250	.719	.750	.705	.884	.888	.800	.912	.875	.881	.727	.918	.935

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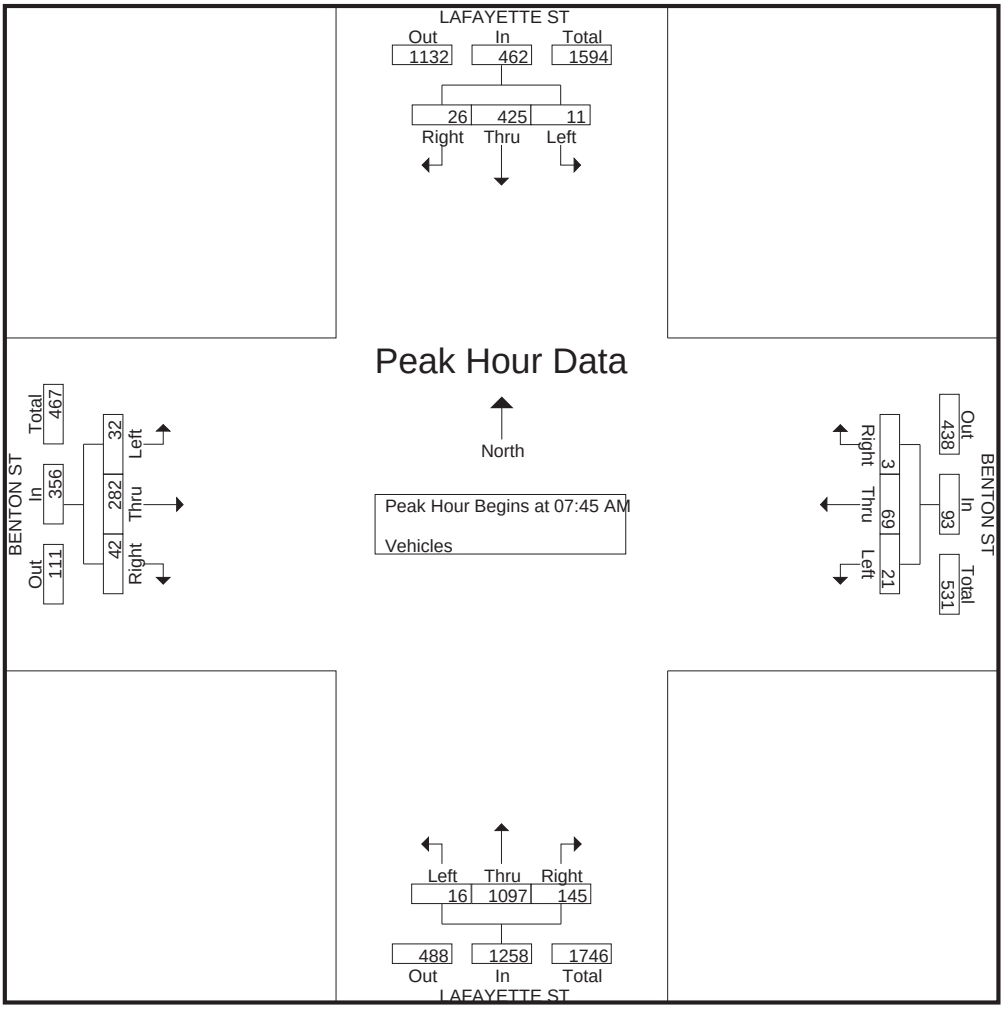

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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					LEWIS ST Westbound					LAFAYETTE ST Northbound					LEWIS ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	260	0	0	261	29	47	48	1	125	0	57	0	0	57	0	0	0	0	0	443
04:15 PM	4	235	0	1	240	43	40	57	4	144	0	54	1	0	55	0	0	0	2	2	441
04:30 PM	2	306	0	2	310	38	44	66	5	153	0	55	0	0	55	0	0	0	0	0	518
04:45 PM	4	265	0	1	270	64	51	94	1	210	0	70	1	1	72	0	0	0	4	4	556
Total	11	1066	0	4	1081	174	182	265	11	632	0	236	2	1	239	0	0	0	6	6	1958
05:00 PM	5	302	0	0	307	65	47	94	1	207	0	92	3	0	95	0	0	0	5	5	614
05:15 PM	5	285	0	2	292	81	79	121	2	283	0	61	2	0	63	0	0	0	2	2	640
05:30 PM	7	299	0	1	307	76	78	119	3	276	0	89	1	1	91	0	0	0	2	2	676
05:45 PM	5	280	0	4	289	62	82	119	4	267	0	75	1	0	76	0	0	0	2	2	634
Total	22	1166	0	7	1195	284	286	453	10	1033	0	317	7	1	325	0	0	0	11	11	2564
Grand Total	33	2232	0	11	2276	458	468	718	21	1665	0	553	9	2	564	0	0	0	17	17	4522
Apprch %	1.4	98.1	0	0.5		27.5	28.1	43.1	1.3		0	98	1.6	0.4		0	0	0	100		
Total %	0.7	49.4	0	0.2	50.3	10.1	10.3	15.9	0.5	36.8	0	12.2	0.2	0	12.5	0	0	0	0.4	0.4	

	LAFAYETTE ST Southbound				LEWIS ST Westbound				LAFAYETTE ST Northbound				LEWIS ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	5	**302**	0	**307**	65	47	94	206	0	**92**	**3**	**95**	0	0	0	0	608
05:15 PM	5	285	0	290	**81**	79	**121**	**281**	0	61	2	63	0	0	0	0	634
05:30 PM	**7**	299	0	306	76	78	119	273	0	89	1	90	0	0	0	0	**669**
05:45 PM	5	280	0	285	62	**82**	119	263	0	75	1	76	0	0	0	0	624
Total Volume	22	1166	0	1188	284	286	453	1023	0	317	7	324	0	0	0	0	2535
% App. Total	1.9	98.1	0		27.8	28	44.3		0	97.8	2.2		0	0	0		
PHF	.786	.965	.000	.967	.877	.872	.936	.910	.000	.861	.583	.853	.000	.000	.000	.000	.947

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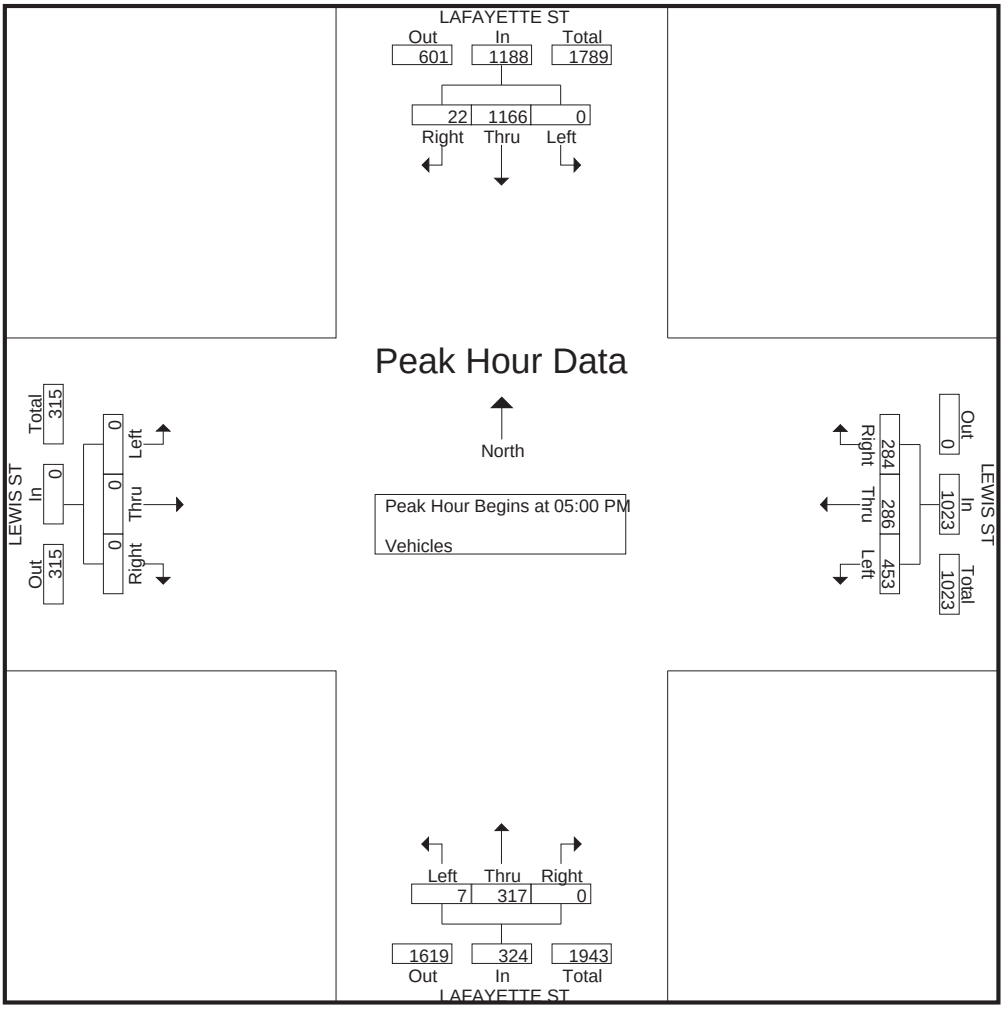

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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					LEWIS ST Westbound					LAFAYETTE ST Northbound					LEWIS ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	42	0	0	44	15	3	14	1	33	0	149	0	0	149	0	0	0	0	0	226
07:15 AM	0	66	0	0	66	13	12	18	2	45	1	177	2	0	180	0	0	0	0	0	291
07:30 AM	0	75	0	1	76	20	11	25	1	57	0	193	1	0	194	0	0	0	0	0	327
07:45 AM	2	116	0	0	118	21	11	29	1	62	0	257	4	0	261	0	0	0	2	2	443
Total	4	299	0	1	304	69	37	86	5	197	1	776	7	0	784	0	0	0	2	2	1287
08:00 AM	4	133	0	0	137	28	20	40	0	88	0	232	2	0	234	0	0	0	0	0	459
08:15 AM	0	81	0	0	81	29	21	33	4	87	0	255	2	0	257	0	0	0	0	0	425
08:30 AM	2	90	0	0	92	26	21	19	0	66	0	233	0	0	233	0	0	0	5	5	396
08:45 AM	1	70	0	2	73	28	15	26	2	71	0	237	1	4	242	0	0	0	1	1	387
Total	7	374	0	2	383	111	77	118	6	312	0	957	5	4	966	0	0	0	6	6	1667
Grand Total	11	673	0	3	687	180	114	204	11	509	1	1733	12	4	1750	0	0	0	8	8	2954
Apprch %	1.6	98	0	0.4		35.4	22.4	40.1	2.2		0.1	99	0.7	0.2		0	0	0	100		
Total %	0.4	22.8	0	0.1	23.3	6.1	3.9	6.9	0.4	17.2	0	58.7	0.4	0.1	59.2	0	0	0	0.3	0.3	

	LAFAYETTE ST Southbound				LEWIS ST Westbound				LAFAYETTE ST Northbound				LEWIS ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	2	116	0	118	21	11	29	61	0	**257**	**4**	**261**	0	0	0	0	440
08:00 AM	**4**	**133**	0	**137**	28	20	**40**	**88**	0	232	2	234	0	0	0	0	**459**
08:15 AM	0	81	0	81	**29**	**21**	33	83	0	255	2	257	0	0	0	0	421
08:30 AM	2	90	0	92	26	21	19	66	0	233	0	233	0	0	0	0	391
Total Volume	8	420	0	428	104	73	121	298	0	977	8	985	0	0	0	0	1711
% App. Total	1.9	98.1	0		34.9	24.5	40.6		0	99.2	0.8		0	0	0		
PHF	.500	.789	.000	.781	.897	.869	.756	.847	.000	.950	.500	.943	.000	.000	.000	.000	.932

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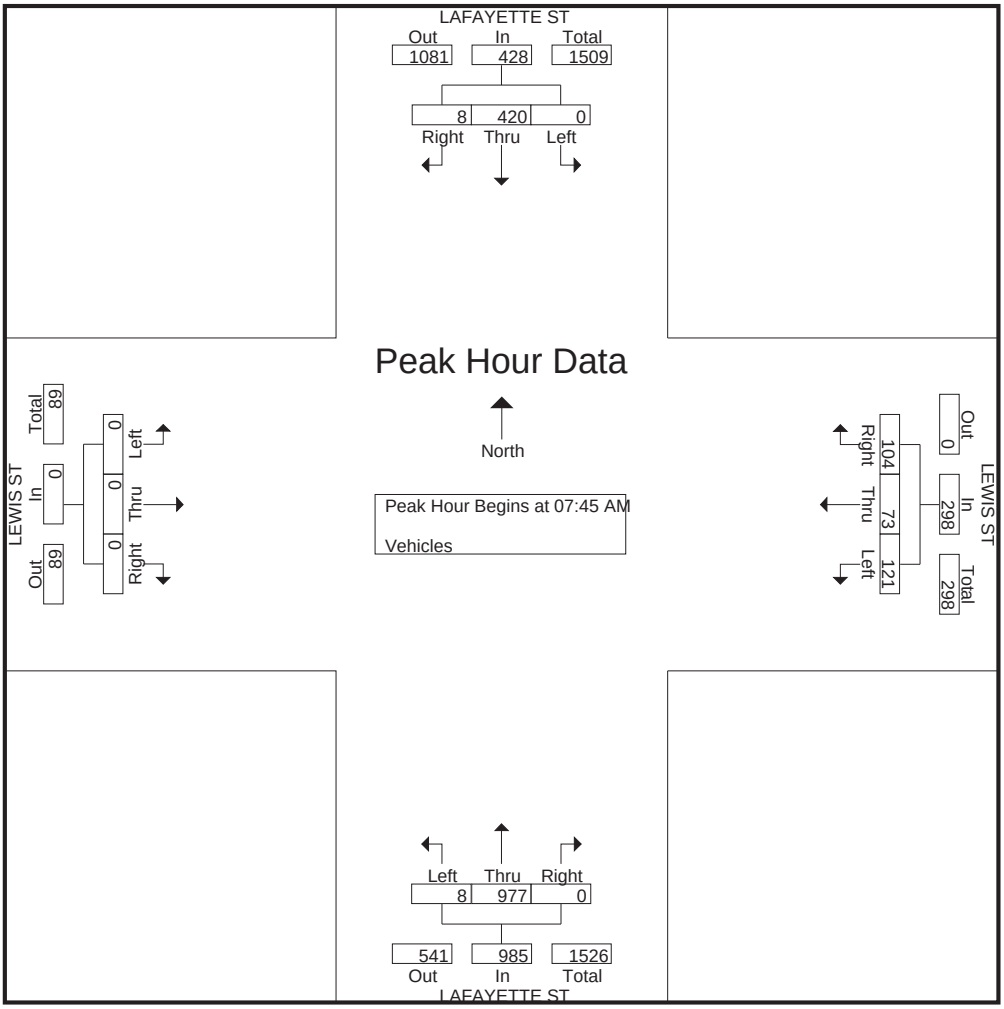

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File Name : 1PM FINAL
Site Code : 00000001
Start Date : 4/22/2015
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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					EL CAMINO REAL Westbound					LAFAYETTE ST Northbound					EL CAMINO REAL Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	63	205	81	2	351	31	112	4	1	148	29	27	21	2	79	42	150	47	0	239	817
04:15 PM	41	176	78	2	297	20	113	5	1	139	33	30	23	0	86	58	181	52	1	292	814
04:30 PM	59	243	85	0	387	34	108	6	3	151	34	43	23	2	102	61	167	43	4	275	915
04:45 PM	50	201	76	2	329	20	137	8	1	166	55	43	26	1	125	52	198	53	3	306	926
Total	213	825	320	6	1364	105	470	23	6	604	151	143	93	5	392	213	696	195	8	1112	3472
05:00 PM	74	242	92	4	412	23	164	7	3	197	60	56	27	2	145	58	179	42	0	279	1033
05:15 PM	56	207	97	8	368	30	180	21	0	231	71	40	19	4	134	62	238	38	6	344	1077
05:30 PM	62	246	85	0	393	33	142	14	1	190	77	48	42	2	169	54	192	53	4	303	1055
05:45 PM	56	206	71	2	335	13	155	15	1	184	60	43	27	0	130	50	238	56	2	346	995
Total	248	901	345	14	1508	99	641	57	5	802	268	187	115	8	578	224	847	189	12	1272	4160
Grand Total	461	1726	665	20	2872	204	1111	80	11	1406	419	330	208	13	970	437	1543	384	20	2384	7632
Apprch %	16.1	60.1	23.2	0.7		14.5	79	5.7	0.8		43.2	34	21.4	1.3		18.3	64.7	16.1	0.8		
Total %	6	22.6	8.7	0.3	37.6	2.7	14.6	1	0.1	18.4	5.5	4.3	2.7	0.2	12.7	5.7	20.2	5	0.3	31.2	

	LAFAYETTE ST Southbound				EL CAMINO REAL Westbound				LAFAYETTE ST Northbound				EL CAMINO REAL Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**74**	242	92	**408**	23	164	7	194	60	**56**	27	143	58	179	42	279	1024
05:15 PM	56	207	**97**	360	30	**180**	**21**	**231**	71	40	19	130	**62**	**238**	38	338	**1059**
05:30 PM	62	**246**	85	393	**33**	142	14	189	**77**	48	**42**	**167**	54	192	53	299	1048
05:45 PM	56	206	71	333	13	155	15	183	60	43	27	130	50	238	**56**	**344**	990
Total Volume	248	901	345	1494	99	641	57	797	268	187	115	570	224	847	189	1260	4121
% App. Total	16.6	60.3	23.1		12.4	80.4	7.2		47	32.8	20.2		17.8	67.2	15		
PHF	.838	.916	.889	.915	.750	.890	.679	.863	.870	.835	.685	.853	.903	.890	.844	.916	.973

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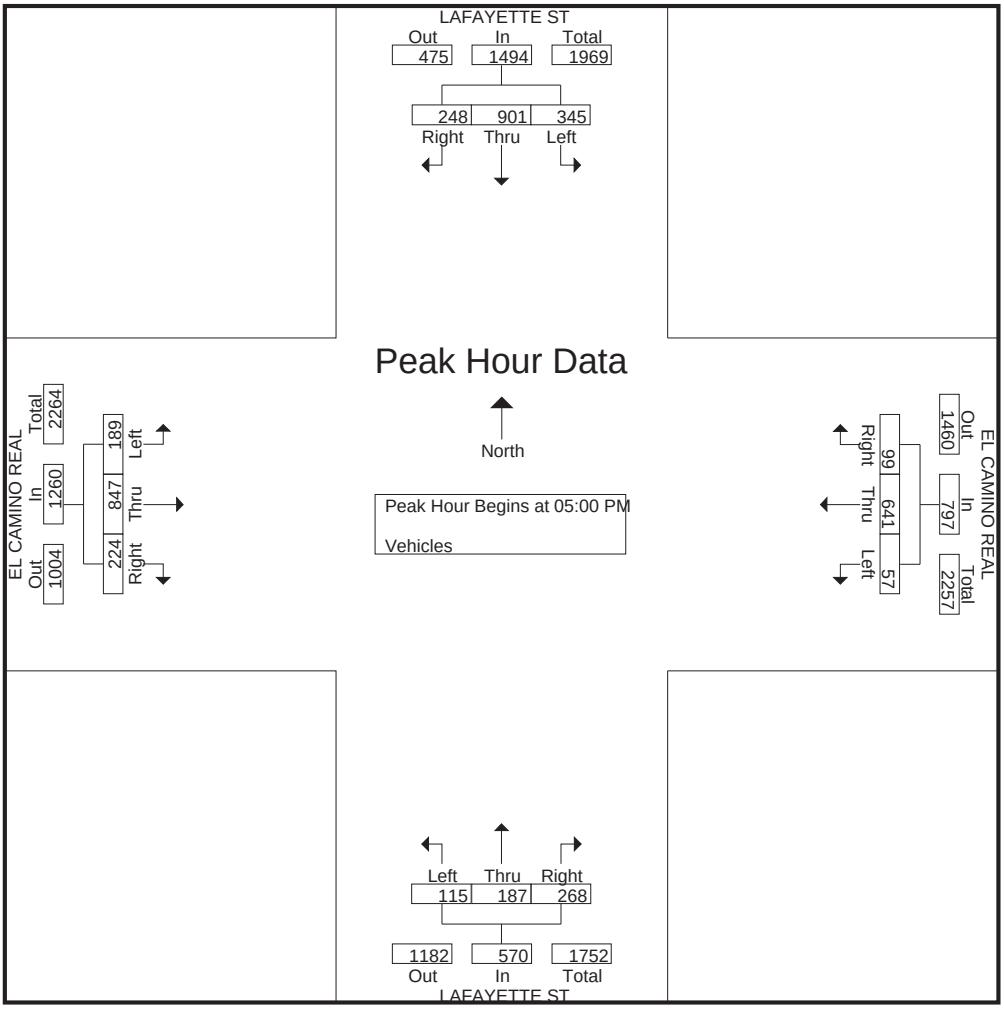

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Groups Printed- Vehicles

	LAFAYETTE ST Southbound					EL CAMINO REAL Westbound					LAFAYETTE ST Northbound					EL CAMINO REAL Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	19	28	12	2	61	90	157	3	2	252	13	133	29	1	176	18	55	28	1	102	591
07:15 AM	28	50	16	2	96	100	180	0	1	281	7	152	28	1	188	19	46	46	1	112	677
07:30 AM	30	44	14	3	91	117	234	1	1	353	17	172	22	1	212	24	84	54	0	162	818
07:45 AM	38	77	27	2	144	134	227	3	0	364	17	226	22	0	265	38	87	64	4	193	966
Total	115	199	69	9	392	441	798	7	4	1250	54	683	101	3	841	99	272	192	6	569	3052
08:00 AM	46	99	25	1	171	148	209	7	0	364	14	234	26	1	275	31	97	54	1	183	993
08:15 AM	36	63	22	4	125	119	231	4	1	355	20	229	40	2	291	16	92	81	3	192	963
08:30 AM	38	48	18	4	108	154	202	5	0	361	16	201	31	0	248	31	101	74	1	207	924
08:45 AM	35	39	20	0	94	123	219	2	2	346	20	211	34	0	265	26	96	76	0	198	903
Total	155	249	85	9	498	544	861	18	3	1426	70	875	131	3	1079	104	386	285	5	780	3783
Grand Total	270	448	154	18	890	985	1659	25	7	2676	124	1558	232	6	1920	203	658	477	11	1349	6835
Apprch %	30.3	50.3	17.3	2		36.8	62	0.9	0.3		6.5	81.1	12.1	0.3		15	48.8	35.4	0.8		
Total %	4	6.6	2.3	0.3	13	14.4	24.3	0.4	0.1	39.2	1.8	22.8	3.4	0.1	28.1	3	9.6	7	0.2	19.7	

	LAFAYETTE ST Southbound				EL CAMINO REAL Westbound				LAFAYETTE ST Northbound				EL CAMINO REAL Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	38	77	**27**	142	134	227	3	**364**	17	226	22	265	**38**	87	64	189	960
08:00 AM	**46**	**99**	25	**170**	148	209	**7**	364	14	**234**	26	274	31	97	54	182	**990**
08:15 AM	36	63	22	121	119	**231**	4	354	**20**	229	**40**	**289**	16	92	**81**	189	953
08:30 AM	38	48	18	104	**154**	202	5	361	16	201	31	248	31	**101**	74	**206**	919
Total Volume	158	287	92	537	555	869	19	1443	67	890	119	1076	116	377	273	766	3822
% App. Total	29.4	53.4	17.1		38.5	60.2	1.3		6.2	82.7	11.1		15.1	49.2	35.6		
PHF	.859	.725	.852	.790	.901	.940	.679	.991	.838	.951	.744	.931	.763	.933	.843	.930	.965

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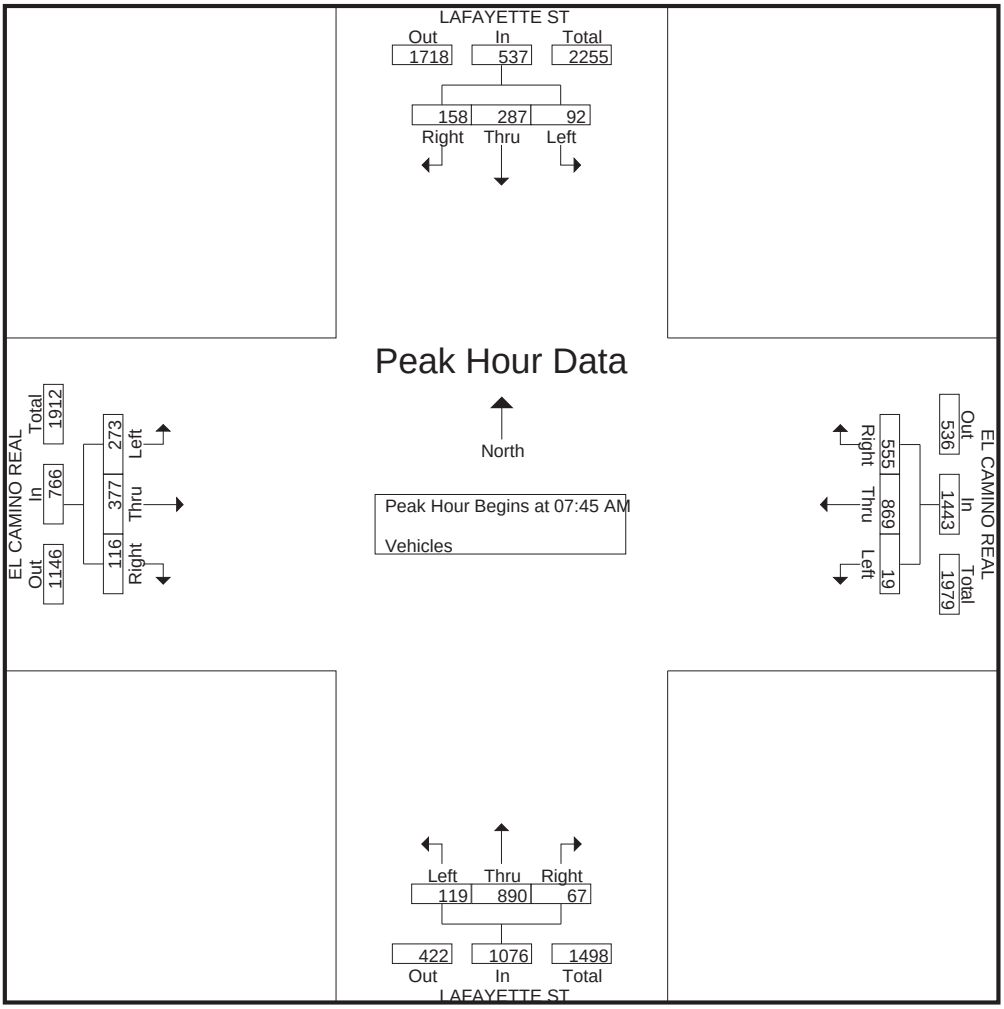

APPENDIX B: INTERSECTION LEVEL OF SERVICE CALCULATIONS

Mission Town Center TIA
DN15-0483
Existing PM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection	???				Existing PM				Existing Plus Project PM						???			
	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1 Lafavettee & El Camino Real	?	xx.x	x.xxx	xx.x	D	41.1	0.655	41.6	D	41.3	0.659	+ 0.005	41.8	+ 0.2	?	xx.x	x.xxx	xx.x
#2 Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	C-	33.7	0.936	38.9	D+	35.4	0.950	+ 0.014	41.7	+ 2.8	?	xx.x	x.xxx	xx.x
#3 Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	15.1	0.571	14.3	B	15.4	0.583	+ 0.013	14.7	+ 0.4	?	xx.x	x.xxx	xx.x
#4 Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	B	7.5	0.252	7.5	B	7.5	0.256	+ 0.003	7.5	- 0.0	?	xx.x	x.xxx	xx.x
#5 The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	2.8	0.015	2.8	A	2.8	0.015	+ 0.000	2.8	+ 0.0	?	xx.x	x.xxx	xx.x
#6 The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	3.9	0.012	3.9	A	2.6	0.006	- 0.007	2.6	- 1.4	?	xx.x	x.xxx	xx.x
#7 The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	3.0	0.059	3.0	B	2.7	0.063	+ 0.004	2.7	- 0.3	?	xx.x	x.xxx	xx.x
#8 Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	2.6	0.081	2.6	B	3.8	0.098	+ 0.017	3.8	+ 1.1	?	xx.x	x.xxx	xx.x
#9 El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	C	0.4	0.065	0.4	C	0.4	0.067	+ 0.002	0.4	- 0.0	?	xx.x	x.xxx	xx.x
#10 El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	B-	19.8	0.496	19.1	C+	20.1	0.507	+ 0.010	19.6	+ 0.5	?	xx.x	x.xxx	xx.x
#11 El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	B	0.1	0.031	+ 0.031	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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Mission Town Center TIA
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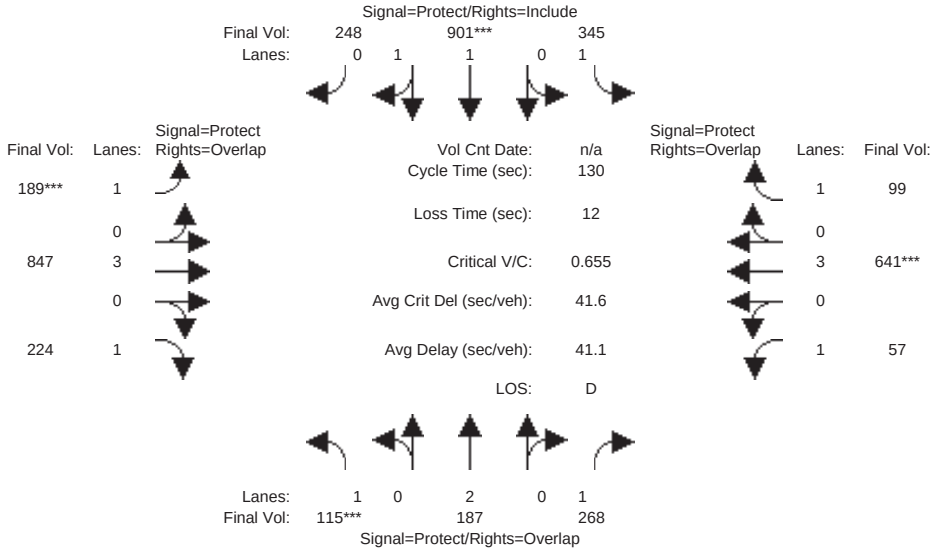
Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	115	187	268	345	901	248	189	847	224	57	641	99
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	115	187	268	345	901	248	189	847	224	57	641	99
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	115	187	268	345	901	248	189	847	224	57	641	99
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	115	187	268	345	901	248	189	847	224	57	641	99
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	115	187	268	345	901	248	189	847	224	57	641	99
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	115	187	268	345	901	248	189	847	224	57	641	99
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.54	0.46	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1750	3800	1750	1750	2926	805	1750	5700	1750	1750	5700	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.05	0.15	0.20	0.31	0.31	0.11	0.15	0.13	0.03	0.11	0.06
Crit Moves:	****				****		****				****	
Green Time:	13.1	28.2	39.8	46.1	61.2	61.2	21.4	32.1	45.2	11.6	22.3	68.4
Volume/Cap:	0.65	0.23	0.50	0.56	0.65	0.65	0.65	0.60	0.37	0.36	0.65	0.11
Delay/Veh:	73.8	42.6	40.3	37.3	28.3	28.3	61.8	45.2	33.4	62.1	53.6	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.8	42.6	40.3	37.3	28.3	28.3	61.8	45.2	33.4	62.1	53.6	15.7
LOS by Move:	E	D	D	D+	C	C	E	D	C-	E	D-	B
HCM2kAvgQ:	5	3	10	12	18	18	9	10	7	3	9	2

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
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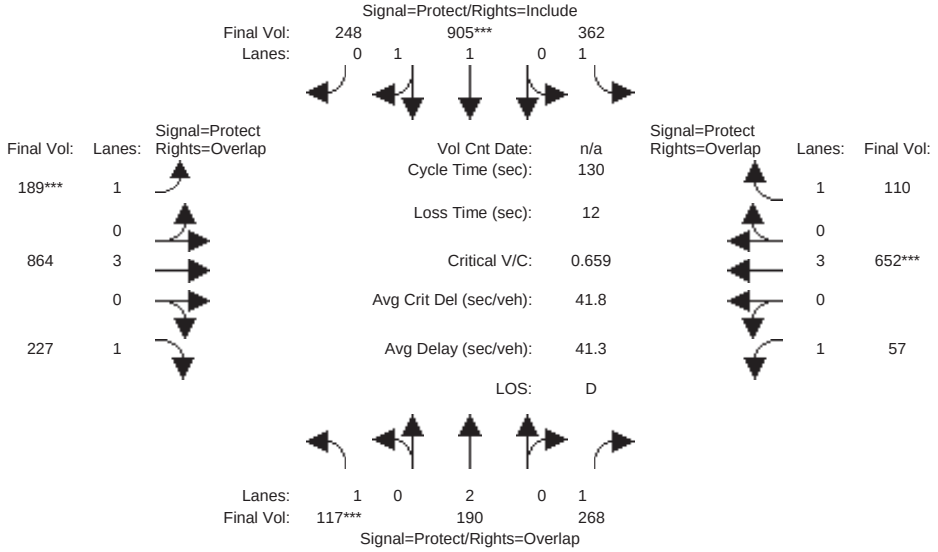
Existing Plus Project PM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	115	187	268	345	901	248	189	847	224	57	641	99
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	115	187	268	345	901	248	189	847	224	57	641	99
Added Vol:	2	3	0	17	4	0	0	17	3	0	11	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	117	190	268	362	905	248	189	864	227	57	652	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	117	190	268	362	905	248	189	864	227	57	652	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	117	190	268	362	905	248	189	864	227	57	652	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	117	190	268	362	905	248	189	864	227	57	652	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.54	0.46	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1750	3800	1750	1750	2929	803	1750	5700	1750	1750	5700	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.05	0.15	0.21	0.31	0.31	0.11	0.15	0.13	0.03	0.11	0.06
Crit Moves:	****				****		****				****	
Green Time:	13.2	27.3	38.8	46.8	60.9	60.9	21.3	32.4	45.6	11.5	22.6	69.4
Volume/Cap:	0.66	0.24	0.51	0.57	0.66	0.66	0.66	0.61	0.37	0.37	0.66	0.12
Delay/Veh:	73.8	43.4	41.4	37.3	28.5	28.5	62.2	45.2	33.2	62.5	53.6	15.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.8	43.4	41.4	37.3	28.5	28.5	62.2	45.2	33.2	62.5	53.6	15.3
LOS by Move:	E	D	D	D+	C	C	E	D	C-	E	D-	B
HCM2kAvgQ:	5	3	10	13	18	18	9	11	7	3	9	2

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
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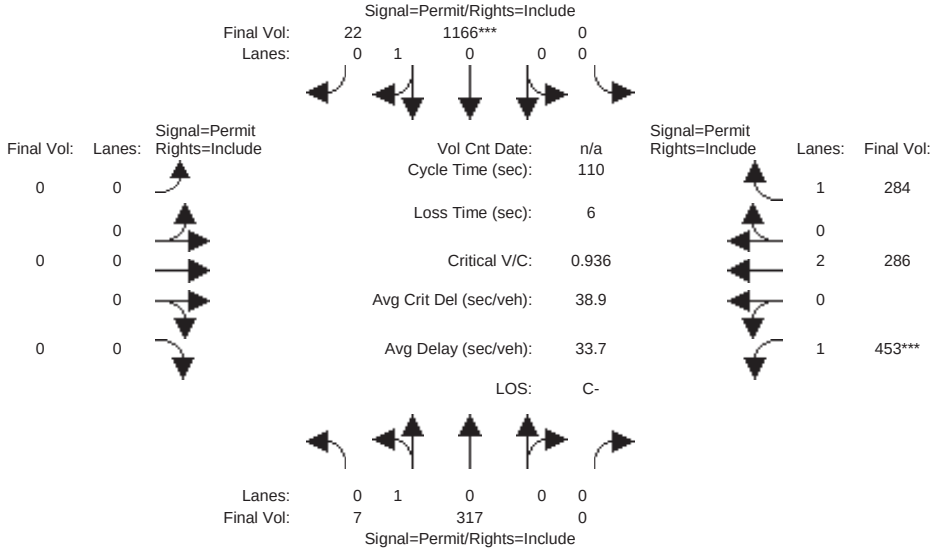
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	7	317	0	0	1166	22	0	0	0	453	286	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	317	0	0	1166	22	0	0	0	453	286	284
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	317	0	0	1166	22	0	0	0	453	286	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	317	0	0	1166	22	0	0	0	453	286	284
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	317	0	0	1166	22	0	0	0	453	286	284
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	317	0	0	1166	22	0	0	0	453	286	284
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	41	1856	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.26	0.08	0.16
Crit Moves:					****					****		
Green Time:	73.6	73.6	0.0	0.0	73.6	73.6	0.0	0.0	0.0	30.4	30.4	30.4
Volume/Cap:	0.26	0.26	0.00	0.00	0.94	0.94	0.00	0.00	0.00	0.94	0.27	0.59
Delay/Veh:	7.4	7.4	0.0	0.0	29.0	29.0	0.0	0.0	0.0	64.7	31.3	36.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.4	7.4	0.0	0.0	29.0	29.0	0.0	0.0	0.0	64.7	31.3	36.2
LOS by Move:	A	A	A	A	C	C	A	A	A	E	C	D+
HCM2kAvgQ:	4	4	0	0	38	38	0	0	0	21	4	9

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
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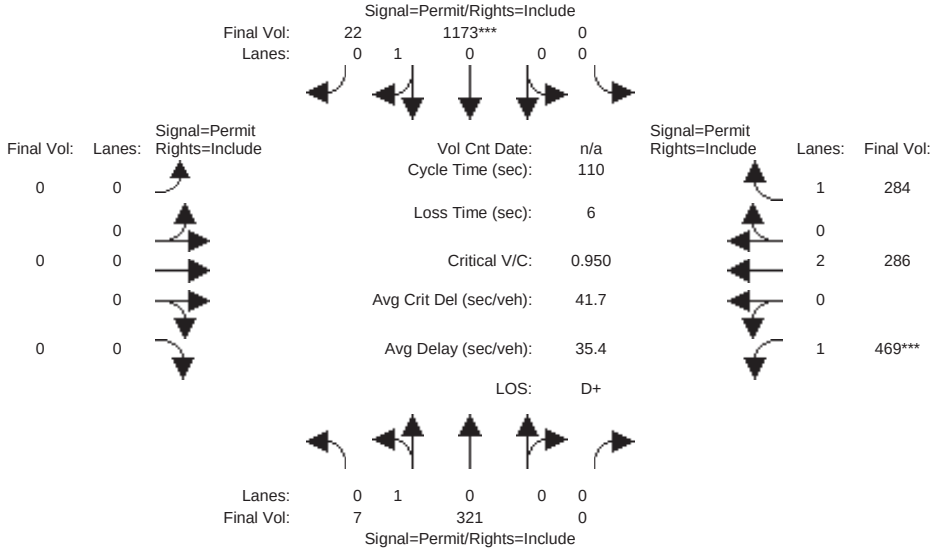
Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	7	317	0	0	1166	22	0	0	0	453	286	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	317	0	0	1166	22	0	0	0	453	286	284
Added Vol:	0	4	0	0	7	0	0	0	0	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	321	0	0	1173	22	0	0	0	469	286	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	321	0	0	1173	22	0	0	0	469	286	284
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	321	0	0	1173	22	0	0	0	469	286	284
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	321	0	0	1173	22	0	0	0	469	286	284
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	40	1856	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.27	0.08	0.16
Crit Moves:					****					****		
Green Time:	73.0	73.0	0.0	0.0	73.0	73.0	0.0	0.0	0.0	31.0	31.0	31.0
Volume/Cap:	0.26	0.26	0.00	0.00	0.95	0.95	0.00	0.00	0.00	0.95	0.27	0.58
Delay/Veh:	7.7	7.7	0.0	0.0	31.8	31.8	0.0	0.0	0.0	66.9	30.8	35.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.7	7.7	0.0	0.0	31.8	31.8	0.0	0.0	0.0	66.9	30.8	35.5
LOS by Move:	A	A	A	A	C	C	A	A	A	E	C	D+
HCM2kAvgQ:	4	4	0	0	40	40	0	0	0	22	4	9

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Existing PM

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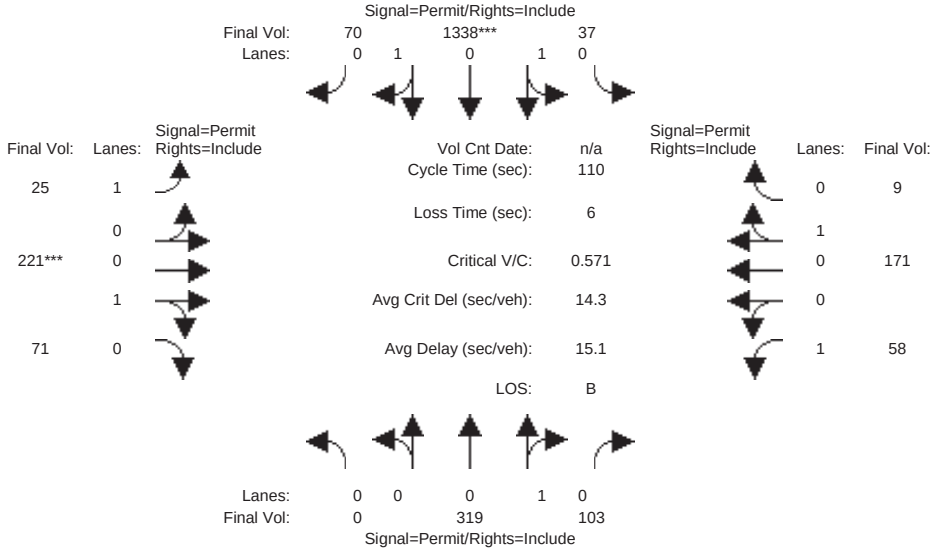
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	319	103	37	1338	70	25	221	71	58	171	9
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	319	103	37	1338	70	25	221	71	58	171	9
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	319	103	37	1338	70	25	221	71	58	171	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	319	103	37	1338	70	25	221	71	58	171	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	319	103	37	1338	70	25	221	71	58	171	9
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	319	103	37	1338	70	25	221	71	58	171	9
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.74	0.26	0.06	1.84	0.10	1.00	0.74	0.26	1.00	0.95	0.05
Final Sat.:	0	1407	454	97	3496	183	1750	1409	453	1750	1797	95
Capacity Analysis Module:												
Vol/Sat:	0.00	0.23	0.23	0.38	0.38	0.38	0.01	0.16	0.16	0.03	0.10	0.10
Crit Moves:					****			****				
Green Time:	0.0	73.8	73.8	73.8	73.8	73.8	30.2	30.2	30.2	30.2	30.2	30.2
Volume/Cap:	0.00	0.34	0.34	0.57	0.57	0.57	0.05	0.57	0.57	0.12	0.35	0.35
Delay/Veh:	0.0	7.9	7.9	10.0	10.0	10.0	29.4	35.8	35.8	30.0	32.4	32.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.9	7.9	10.0	10.0	10.0	29.4	35.8	35.8	30.0	32.4	32.4
LOS by Move:	A	A	A	A	A	A	C	D+	D+	C	C-	C-
HCM2kAvgQ:	0	6	6	12	12	12	1	9	9	2	5	5

Note: Queue reported is the number of cars per lane.

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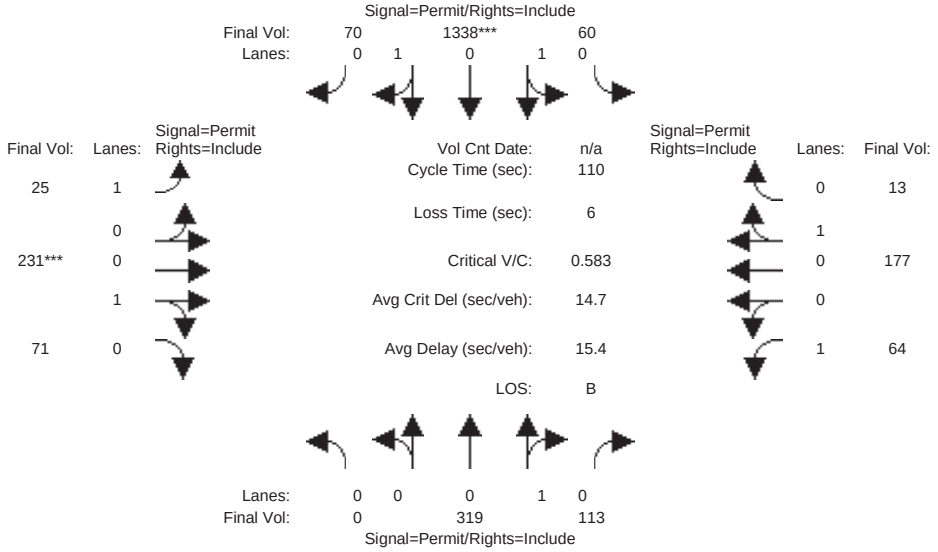
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	319	103	37	1338	70	25	221	71	58	171	9
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	319	103	37	1338	70	25	221	71	58	171	9
Added Vol:	0	0	10	23	0	0	0	10	0	6	6	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	319	113	60	1338	70	25	231	71	64	177	13
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	319	113	60	1338	70	25	231	71	64	177	13
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	319	113	60	1338	70	25	231	71	64	177	13
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	319	113	60	1338	70	25	231	71	64	177	13
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.72	0.28	0.09	1.81	0.10	1.00	0.75	0.25	1.00	0.93	0.07
Final Sat.:	0	1372	486	154	3437	180	1750	1425	438	1750	1760	129
Capacity Analysis Module:												
Vol/Sat:	0.00	0.23	0.23	0.39	0.39	0.39	0.01	0.16	0.16	0.04	0.10	0.10
Crit Moves:					****			****				
Green Time:	0.0	73.4	73.4	73.4	73.4	73.4	30.6	30.6	30.6	30.6	30.6	30.6
Volume/Cap:	0.00	0.35	0.35	0.58	0.58	0.58	0.05	0.58	0.58	0.13	0.36	0.36
Delay/Veh:	0.0	8.1	8.1	10.3	10.3	10.3	29.1	35.9	35.9	29.9	32.3	32.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.1	8.1	10.3	10.3	10.3	29.1	35.9	35.9	29.9	32.3	32.3
LOS by Move:	A	A	A	B+	B+	B+	C	D+	D+	C	C-	C-
HCM2kAvgQ:	0	6	6	13	13	13	1	9	9	2	5	5

Note: Queue reported is the number of cars per lane.

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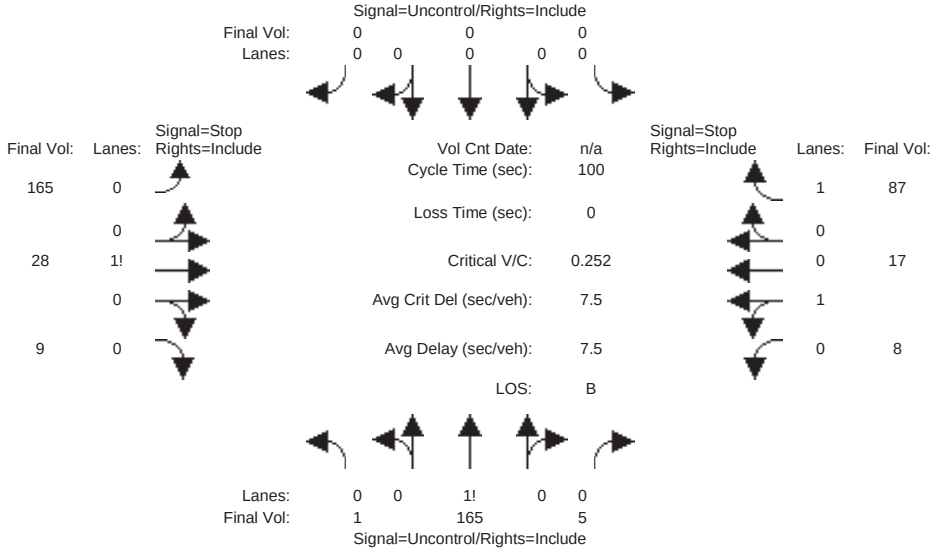
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  165     5     0    0     0   165   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  165     5     0    0     0   165   28     9     8   17    87
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  165     5     0    0     0   165   28     9     8   17    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  165     5     0    0     0   165   28     9     8   17    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  165     5     0    0     0   165   28     9     8   17    87
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   222  172     0   184  170   168
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   739  725  1091   782  727   882
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   654  724  1091   752  727   882
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.25 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.5
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  675 xxxxx   735 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.6 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             12.6              9.6
ApproachLOS:         *                *                B                 A
Note: Queue reported is the number of cars per lane.
```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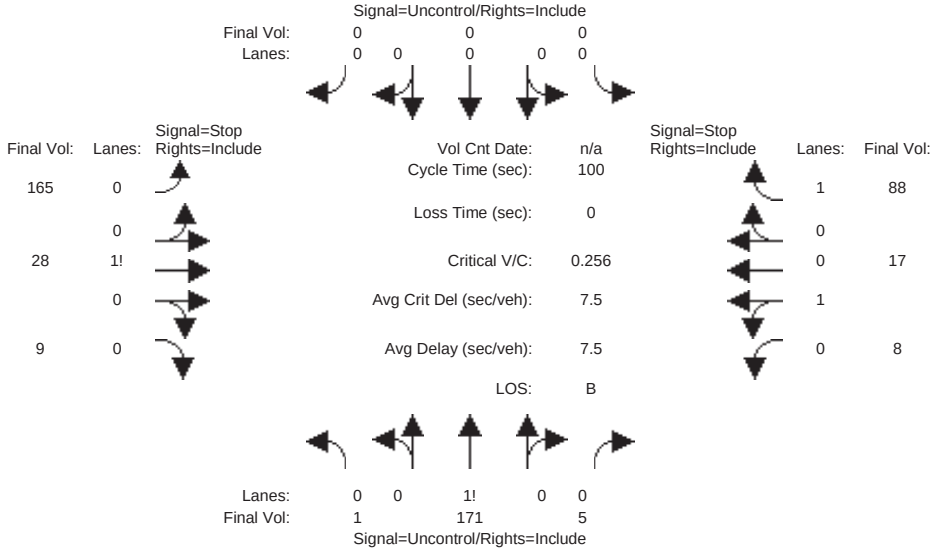
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  165     5     0    0     0   165   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  165     5     0    0     0   165   28     9     8   17    87
Added Vol:      0    6     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  171     5     0    0     0   165   28     9     8   17    88
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  171     5     0    0     0   165   28     9     8   17    88
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  171     5     0    0     0   165   28     9     8   17    88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   228  178     0   190  176   174
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   731  719  1091   775  722   875
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   646  719  1091   745  721   875
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.26 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  667 xxxxx   729 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.7 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             12.7              9.7
ApproachLOS:         *                *                B                A
Note: Queue reported is the number of cars per lane.
```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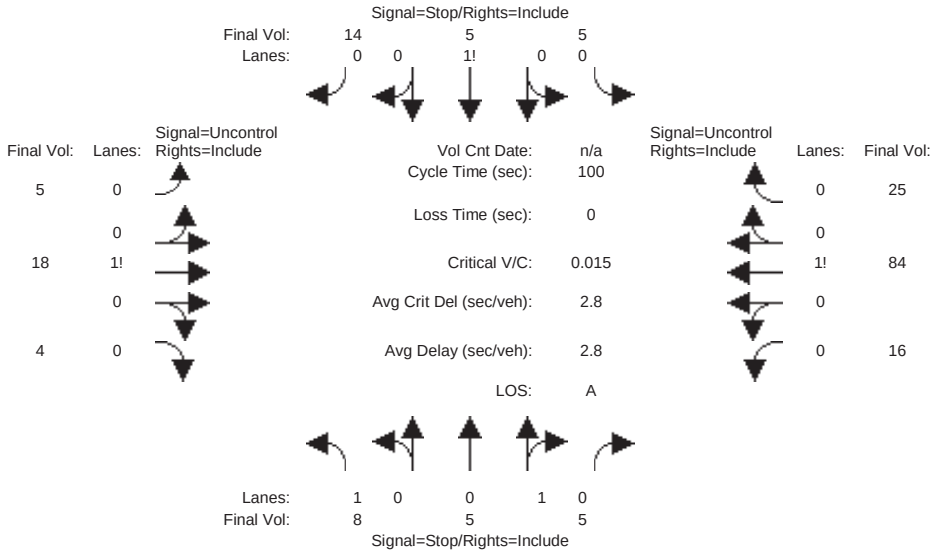
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    5     5     5    5    14     5   18     4    16   84    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    5     5     5    5    14     5   18     4    16   84    25
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8    5     5     5    5    14     5   18     4    16   84    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     8    5     5     5    5    14     5   18     4    16   84    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    8    5     5     5    5    14     5   18     4    16   84    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  168  171    20   164  161    97   109 xxxx xxxxx    22 xxxx xxxxx
Potent Cap.:  800  726  1064   806  735   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Move Cap.:    777  716  1064   790  726   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Volume/Cap:  0.01 0.01  0.00  0.01 0.01  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   856  xxxx  866 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.3 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.4              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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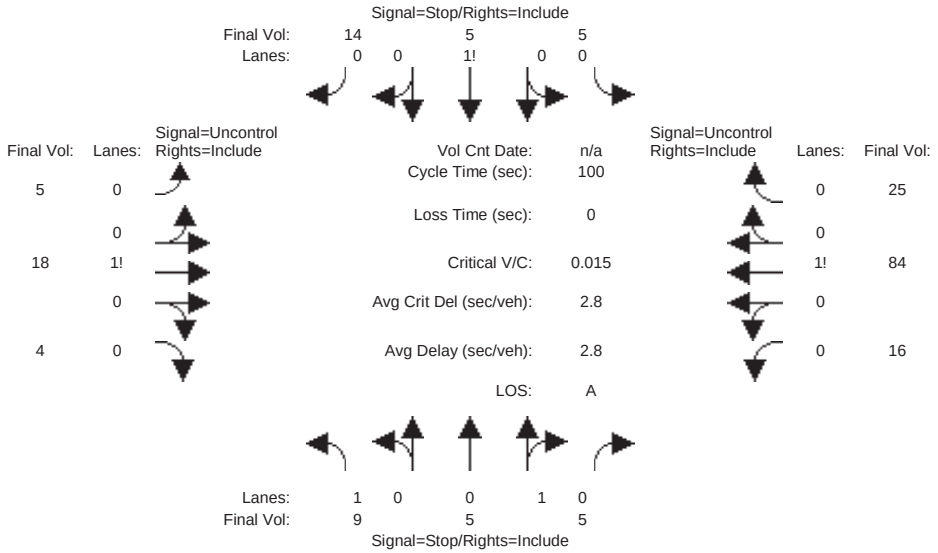
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    5     5     5    5    14     5   18     4    16   84    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    5     5     5    5    14     5   18     4    16   84    25
Added Vol:      1    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    5     5     5    5    14     5   18     4    16   84    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    5     5     5    5    14     5   18     4    16   84    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    5     5     5    5    14     5   18     4    16   84    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  168  171    20   164  161    97   109 xxxx xxxxx    22 xxxx xxxxx
Potent Cap.:  800  726  1064   806  735   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Move Cap.:    777  716  1064   790  726   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Volume/Cap:  0.01 0.01  0.00  0.01 0.01  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   856  xxxx  866 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.3 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.5              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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Mission Town Center TIA
DN15-0483
Existing PM

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2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #6: The Alameda & Fremont Street

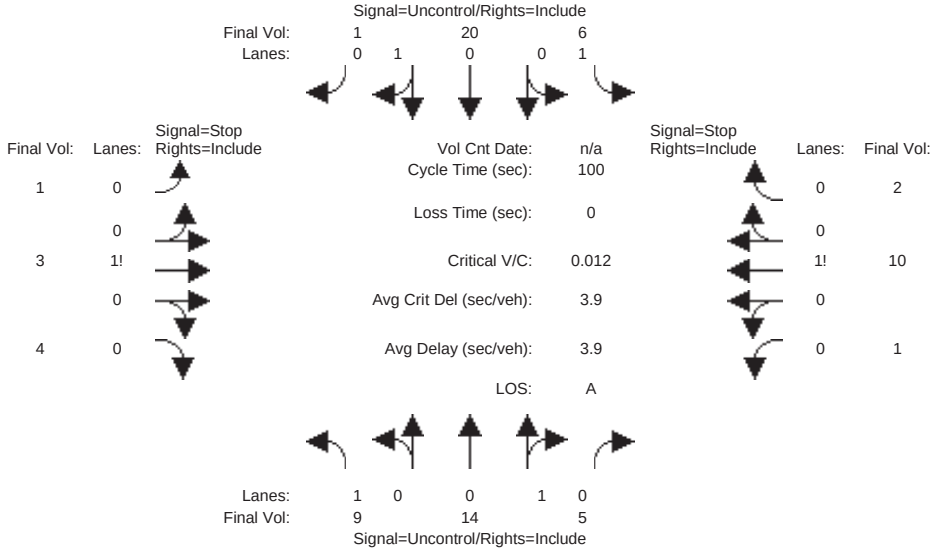
Signal=Uncontrol/Rights=Include

Final Vol:	1		20		6
Lanes:	0	1	0	0	1

Final Vol:	Lanes:	Signal=Stop Rights=Include			Signal=Stop Rights=Include	Lanes:	Final Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
1	0					0	2
			Loss Time (sec):	0			
	0					0	
3	1!		Critical V/C:	0.012		1!	10
	0		Avg Crit Del (sec/veh):	3.9		0	
4	0		Avg Delay (sec/veh):	3.9		0	1
			LOS:	A			

Lanes:	1	0	0	1	0
Final Vol:	9		14		5

Signal=Uncontrol/Rights=Include



```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        9   14     5     6   20     1     1    3     4     1   10     2
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     9   14     5     6   20     1     1    3     4     1   10     2
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     9   14     5     6   20     1     1    3     4     1   10     2
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      9   14     5     6   20     1     1    3     4     1   10     2
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9   14     5     6   20     1     1    3     4     1   10     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:   2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    21 xxxx xxxxx    19 xxxx xxxxx    73   70    21    71   68    17
Potent Cap.:  1608 xxxx xxxxx  1611 xxxx xxxxx   923  825  1063   926  827  1068
Move Cap.:    1608 xxxx xxxxx  1611 xxxx xxxxx   906  817  1063   913  819  1068
Volume/Cap:   0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.00 0.00  0.00  0.00 0.01  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:     0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:   7.3 xxxx xxxxx   7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *     A    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  937 xxxxx  xxxx  857 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx  0.0 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.9 xxxxx xxxxx  9.3 xxxxx
Shared LOS:      *    *     *     *    *     *     *    A     *     *    A     *
ApproachDel:     xxxxxx           xxxxxx               8.9               9.3
ApproachLOS:          *                *                 A                 A
Note: Queue reported is the number of cars per lane.
```

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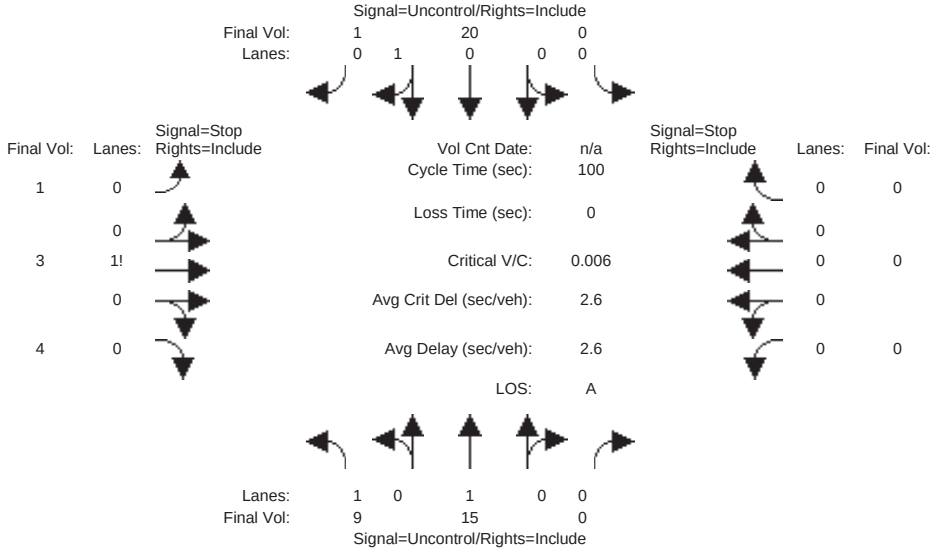
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9   14     0     0   20     1     1    3     4     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9   14     0     0   20     1     1    3     4     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9   15     0     0   20     1     1    3     4     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9   15     0     0   20     1     1    3     4     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9   15     0     0   20     1     1    3     4     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   21 xxxx xxxxx  xxxx xxxx xxxxx    54   54    21  xxxx xxxx xxxxx
Potent Cap.: 1608 xxxx xxxxx  xxxx xxxx xxxxx   960  842  1063  xxxx xxxx xxxxx
Move Cap.:   1608 xxxx xxxxx  xxxx xxxx xxxxx   956  837  1063  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  953 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.8           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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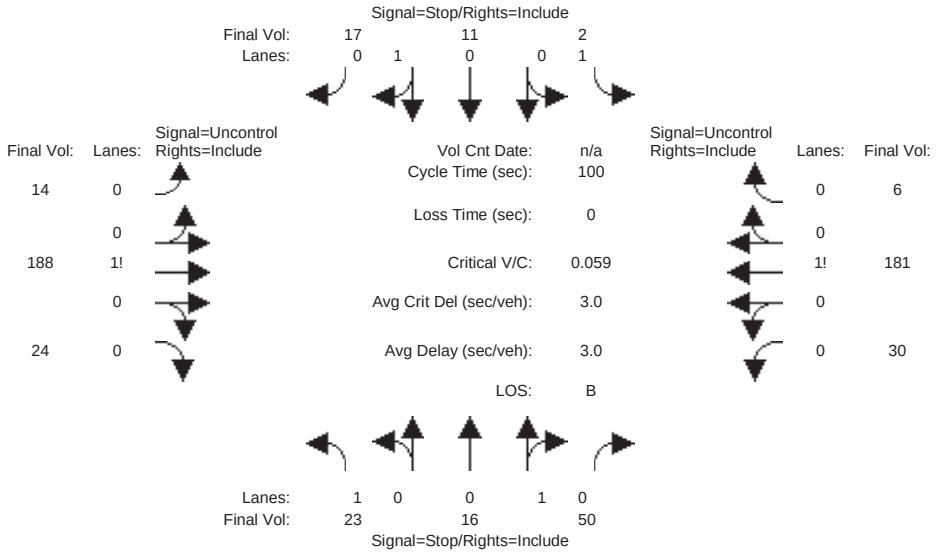
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      23   16    50     2   11    17    14  188    24    30  181     6
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23   16    50     2   11    17    14  188    24    30  181     6
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23   16    50     2   11    17    14  188    24    30  181     6
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23   16    50     2   11    17    14  188    24    30  181     6
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   23   16    50     2   11    17    14  188    24    30  181     6
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  486  475   200   505  484   184   187 xxxx xxxxx   212 xxxx xxxxx
Potent Cap.:  495  491   846   481  486   864  1399 xxxx xxxxx  1370 xxxx xxxxx
Move Cap.:    465  476   846   430  470   864  1399 xxxx xxxxx  1370 xxxx xxxxx
Volume/Cap:  0.05 0.03  0.06  0.00 0.02  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 13.1 xxxx xxxxx  13.4 xxxx xxxxx   7.6 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   712  xxxx xxxx   650  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.3 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  10.6 xxxxx xxxx  10.8 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:      11.2             11.0           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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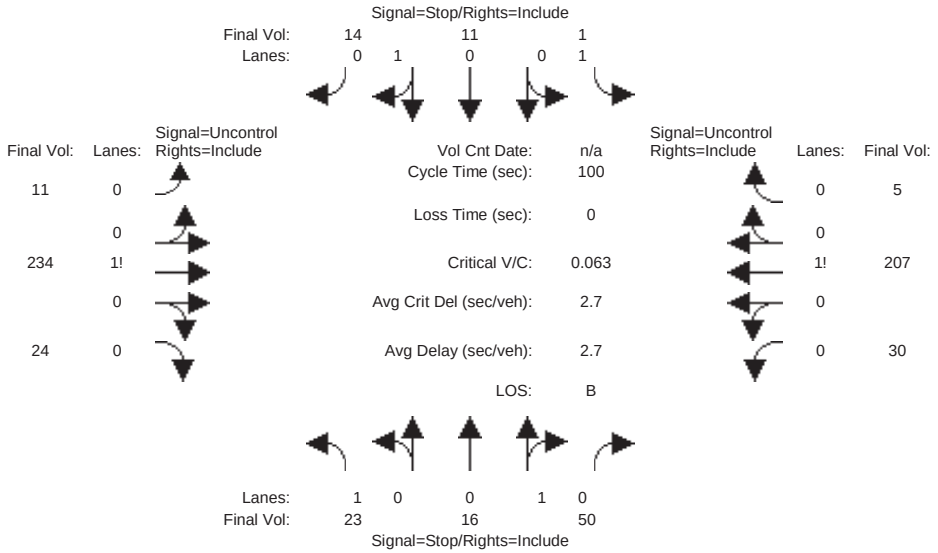
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      23   16    50     2   11    17    14  188    24    30  181     6
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23   16    50     2   11    17    14  188    24    30  181     6
Added Vol:      0    0     0    -1    0    -3    -3   46     0     0   26    -1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23   16    50     1   11    14    11  234    24    30  207     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23   16    50     1   11    14    11  234    24    30  207     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   23   16    50     1   11    14    11  234    24    30  207     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  550  540   246   571  550   210   212 xxxx xxxxx   258 xxxx xxxxx
Potent Cap.:  449  451   798   435  446   836  1370 xxxx xxxxx  1318 xxxx xxxxx
Move Cap.:    423  437   798   387  432   836  1370 xxxx xxxxx  1318 xxxx xxxxx
Volume/Cap:  0.05 0.04  0.06  0.00 0.03  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 14.0 xxxx xxxxx  14.3 xxxx xxxxx   7.6 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   665  xxxx xxxx   592  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.3 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  11.0 xxxxx xxxx  11.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:      11.8             11.5           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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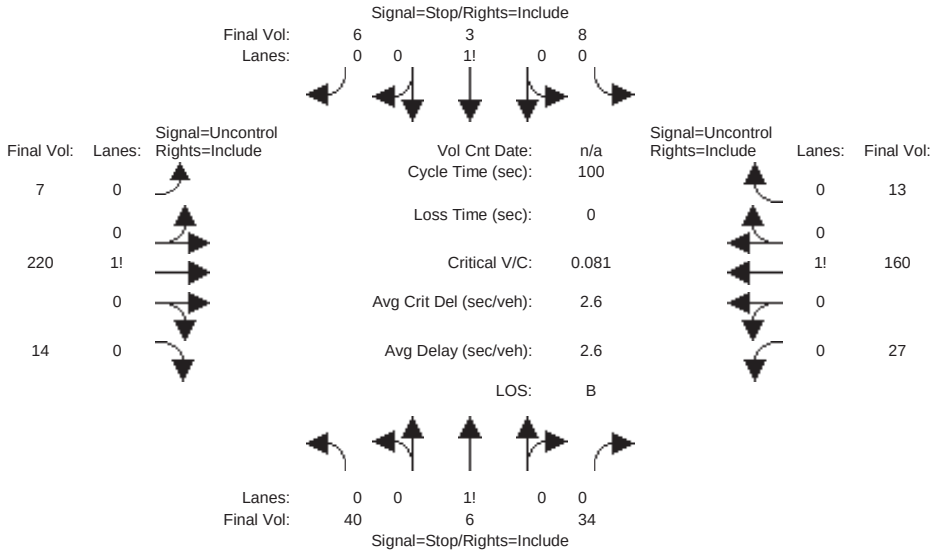
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    6    34     8    3     6     7  220    14    27  160    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    6    34     8    3     6     7  220    14    27  160    13
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    6    34     8    3     6     7  220    14    27  160    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    6    34     8    3     6     7  220    14    27  160    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    6    34     8    3     6     7  220    14    27  160    13
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  466  468   227   482  469   167   173 xxxx xxxxx   234 xxxx xxxxx
Potent Cap.:  510  496   817   498  495   883  1416 xxxx xxxxx  1345 xxxx xxxxx
Move Cap.:    495  483   817   464  483   883  1416 xxxx xxxxx  1345 xxxx xxxxx
Volume/Cap:  0.08 0.01  0.04  0.02 0.01  0.01  0.00 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  593 xxxxx  xxxx  562 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.0 xxxxx xxxxx 11.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      12.0             11.6           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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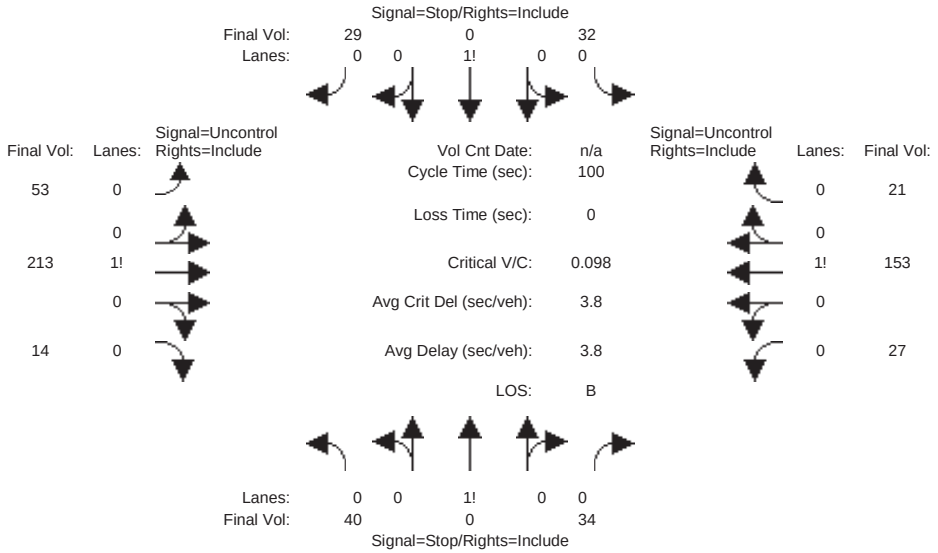
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    0    34     0    0     0     0  220    14    27  160     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    34     0    0     0     0  220    14    27  160     0
Added Vol:      0    0     0    30    0    29    51   -5     0     0   -7    21
PasserByVol:    0    0     0     2    0     0     2   -2     0     0    0     0
Initial Fut:   40    0    34    32    0    29    53  213    14    27  153    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    0    34    32    0    29    53  213    14    27  153    21
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    0    34    32    0    29    53  213    14    27  153    21
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  558  554   220   561  551   164   174 xxxx xxxxx   227 xxxx xxxxx
Potent Cap.:  443  443   825   442  445   886  1415 xxxx xxxxx  1353 xxxx xxxxx
Move Cap.:    410  418   825   405  419   886  1415 xxxx xxxxx  1353 xxxx xxxxx
Volume/Cap:  0.10 0.00  0.04  0.08 0.00  0.03  0.04 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  533 xxxxx  xxxx  546 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.8 xxxxx xxxxx 12.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      12.8             12.4           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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DN15-0483
Existing PM

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2000 HCM Unsignalized (Future Volume Alternative)
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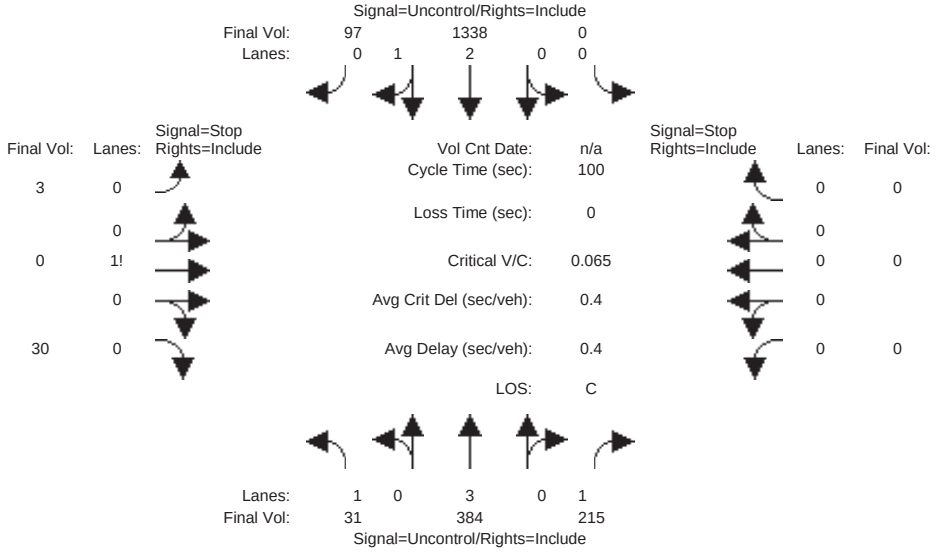
Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31  384   215     0 1338    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31  384   215     0 1338    97     3    0    30     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31  384   215     0 1338    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31  384   215     0 1338    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31  384   215     0 1338    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1435 xxxx xxxxx  xxxx xxxx xxxxx  1577 2048   495  xxxx xxxx xxxxx
Potent Cap.:  479 xxxx xxxxx  xxxx xxxx xxxxx   102   57   526  xxxx xxxx xxxxx
Move Cap.:    479 xxxx xxxxx  xxxx xxxx xxxxx    97   53   526  xxxx xxxx xxxxx
Volume/Cap:  0.06 xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00  0.06  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 13.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  376 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             15.5           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```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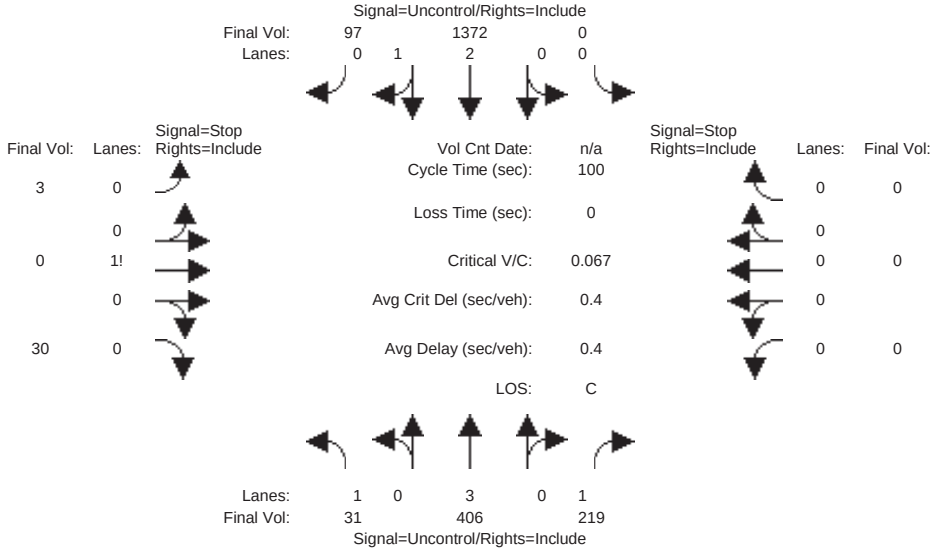
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31  384   215     0 1338    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31  384   215     0 1338    97     3    0    30     0    0     0
Added Vol:      0   22     4     0   34     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31  406   219     0 1372    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31  406   219     0 1372    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31  406   219     0 1372    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1469 xxxx xxxxx  xxxx xxxx xxxxx  1618 2108   506  xxxx xxxx xxxxx
Potent Cap.:  465 xxxx xxxxx  xxxx xxxx xxxxx    96   52   517  xxxx xxxx xxxxx
Move Cap.:    465 xxxx xxxxx  xxxx xxxx xxxxx    91   48   517  xxxx xxxx xxxxx
Volume/Cap:  0.07 xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00  0.06  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 13.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  363 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             15.9           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```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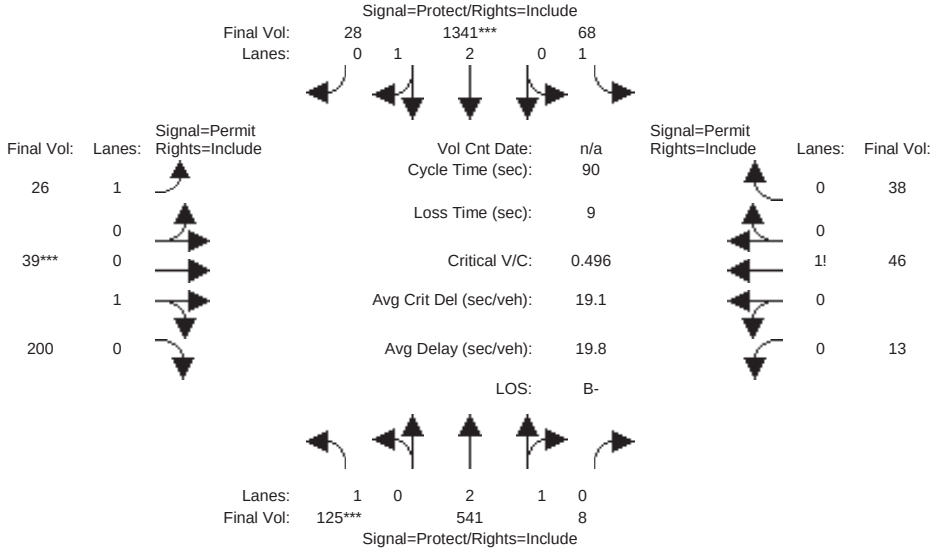
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	125	541	8	68	1341	28	26	39	200	13	46	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	125	541	8	68	1341	28	26	39	200	13	46	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	125	541	8	68	1341	28	26	39	200	13	46	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	125	541	8	68	1341	28	26	39	200	13	46	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	125	541	8	68	1341	28	26	39	200	13	46	38
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	125	541	8	68	1341	28	26	39	200	13	46	38
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.95	0.05	1.00	2.93	0.07	1.00	0.15	0.85	0.14	0.45	0.41
Final Sat.:	1750	5610	83	1750	5574	116	1750	289	1484	244	862	712
Capacity Analysis Module:												
Vol/Sat:	0.07	0.10	0.10	0.04	0.24	0.24	0.01	0.13	0.13	0.05	0.05	0.05
Crit Moves:	****				****			****				
Green Time:	12.9	33.3	33.3	23.3	43.6	43.6	24.4	24.4	24.4	24.4	24.4	24.4
Volume/Cap:	0.50	0.26	0.26	0.15	0.50	0.50	0.05	0.50	0.50	0.20	0.20	0.20
Delay/Veh:	37.1	19.9	19.9	25.9	15.9	15.9	24.3	28.4	28.4	25.4	25.4	25.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.1	19.9	19.9	25.9	15.9	15.9	24.3	28.4	28.4	25.4	25.4	25.4
LOS by Move:	D+	B-	B-	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	4	4	4	1	8	8	1	6	6	2	2	2

Note: Queue reported is the number of cars per lane.

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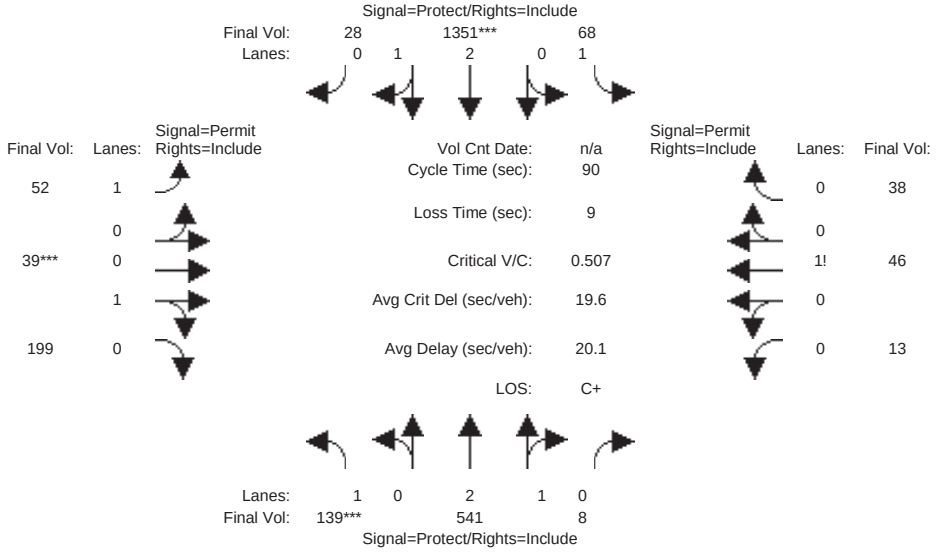
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	125	541	8	68	1341	28	26	39	200	13	46	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	125	541	8	68	1341	28	26	39	200	13	46	38
Added Vol:	14	0	0	0	10	0	26	0	-1	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	139	541	8	68	1351	28	52	39	199	13	46	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	139	541	8	68	1351	28	52	39	199	13	46	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	139	541	8	68	1351	28	52	39	199	13	46	38
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	139	541	8	68	1351	28	52	39	199	13	46	38
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.95	0.05	1.00	2.93	0.07	1.00	0.15	0.85	0.14	0.45	0.41
Final Sat.:	1750	5610	83	1750	5575	116	1750	291	1482	244	862	712
Capacity Analysis Module:												
Vol/Sat:	0.08	0.10	0.10	0.04	0.24	0.24	0.03	0.13	0.13	0.05	0.05	0.05
Crit Moves:	****				****			****				
Green Time:	14.1	33.6	33.6	23.5	43.0	43.0	23.8	23.8	23.8	23.8	23.8	23.8
Volume/Cap:	0.51	0.26	0.26	0.15	0.51	0.51	0.11	0.51	0.51	0.20	0.20	0.20
Delay/Veh:	36.3	19.6	19.6	25.7	16.3	16.3	25.2	29.0	29.0	25.9	25.9	25.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.3	19.6	19.6	25.7	16.3	16.3	25.2	29.0	29.0	25.9	25.9	25.9
LOS by Move:	D+	B-	B-	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	4	4	4	1	8	8	1	6	6	2	2	2

Note: Queue reported is the number of cars per lane.

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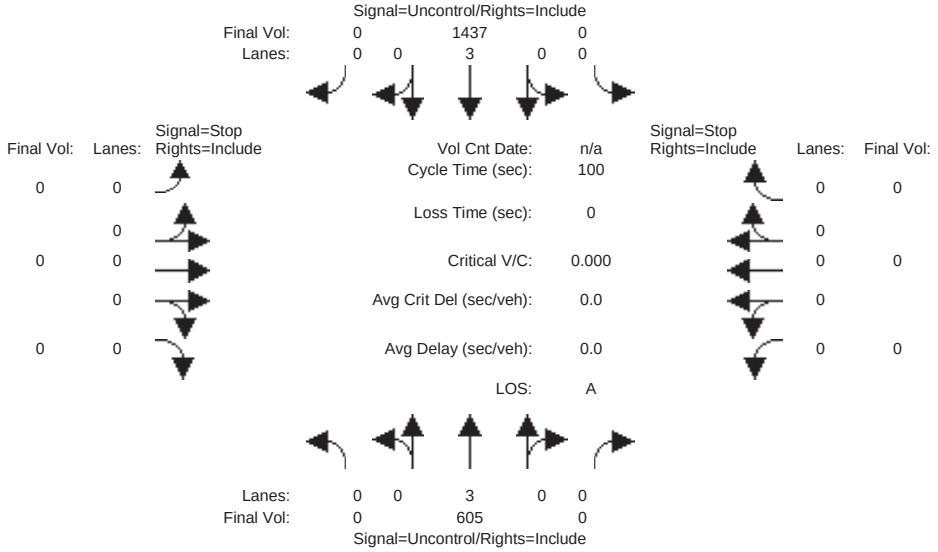
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  605     0     0 1437     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  605     0     0 1437     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  605     0     0 1437     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  605     0     0 1437     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  605     0     0 1437     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```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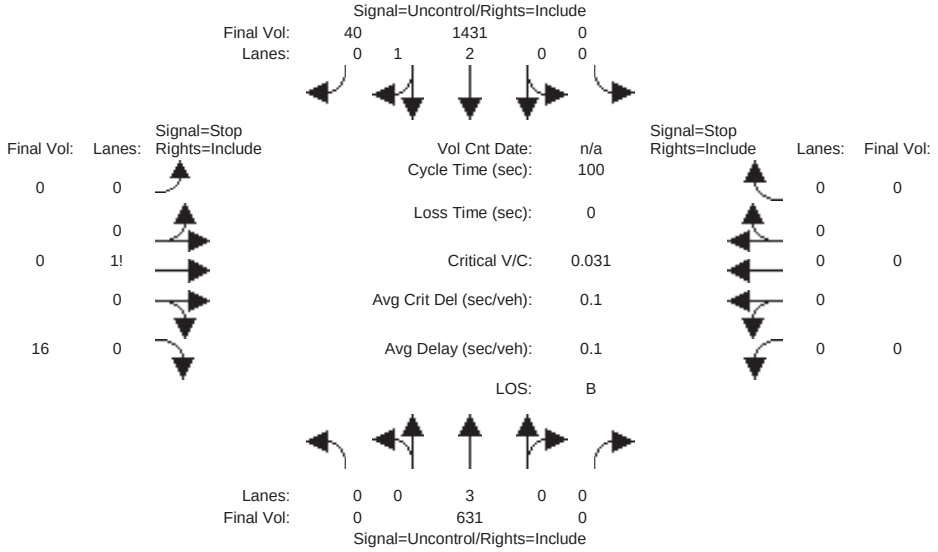
Mission Town Center TIA
DN15-0483
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  605     0     0 1437     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  605     0     0 1437     0     0    0     0     0    0     0
Added Vol:      0   26     0     0    0    34     0    0    10     0    0     0
PasserByVol:    0    0     0     0   -6     6     0    0     6     0    0     0
Initial Fut:    0  631     0     0 1431    40     0    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  631     0     0 1431    40     0    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  631     0     0 1431    40     0    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   497  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   524  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   524  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  12.1 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     B     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             12.1           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Existing AM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection	???				Existing AM				Existing Plus Project AM						???			
	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1 Lafavettee & El Camino Real	?	xx.x	x.xxx	xx.x	D	43.4	0.779	50.7	D	43.6	0.790	+ 0.011	51.3	+ 0.6	?	xx.x	x.xxx	xx.x
#2 Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	B+	10.5	0.347	8.5	B+	10.7	0.353	+ 0.006	8.8	+ 0.3	?	xx.x	x.xxx	xx.x
#3 Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	15.4	0.536	16.0	B	15.6	0.540	+ 0.003	16.0	+ 0.1	?	xx.x	x.xxx	xx.x
#4 Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	C	6.2	0.297	6.2	C	6.3	0.302	+ 0.005	6.3	+ 0.0	?	xx.x	x.xxx	xx.x
#5 The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	2.2	0.008	2.2	A	2.2	0.008	+ 0.000	2.2	+ 0.0	?	xx.x	x.xxx	xx.x
#6 The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	3.0	0.007	3.0	A	2.6	0.007	+ 0.000	2.6	- 0.4	?	xx.x	x.xxx	xx.x
#7 The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	2.6	0.026	2.6	B	2.2	0.026	+ 0.000	2.2	- 0.4	?	xx.x	x.xxx	xx.x
#8 Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	1.2	0.019	1.2	B	3.2	0.076	+ 0.057	3.2	+ 1.9	?	xx.x	x.xxx	xx.x
#9 El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	B	0.2	0.021	0.2	B	0.2	0.021	+ 0.000	0.2	- 0.0	?	xx.x	x.xxx	xx.x
#10 El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	B	17.5	0.384	15.8	B	17.9	0.387	+ 0.003	16.0	+ 0.2	?	xx.x	x.xxx	xx.x
#11 El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	A	0.1	0.021	+ 0.021	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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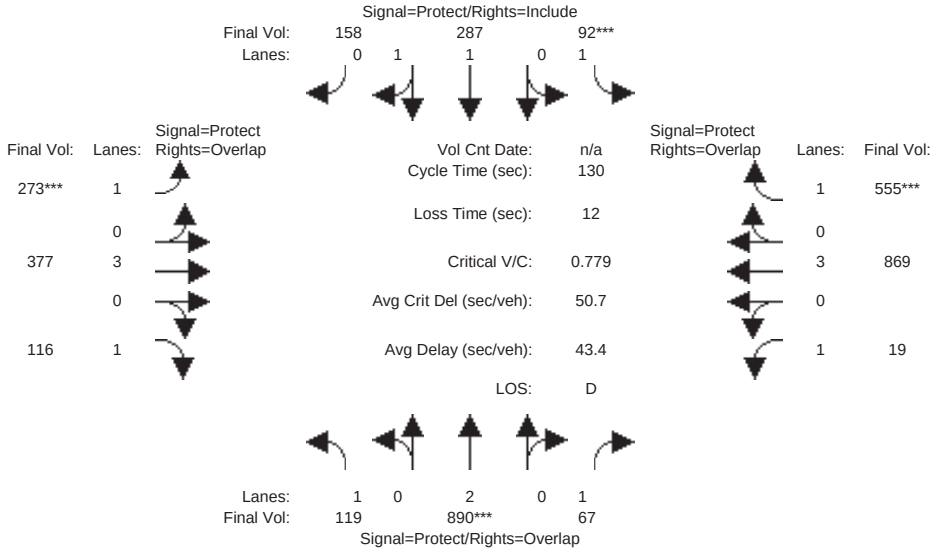
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	119	890	67	92	287	158	273	377	116	19	869	555
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	119	890	67	92	287	158	273	377	116	19	869	555
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	119	890	67	92	287	158	273	377	116	19	869	555
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	119	890	67	92	287	158	273	377	116	19	869	555
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	119	890	67	92	287	158	273	377	116	19	869	555
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	119	890	67	92	287	158	273	377	116	19	869	555
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.25	0.75	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1750	3800	1750	1750	2378	1309	1750	5700	1750	1750	5700	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.23	0.04	0.05	0.12	0.12	0.16	0.07	0.07	0.01	0.15	0.32
Crit Moves:		****		****			****					****
Green Time:	17.2	39.1	67.9	8.8	30.6	30.6	26.0	41.1	58.4	28.8	43.9	52.7
Volume/Cap:	0.51	0.78	0.07	0.78	0.51	0.51	0.78	0.21	0.15	0.05	0.45	0.78
Delay/Veh:	60.3	46.8	15.6	98.4	45.4	45.4	64.9	32.8	21.5	40.1	34.4	42.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.3	46.8	15.6	98.4	45.4	45.4	64.9	32.8	21.5	40.1	34.4	42.1
LOS by Move:	E	D	B	F	D	D	E	C-	C+	D	C-	D
HCM2kAvgQ:	5	18	1	6	8	8	13	4	3	1	9	22

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
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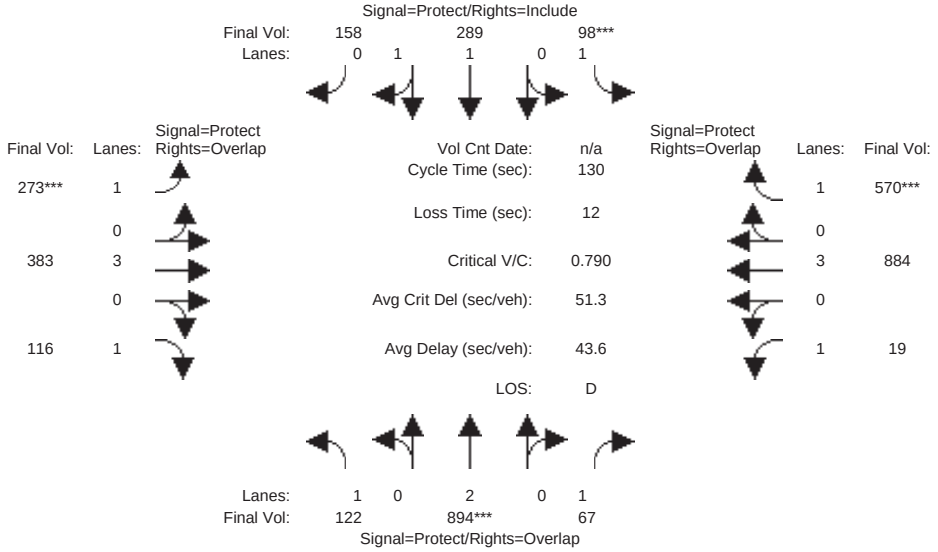
Existing AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	119	890	67	92	287	158	273	377	116	19	869	555
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	119	890	67	92	287	158	273	377	116	19	869	555
Added Vol:	3	4	0	6	2	0	0	6	0	0	15	15
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	894	67	98	289	158	273	383	116	19	884	570
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	122	894	67	98	289	158	273	383	116	19	884	570
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	894	67	98	289	158	273	383	116	19	884	570
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	122	894	67	98	289	158	273	383	116	19	884	570
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.26	0.74	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1750	3800	1750	1750	2385	1304	1750	5700	1750	1750	5700	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.24	0.04	0.06	0.12	0.12	0.16	0.07	0.07	0.01	0.16	0.33
Crit Moves:		****		****			****					****
Green Time:	17.5	38.7	67.6	9.2	30.4	30.4	25.7	41.2	58.7	28.8	44.4	53.6
Volume/Cap:	0.52	0.79	0.07	0.79	0.52	0.52	0.79	0.21	0.15	0.05	0.45	0.79
Delay/Veh:	60.2	47.5	15.7	98.1	45.6	45.6	66.2	32.8	21.3	40.0	34.1	41.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.2	47.5	15.7	98.1	45.6	45.6	66.2	32.8	21.3	40.0	34.1	41.9
LOS by Move:	E	D	B	F	D	D	E	C-	C+	D	C-	D
HCM2kAvgQ:	5	18	1	6	8	8	13	4	3	1	9	23

Note: Queue reported is the number of cars per lane.

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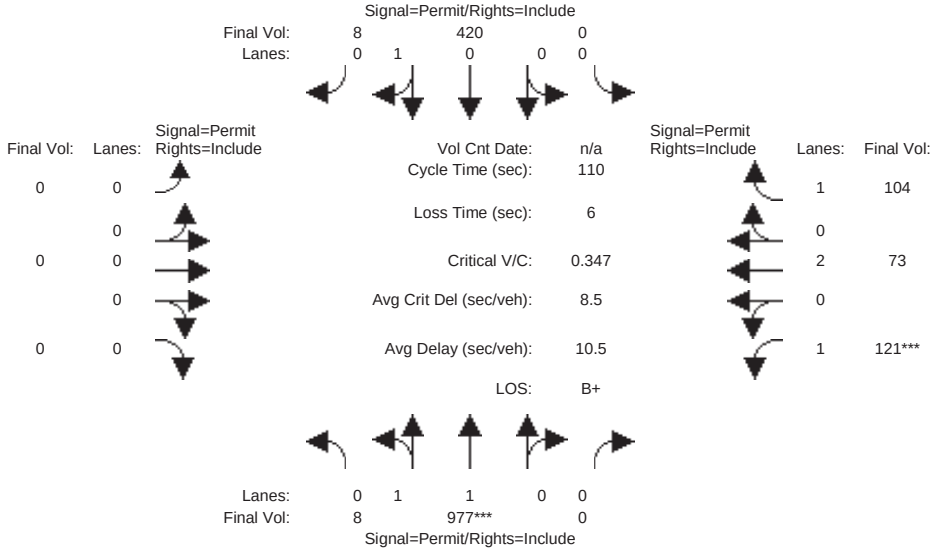
Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	8	977	0	0	420	8	0	0	0	121	73	104
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	977	0	0	420	8	0	0	0	121	73	104
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	977	0	0	420	8	0	0	0	121	73	104
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	8	977	0	0	420	8	0	0	0	121	73	104
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	977	0	0	420	8	0	0	0	121	73	104
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	977	0	0	420	8	0	0	0	121	73	104
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	31	3767	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.07	0.02	0.06
Crit Moves:		****								****		
Green Time:	82.1	82.1	0.0	0.0	82.1	82.1	0.0	0.0	0.0	21.9	21.9	21.9
Volume/Cap:	0.35	0.35	0.00	0.00	0.30	0.30	0.00	0.00	0.00	0.35	0.10	0.30
Delay/Veh:	4.8	4.8	0.0	0.0	4.7	4.7	0.0	0.0	0.0	38.5	36.0	38.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	4.8	4.8	0.0	0.0	4.7	4.7	0.0	0.0	0.0	38.5	36.0	38.0
LOS by Move:	A	A	A	A	A	A	A	A	A	D+	D+	D+
HCM2kAvgQ:	6	6	0	0	5	5	0	0	0	4	1	3

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Existing AM

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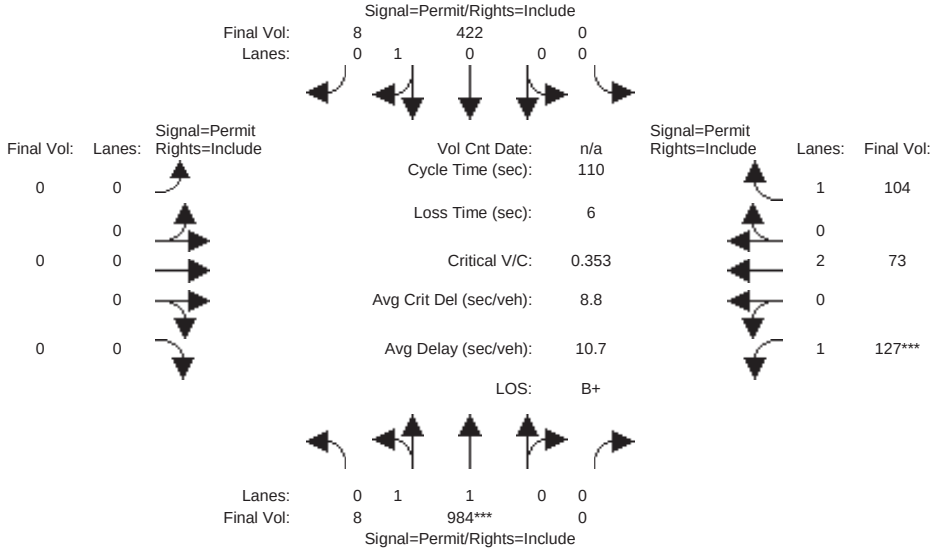
Existing Plus Project AM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	10	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	8	977	0	0	420	8	0	0	0	121	73	104
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	977	0	0	420	8	0	0	0	121	73	104
Added Vol:	0	7	0	0	2	0	0	0	0	6	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	984	0	0	422	8	0	0	0	127	73	104
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	8	984	0	0	422	8	0	0	0	127	73	104
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	984	0	0	422	8	0	0	0	127	73	104
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	984	0	0	422	8	0	0	0	127	73	104
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	31	3767	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.07	0.02	0.06
Crit Moves:		****								****		
Green Time:	81.4	81.4	0.0	0.0	81.4	81.4	0.0	0.0	0.0	22.6	22.6	22.6
Volume/Cap:	0.35	0.35	0.00	0.00	0.31	0.31	0.00	0.00	0.00	0.35	0.09	0.29
Delay/Veh:	5.1	5.1	0.0	0.0	4.9	4.9	0.0	0.0	0.0	38.0	35.4	37.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.1	5.1	0.0	0.0	4.9	4.9	0.0	0.0	0.0	38.0	35.4	37.4
LOS by Move:	A	A	A	A	A	A	A	A	A	D+	D+	D+
HCM2kAvgQ:	6	6	0	0	5	5	0	0	0	4	1	3

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Existing AM

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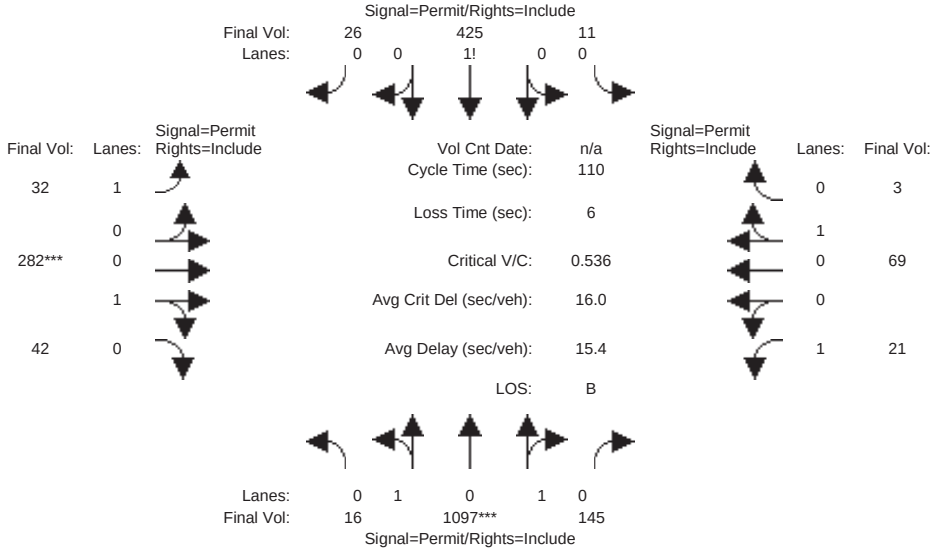
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	16	1097	145	11	425	26	32	282	42	21	69	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	1097	145	11	425	26	32	282	42	21	69	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	1097	145	11	425	26	32	282	42	21	69	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	16	1097	145	11	425	26	32	282	42	21	69	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	1097	145	11	425	26	32	282	42	21	69	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	1097	145	11	425	26	32	282	42	21	69	3
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.03	1.72	0.25	0.03	0.91	0.06	1.00	0.86	0.14	1.00	0.95	0.05
Final Sat.:	48	3278	433	45	1736	106	1750	1636	244	1750	1814	79
Capacity Analysis Module:												
Vol/Sat:	0.33	0.33	0.33	0.24	0.24	0.24	0.02	0.17	0.17	0.01	0.04	0.04
Crit Moves:		****						****				
Green Time:	68.6	68.6	68.6	68.6	68.6	68.6	35.4	35.4	35.4	35.4	35.4	35.4
Volume/Cap:	0.54	0.54	0.54	0.39	0.39	0.39	0.06	0.54	0.54	0.04	0.12	0.12
Delay/Veh:	11.9	11.9	11.9	10.5	10.5	10.5	25.8	31.6	31.6	25.7	26.4	26.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.9	11.9	11.9	10.5	10.5	10.5	25.8	31.6	31.6	25.7	26.4	26.4
LOS by Move:	B+	B+	B+	B+	B+	B+	C	C	C	C	C	C
HCM2kAvgQ:	12	12	12	8	8	8	1	9	9	1	2	2

Note: Queue reported is the number of cars per lane.

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DN15-0483
Existing AM

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2000 HCM Operations (Future Volume Alternative)
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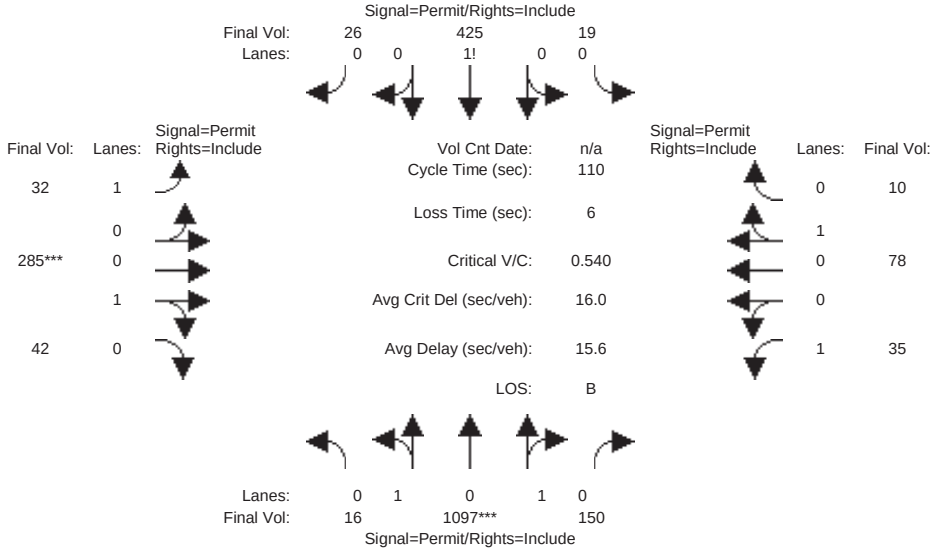
Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	16	1097	145	11	425	26	32	282	42	21	69	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	1097	145	11	425	26	32	282	42	21	69	3
Added Vol:	0	0	5	8	0	0	0	3	0	14	9	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	1097	150	19	425	26	32	285	42	35	78	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	16	1097	150	19	425	26	32	285	42	35	78	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	1097	150	19	425	26	32	285	42	35	78	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	1097	150	19	425	26	32	285	42	35	78	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.03	1.72	0.25	0.04	0.90	0.06	1.00	0.86	0.14	1.00	0.88	0.12
Final Sat.:	48	3264	446	76	1704	104	1750	1638	241	1750	1668	214
Capacity Analysis Module:												
Vol/Sat:	0.34	0.34	0.34	0.25	0.25	0.25	0.02	0.17	0.17	0.02	0.05	0.05
Crit Moves:		****						****				
Green Time:	68.5	68.5	68.5	68.5	68.5	68.5	35.5	35.5	35.5	35.5	35.5	35.5
Volume/Cap:	0.54	0.54	0.54	0.40	0.40	0.40	0.06	0.54	0.54	0.06	0.15	0.15
Delay/Veh:	12.0	12.0	12.0	10.6	10.6	10.6	25.8	31.5	31.5	25.8	26.6	26.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.0	12.0	12.0	10.6	10.6	10.6	25.8	31.5	31.5	25.8	26.6	26.6
LOS by Move:	B	B	B	B+	B+	B+	C	C	C	C	C	C
HCM2kAvgQ:	12	12	12	8	8	8	1	9	9	1	2	2

Note: Queue reported is the number of cars per lane.

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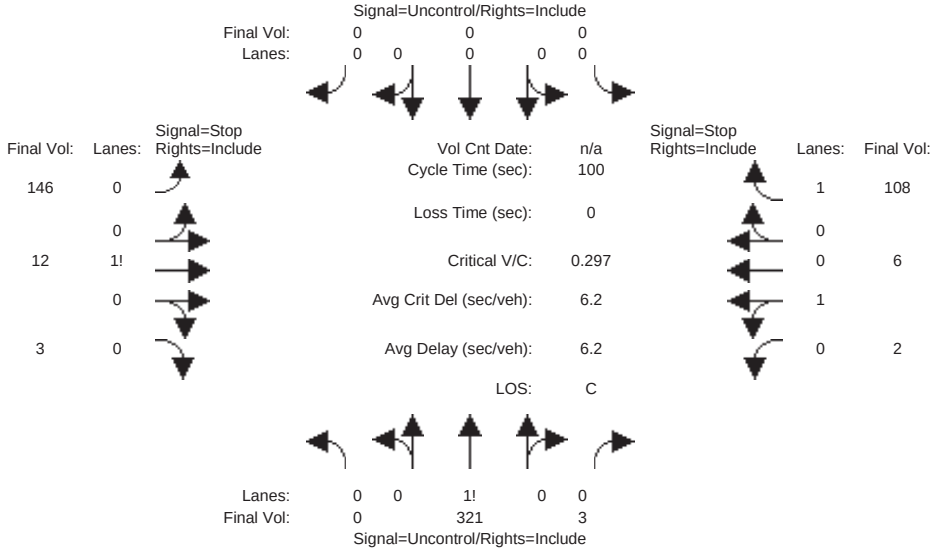
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  321     3     0    0     0   146   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  321     3     0    0     0   146   12     3     2    6   108
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  321     3     0    0     0   146   12     3     2    6   108
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  321     3     0    0     0   146   12     3     2    6   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  321     3     0    0     0   146   12     3     2    6   108
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   380  324     0   329  323   323
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   582  597  1091   629  598   723
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   491  597  1091   617  598   723
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.30 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.9
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  503 xxxxx   603 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.4 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.5 xxxxx  11.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             15.5             10.9
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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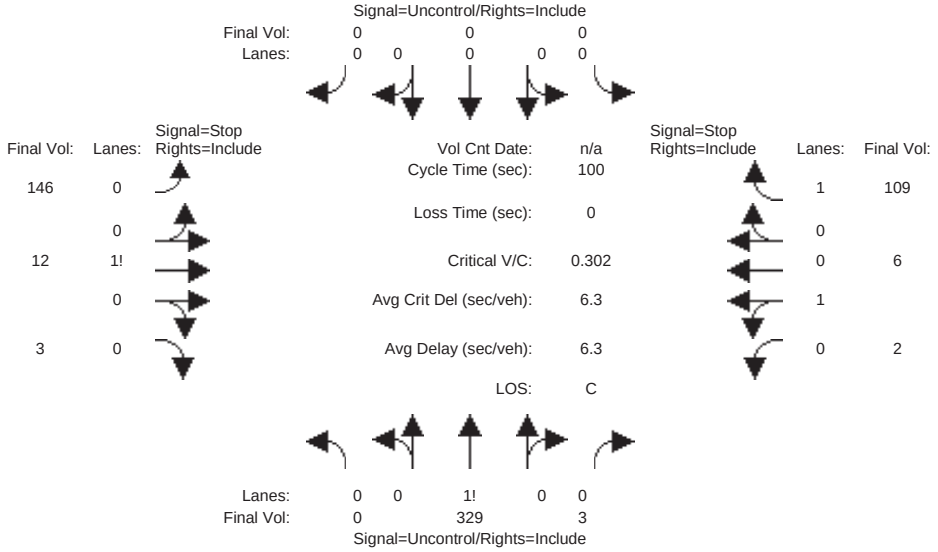
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  321     3     0    0     0   146   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  321     3     0    0     0   146   12     3     2    6   108
Added Vol:      0    8     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  329     3     0    0     0   146   12     3     2    6   109
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  329     3     0    0     0   146   12     3     2    6   109
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  329     3     0    0     0   146   12     3     2    6   109
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   388  332     0   337  331   331
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   574  591  1091   621  592   716
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   483  591  1091   610  592   716
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.30 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.9
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  495 xxxxx   596 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.4 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.7 xxxxx  11.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             15.7             10.9
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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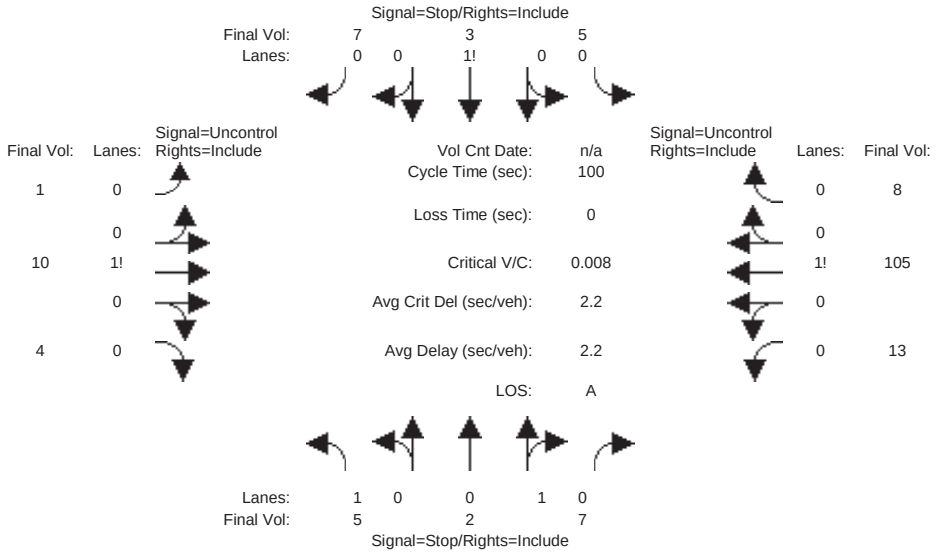
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5    2     7     5    3     7     1   10     4    13  105     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    2     7     5    3     7     1   10     4    13  105     8
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5    2     7     5    3     7     1   10     4    13  105     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5    2     7     5    3     7     1   10     4    13  105     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5    2     7     5    3     7     1   10     4    13  105     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  154  153    12   154  151   109   113 xxxx xxxxx    14 xxxx xxxxx
Potent Cap.:  817  742  1074   818  744   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Move Cap.:    803  736  1074   806  738   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.01  0.01 0.00  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.2 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   975  xxxx  850 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   8.7 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.0              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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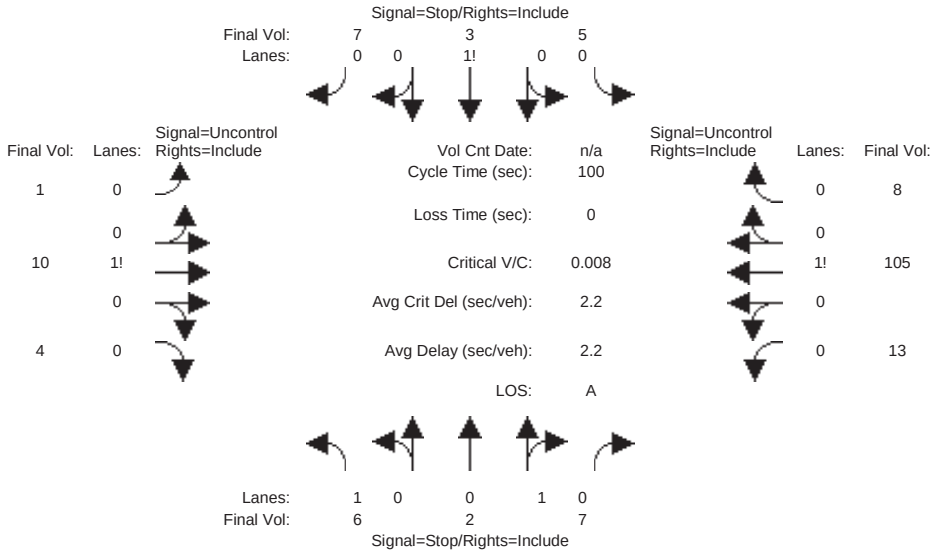
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5    2     7     5    3     7     1   10     4    13  105     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    2     7     5    3     7     1   10     4    13  105     8
Added Vol:      1    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6    2     7     5    3     7     1   10     4    13  105     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6    2     7     5    3     7     1   10     4    13  105     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    6    2     7     5    3     7     1   10     4    13  105     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  154  153    12   154  151   109   113 xxxx xxxxx    14 xxxx xxxxx
Potent Cap.:  817  742  1074   818  744   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Move Cap.:    803  736  1074   806  738   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.01  0.01 0.00  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.2 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   975  xxxx  850 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   8.7 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.0              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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Mission Town Center TIA
DN15-0483
Existing AM

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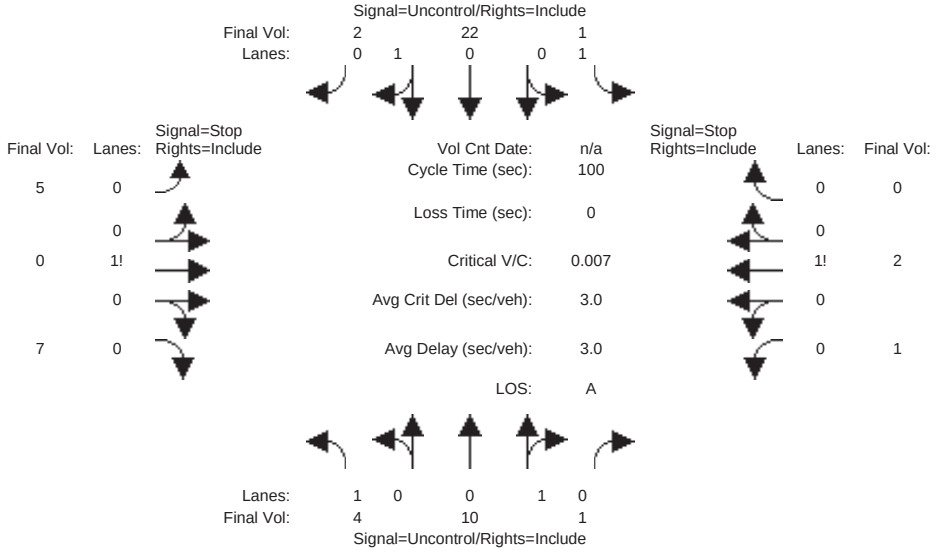
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4   10     1     1   22     2     5    0     7     1    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4   10     1     1   22     2     5    0     7     1    2     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4   10     1     1   22     2     5    0     7     1    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4   10     1     1   22     2     5    0     7     1    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4   10     1     1   22     2     5    0     7     1    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   24 xxxx xxxxx    11 xxxx xxxxx    45   44    23    47   45 xxxxx
Potent Cap.: 1604 xxxx xxxxx  1621 xxxx xxxxx   963  852  1060   959  851 xxxxx
Move Cap.:   1604 xxxx xxxxx  1621 xxxx xxxxx   959  849  1060   951  849 xxxxx
Volume/Cap:  0.00 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.00  0.01  0.00 0.00  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx   7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1015 xxxxx   880 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx   9.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     A    *     *
ApproachDel:    xxxxxx           xxxxxx               8.6              9.1
ApproachLOS:         *                *                A                A
Note: Queue reported is the number of cars per lane.
```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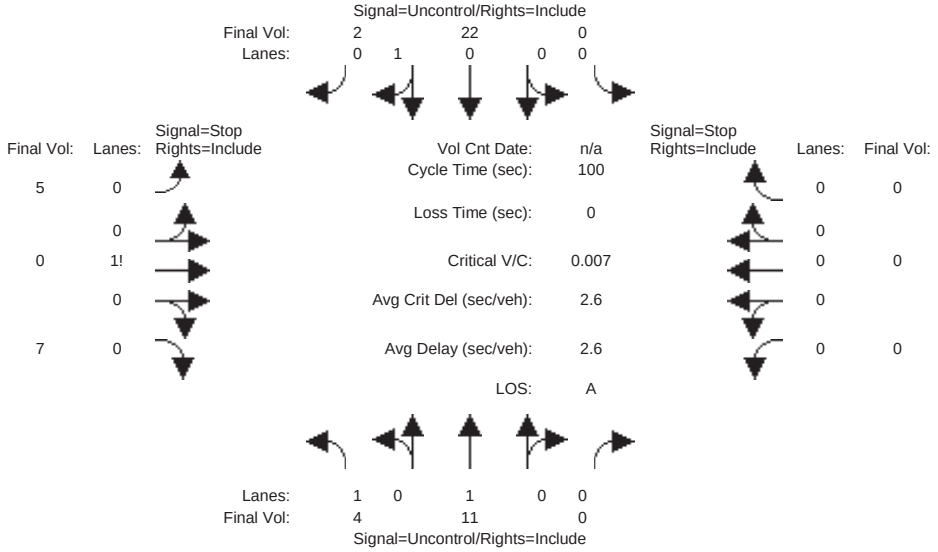
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                         Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4   10     0     0   22     2     5    0     7     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4   10     0     0   22     2     5    0     7     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4   11     0     0   22     2     5    0     7     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4   11     0     0   22     2     5    0     7     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4   11     0     0   22     2     5    0     7     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   24 xxxx xxxxx  xxxx xxxx xxxxx    42   42    23  xxxx xxxx xxxxx
Potent Cap.: 1604 xxxx xxxxx  xxxx xxxx xxxxx   974  854  1060  xxxx xxxx xxxxx
Move Cap.:   1604 xxxx xxxxx  xxxx xxxx xxxxx   972  852  1060  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1021 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.6           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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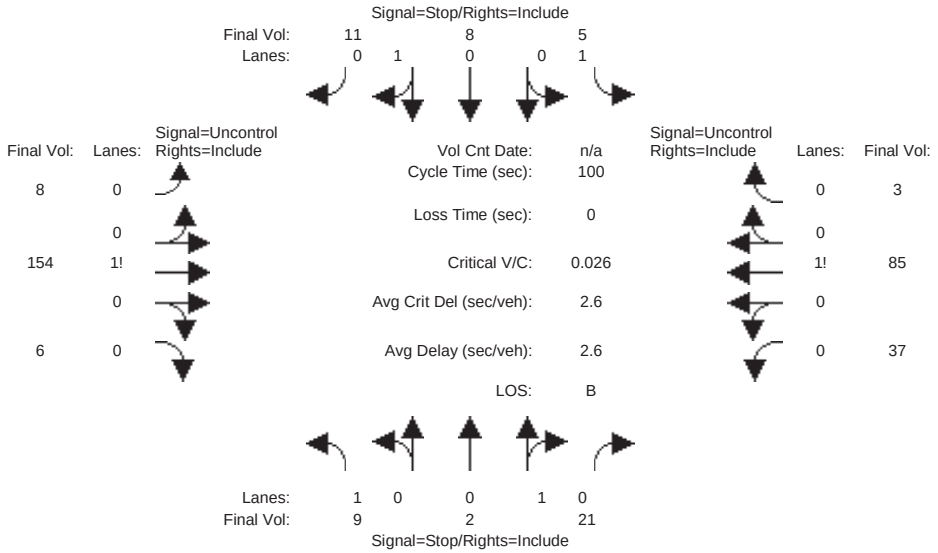
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9    2    21     5    8    11     8  154     6    37   85     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    2    21     5    8    11     8  154     6    37   85     3
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    2    21     5    8    11     8  154     6    37   85     3
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    2    21     5    8    11     8  154     6    37   85     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    2    21     5    8    11     8  154     6    37   85     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  343  335   157   345  337    87    88 xxxx xxxxx   160 xxxx xxxxx
Potent Cap.:  615  589   894   613  588   978  1520 xxxx xxxxx  1432 xxxx xxxxx
Move Cap.:    587  570   894   583  569   978  1520 xxxx xxxxx  1432 xxxx xxxxx
Volume/Cap:  0.02 0.00  0.02  0.01 0.01  0.01  0.01 xxxx  xxxx  0.03 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 11.2 xxxx xxxxx  11.2 xxxx xxxxx   7.4 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   852  xxxx xxxx   751  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.1 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.3 xxxxx xxxx   9.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    *     A     *    *     *     *    *     *
ApproachDel:       9.9             10.2           xxxxxx           xxxxxx
ApproachLOS:         A                B                *                *
Note: Queue reported is the number of cars per lane.
```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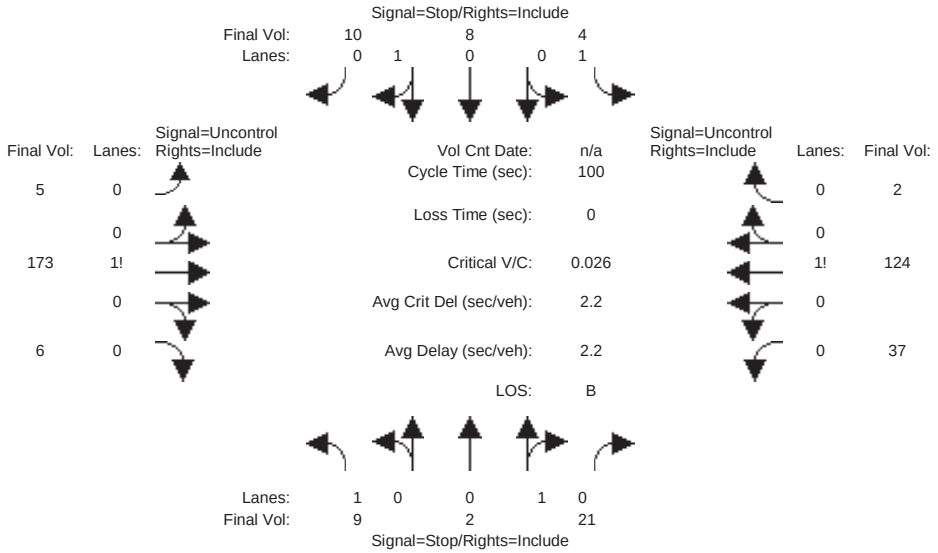
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9    2    21     5    8    11     8  154     6    37   85     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    2    21     5    8    11     8  154     6    37   85     3
Added Vol:      0    0     0    -1    0    -1    -3   19     0     0   39    -1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    2    21     4    8    10     5  173     6    37  124     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    2    21     4    8    10     5  173     6    37  124     2
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    2    21     4    8    10     5  173     6    37  124     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  394  386   176   397  388   125   126 xxxx xxxxx   179 xxxx xxxxx
Potent Cap.:  569  551   872   567  550   931  1473 xxxx xxxxx  1409 xxxx xxxxx
Move Cap.:    544  535   872   539  533   931  1473 xxxx xxxxx  1409 xxxx xxxxx
Volume/Cap:  0.02 0.00  0.02  0.01 0.02  0.01  0.00 xxxx  xxxx  0.03 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 11.7 xxxx xxxxx  11.7 xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   827  xxxx xxxx   699  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.1 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.5 xxxxx xxxx  10.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    *     B     *    *     *     *    *     *
ApproachDel:      10.1             10.5           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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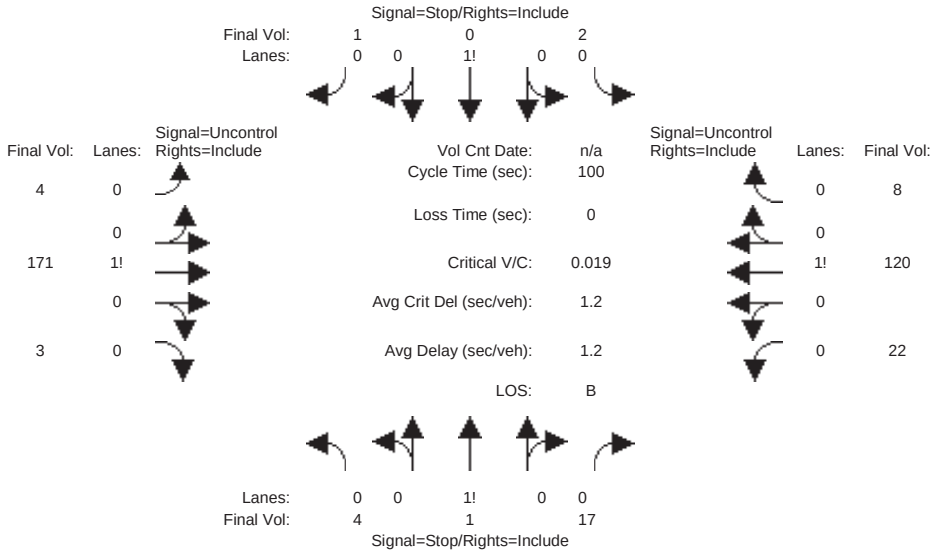
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    1    17     2    0     1     4  171     3    22  120     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4    1    17     2    0     1     4  171     3    22  120     8
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4    1    17     2    0     1     4  171     3    22  120     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4    1    17     2    0     1     4  171     3    22  120     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4    1    17     2    0     1     4  171     3    22  120     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  349  353   173   358  350   124   128 xxxx xxxxx   174 xxxx xxxxx
Potent Cap.:  609  576   876   602  577   932  1470 xxxx xxxxx  1415 xxxx xxxxx
Move Cap.:    600  565   876   581  567   932  1470 xxxx xxxxx  1415 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.02  0.00 0.00  0.00  0.00 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  790 xxxxx  xxxx  664 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.1 xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.7 xxxxx xxxxx 10.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    B     *     *    *     *     *    *     *
ApproachDel:       9.7             10.4           xxxxxx           xxxxxx
ApproachLOS:         A                B                *                *
Note: Queue reported is the number of cars per lane.
```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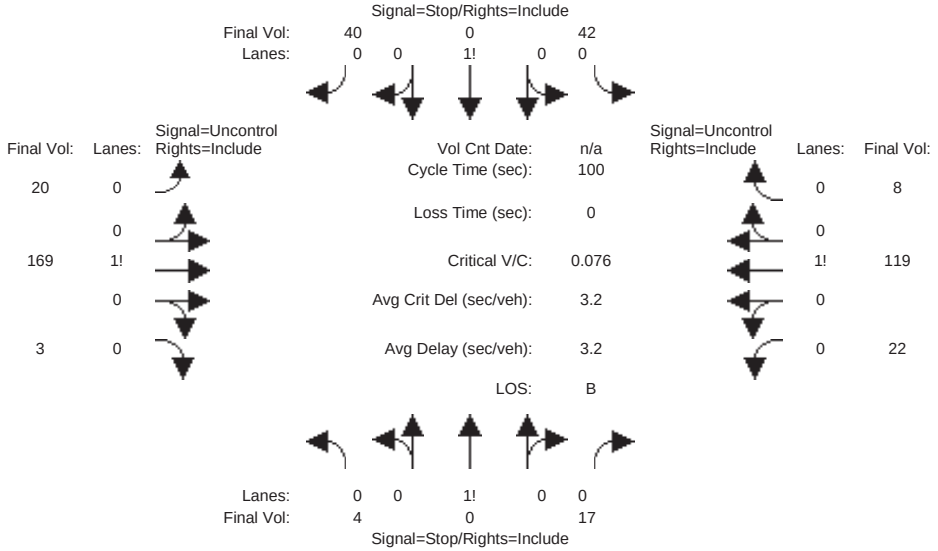
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    0    17     0    0     0     0  171     3    22  120     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4    0    17     0    0     0     0  171     3    22  120     0
Added Vol:      0    0     0    41    0    40    19   -1     0     0   -1     8
PasserByVol:    0    0     0     1    0     0     1   -1     0     0    0     0
Initial Fut:    4    0    17    42    0    40    20  169     3    22  119     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4    0    17    42    0    40    20  169     3    22  119     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4    0    17    42    0    40    20  169     3    22  119     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  398  382   171   386  379   123   127 xxxx xxxxx   172 xxxx xxxxx
Potent Cap.:  566  554   879   576  556   933  1472 xxxx xxxxx  1417 xxxx xxxxx
Move Cap.:    530  538   879   552  540   933  1472 xxxx xxxxx  1417 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.02  0.08 0.00  0.04  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  781 xxxxx  xxxx  690 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.1 xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.7 xxxxx xxxxx 10.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    B     *     *    *     *     *    *     *
ApproachDel:       9.7             10.9           xxxxxx           xxxxxx
ApproachLOS:         A                B                *                *
Note: Queue reported is the number of cars per lane.
```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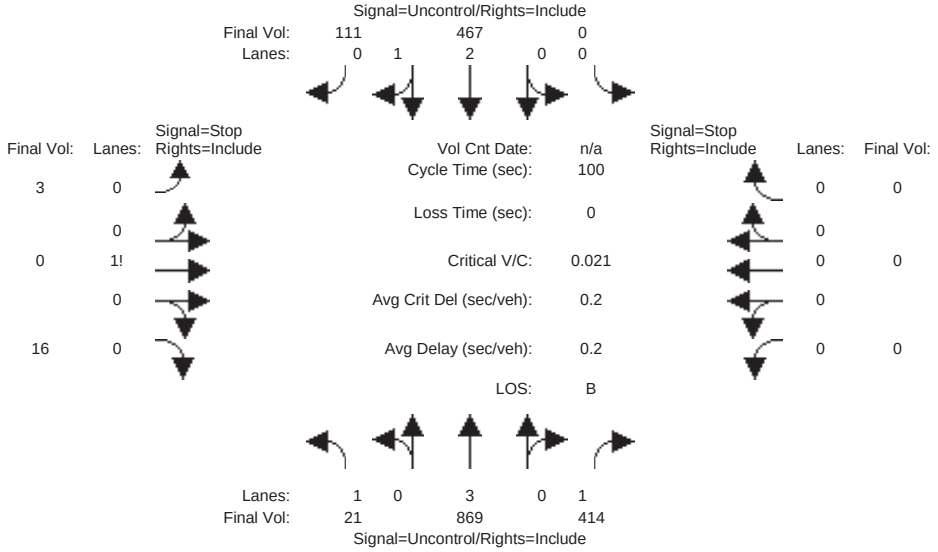
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21  869   414     0  467   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21  869   414     0  467   111     3    0    16     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21  869   414     0  467   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21  869   414     0  467   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21  869   414     0  467   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  578 xxxx xxxxx  xxxx xxxx xxxxx   854 1848   211  xxxx xxxx xxxxx
Potent Cap.: 1006 xxxx xxxxx  xxxx xxxx xxxxx   302   75   801  xxxx xxxx xxxxx
Move Cap.:   1006 xxxx xxxxx  xxxx xxxx xxxxx   297   74   801  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  631 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             10.9           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```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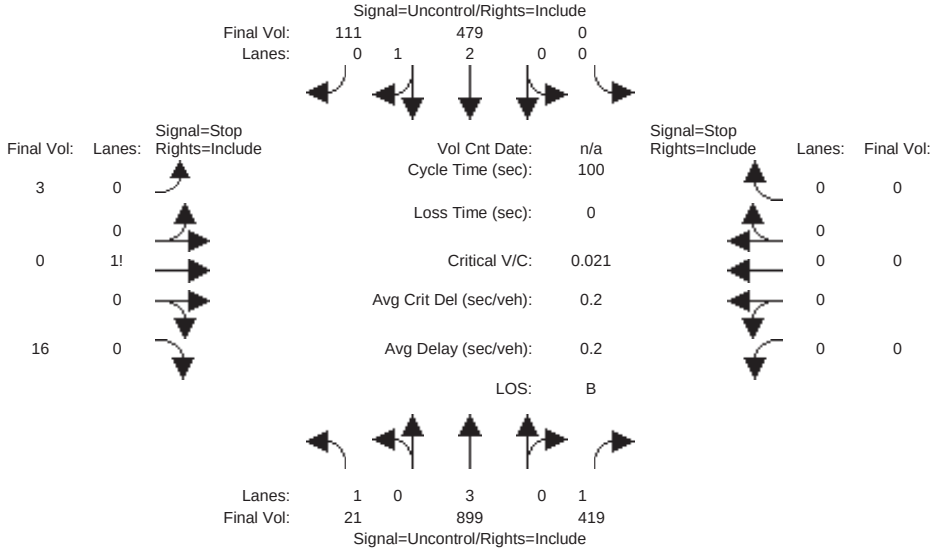
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21  869   414     0  467   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21  869   414     0  467   111     3    0    16     0    0     0
Added Vol:      0   30     5     0   12     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21  899   419     0  479   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21  899   419     0  479   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21  899   419     0  479   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  590 xxxx xxxxx  xxxx xxxx xxxxx   876 1895   215  xxxx xxxx xxxxx
Potent Cap.:  995 xxxx xxxxx  xxxx xxxx xxxxx   292   71   796  xxxx xxxx xxxxx
Move Cap.:    995 xxxx xxxxx  xxxx xxxx xxxxx   287   69   796  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  622 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.0 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.0           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```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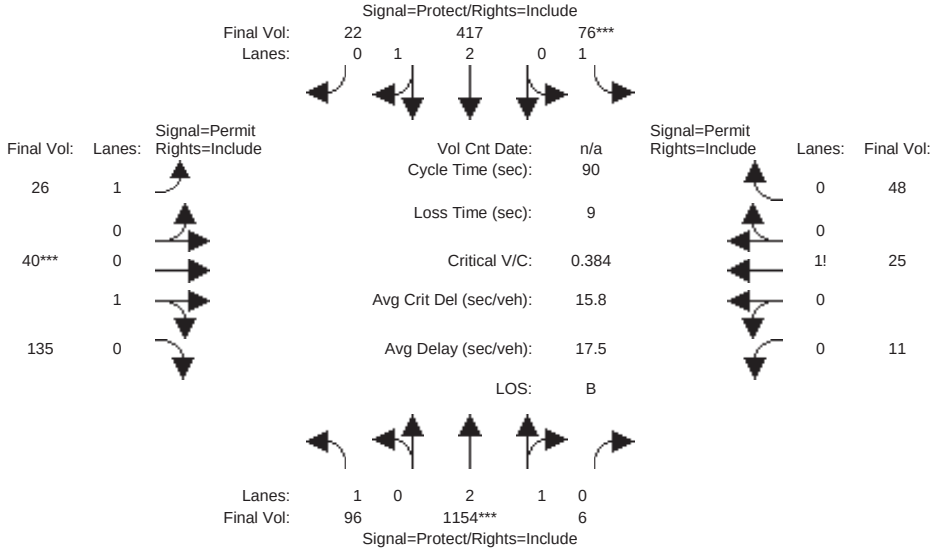
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	96	1154	6	76	417	22	26	40	135	11	25	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	96	1154	6	76	417	22	26	40	135	11	25	48
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	96	1154	6	76	417	22	26	40	135	11	25	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	96	1154	6	76	417	22	26	40	135	11	25	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	96	1154	6	76	417	22	26	40	135	11	25	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	96	1154	6	76	417	22	26	40	135	11	25	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.98	0.02	1.00	2.84	0.16	1.00	0.21	0.79	0.13	0.28	0.59
Final Sat.:	1750	5668	29	1750	5391	284	1750	407	1375	235	533	1024
Capacity Analysis Module:												
Vol/Sat:	0.05	0.20	0.20	0.04	0.08	0.08	0.01	0.10	0.10	0.05	0.05	0.05
Crit Moves:		****		****				****				
Green Time:	23.9	47.8	47.8	10.2	34.1	34.1	23.0	23.0	23.0	23.0	23.0	23.0
Volume/Cap:	0.21	0.38	0.38	0.38	0.20	0.20	0.06	0.38	0.38	0.18	0.18	0.18
Delay/Veh:	25.9	12.5	12.5	38.2	18.9	18.9	25.3	28.2	28.2	26.3	26.3	26.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.9	12.5	12.5	38.2	18.9	18.9	25.3	28.2	28.2	26.3	26.3	26.3
LOS by Move:	C	B	B	D+	B-	B-	C	C	C	C	C	C
HCM2kAvgQ:	2	6	6	2	3	3	1	4	4	2	2	2

Note: Queue reported is the number of cars per lane.

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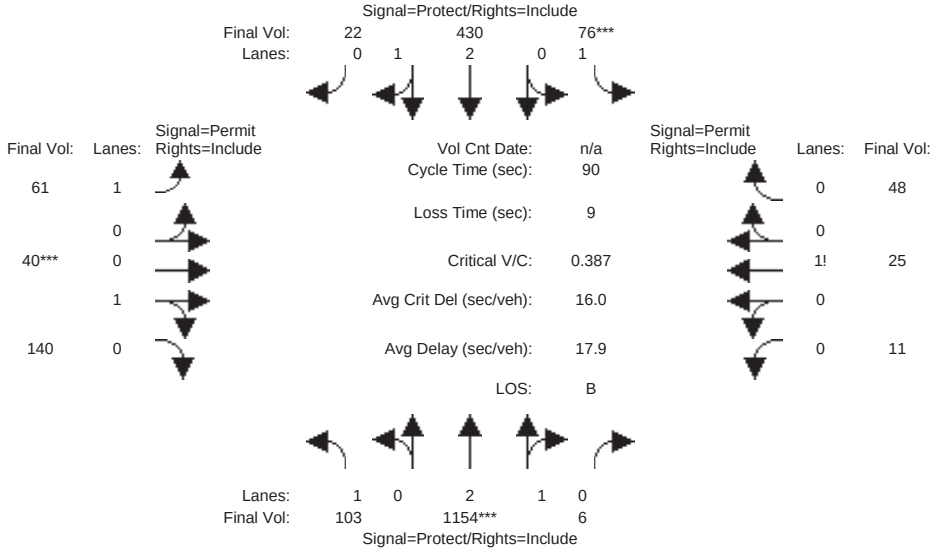
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	96	1154	6	76	417	22	26	40	135	11	25	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	96	1154	6	76	417	22	26	40	135	11	25	48
Added Vol:	7	0	0	0	13	0	35	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	103	1154	6	76	430	22	61	40	140	11	25	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	103	1154	6	76	430	22	61	40	140	11	25	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	103	1154	6	76	430	22	61	40	140	11	25	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	103	1154	6	76	430	22	61	40	140	11	25	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.98	0.02	1.00	2.84	0.16	1.00	0.21	0.79	0.13	0.28	0.59
Final Sat.:	1750	5668	29	1750	5400	276	1750	396	1385	235	533	1024
Capacity Analysis Module:												
Vol/Sat:	0.06	0.20	0.20	0.04	0.08	0.08	0.03	0.10	0.10	0.05	0.05	0.05
Crit Moves:		****		****				****				
Green Time:	23.7	47.4	47.4	10.1	33.8	33.8	23.5	23.5	23.5	23.5	23.5	23.5
Volume/Cap:	0.22	0.39	0.39	0.39	0.21	0.21	0.13	0.39	0.39	0.18	0.18	0.18
Delay/Veh:	26.2	12.8	12.8	38.3	19.1	19.1	25.6	27.9	27.9	25.9	25.9	25.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	26.2	12.8	12.8	38.3	19.1	19.1	25.6	27.9	27.9	25.9	25.9	25.9
LOS by Move:	C	B	B	D+	B-	B-	C	C	C	C	C	C
HCM2kAvgQ:	2	6	6	2	3	3	1	4	4	2	2	2

Note: Queue reported is the number of cars per lane.

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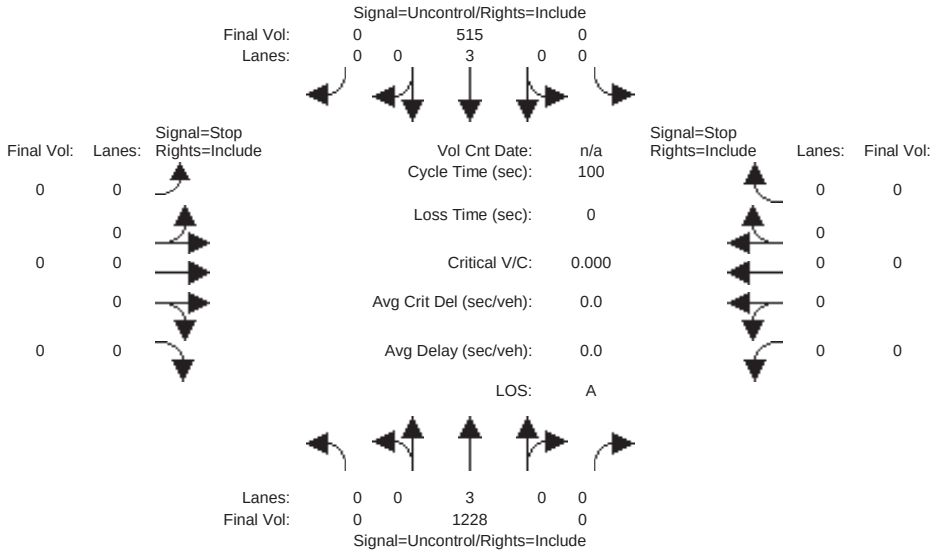
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1228     0     0  515     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1228     0     0  515     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0 1228     0     0  515     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1228     0     0  515     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1228     0     0  515     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```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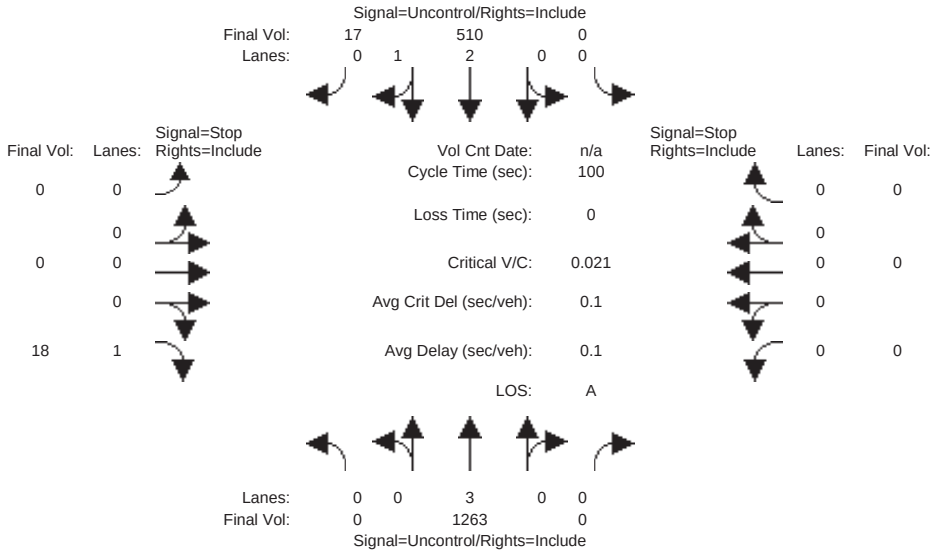
Mission Town Center TIA
DN15-0483
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing Plus Project AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1228     0     0  515     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1228     0     0  515     0     0    0     0     0    0     0
Added Vol:      0   35     0     0    0    12     0    0    13     0    0     0
PasserByVol:    0    0     0     0   -5     5     0    0     5     0    0     0
Initial Fut:    0 1263     0     0  510    17     0    0    18     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1263     0     0  510    17     0    0    18     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1263     0     0  510    17     0    0    18     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   179  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   840  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   840  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.4 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     A     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               9.4           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Background PM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection	???				Background PM				Background Plus Project PM						???			
	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1 Lafavettee & El Camino Real	?	xx.x	x.xxx	xx.x	D-	51.7	0.923	58.0	D-	52.3	0.928	+ 0.006	58.8	+ 0.8	?	xx.x	x.xxx	xx.x
#2 Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	F	83.6	1.176	111.9	F	87.5	1.189	+ 0.014	117.8	+ 5.9	?	xx.x	x.xxx	xx.x
#3 Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	15.3	0.708	14.9	B	15.8	0.720	+ 0.013	15.4	+ 0.5	?	xx.x	x.xxx	xx.x
#4 Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	B	7.5	0.254	7.5	B	7.4	0.257	+ 0.003	7.4	- 0.0	?	xx.x	x.xxx	xx.x
#5 The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	2.9	0.015	2.9	A	3.0	0.015	+ 0.000	3.0	+ 0.0	?	xx.x	x.xxx	xx.x
#6 The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	4.0	0.012	4.0	A	2.8	0.009	- 0.004	2.8	- 1.2	?	xx.x	x.xxx	xx.x
#7 The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	2.8	0.060	2.8	B	2.6	0.064	+ 0.004	2.6	- 0.3	?	xx.x	x.xxx	xx.x
#8 Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	2.5	0.085	2.5	B	3.8	0.103	+ 0.018	3.8	+ 1.3	?	xx.x	x.xxx	xx.x
#9 El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	C	0.4	0.082	0.4	C	0.4	0.084	+ 0.002	0.4	+ 0.0	?	xx.x	x.xxx	xx.x
#10 El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	B-	19.9	0.547	19.4	C+	20.2	0.557	+ 0.010	19.9	+ 0.5	?	xx.x	x.xxx	xx.x
#11 El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	B	0.1	0.034	+ 0.034	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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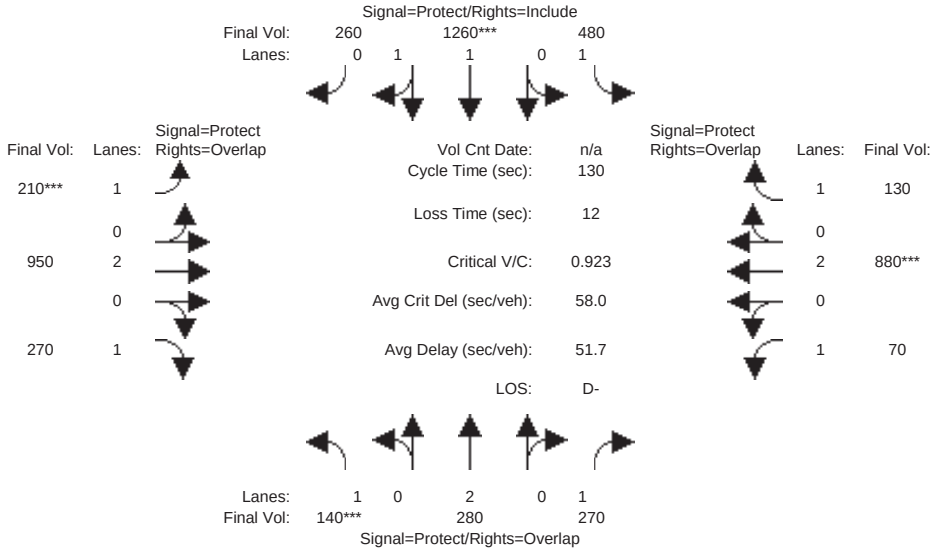
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	140	280	270	480	1260	260	210	950	270	70	880	130
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	280	270	480	1260	260	210	950	270	70	880	130
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	140	280	270	480	1260	260	210	950	270	70	880	130
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	140	280	270	480	1260	260	210	950	270	70	880	130
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	140	280	270	480	1260	260	210	950	270	70	880	130
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	140	280	270	480	1260	260	210	950	270	70	880	130
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.63	0.37	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	3104	641	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.07	0.15	0.27	0.41	0.41	0.12	0.25	0.15	0.04	0.23	0.07
Crit Moves:	****				****		****				****	
Green Time:	11.3	20.1	28.9	48.3	57.2	57.2	16.9	40.8	52.0	8.8	32.6	81.0
Volume/Cap:	0.92	0.48	0.69	0.74	0.92	0.92	0.92	0.80	0.39	0.59	0.92	0.12
Delay/Veh:	113.8	52.9	56.2	42.7	44.4	44.4	98.4	46.4	29.2	78.8	63.0	10.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	113.8	52.9	56.2	42.7	44.4	44.4	98.4	46.4	29.2	78.8	63.0	10.2
LOS by Move:	F	D-	E+	D	D	D	F	D	C	E-	E	B+
HCM2kAvgQ:	8	5	11	19	33	33	12	19	8	4	21	2

Note: Queue reported is the number of cars per lane.

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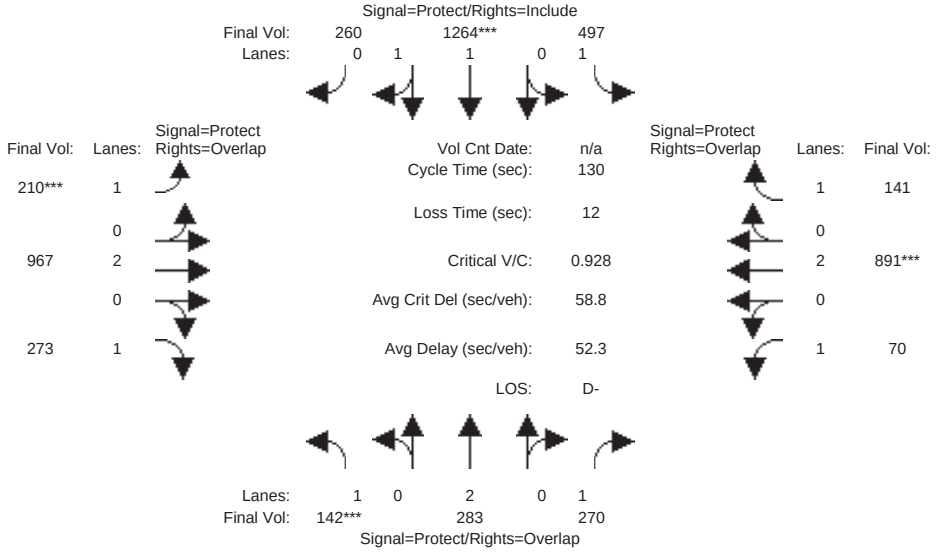
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	140	280	270	480	1260	260	210	950	270	70	880	130
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	280	270	480	1260	260	210	950	270	70	880	130
Added Vol:	2	3	0	17	4	0	0	17	3	0	11	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	142	283	270	497	1264	260	210	967	273	70	891	141
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	142	283	270	497	1264	260	210	967	273	70	891	141
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	142	283	270	497	1264	260	210	967	273	70	891	141
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	142	283	270	497	1264	260	210	967	273	70	891	141
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.63	0.37	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	3106	639	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.07	0.15	0.28	0.41	0.41	0.12	0.25	0.16	0.04	0.23	0.08
Crit Moves:	****				****		****				****	
Green Time:	11.4	19.6	28.3	48.7	57.0	57.0	16.8	41.0	52.3	8.7	32.8	81.6
Volume/Cap:	0.93	0.49	0.71	0.76	0.93	0.93	0.93	0.81	0.39	0.60	0.93	0.13
Delay/Veh:	114.7	53.7	57.7	43.5	45.2	45.2	99.7	46.8	29.1	79.7	63.6	10.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	114.7	53.7	57.7	43.5	45.2	45.2	99.7	46.8	29.1	79.7	63.6	10.0
LOS by Move:	F	D-	E+	D	D	D	F	D	C	E-	E	B+
HCM2kAvgQ:	8	5	11	20	33	33	12	19	8	4	21	2

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
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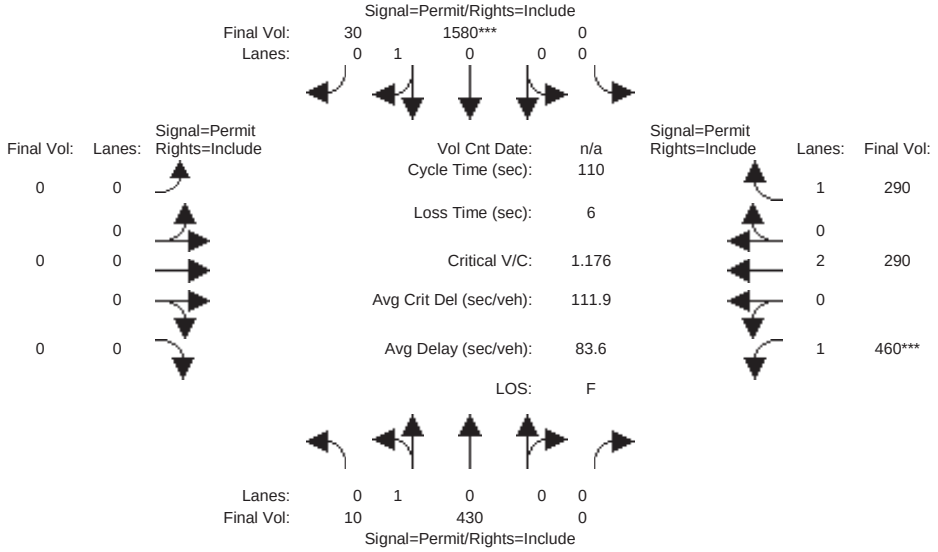
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	430	0	0	1580	30	0	0	0	460	290	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	430	0	0	1580	30	0	0	0	460	290	290
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	430	0	0	1580	30	0	0	0	460	290	290
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	430	0	0	1580	30	0	0	0	460	290	290
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	430	0	0	1580	30	0	0	0	460	290	290
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	430	0	0	1580	30	0	0	0	460	290	290
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	43	1853	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	0.00	0.00	0.85	0.85	0.00	0.00	0.00	0.26	0.08	0.17
Crit Moves:					****					****		
Green Time:	79.4	79.4	0.0	0.0	79.4	79.4	0.0	0.0	0.0	24.6	24.6	24.6
Volume/Cap:	0.32	0.32	0.00	0.00	1.18	1.18	0.00	0.00	0.00	1.18	0.34	0.74
Delay/Veh:	5.7	5.7	0.0	0.0	102	102.4	0.0	0.0	0.0	145.5	36.1	47.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.7	5.7	0.0	0.0	102	102.4	0.0	0.0	0.0	145.5	36.1	47.1
LOS by Move:	A	A	A	A	F	F	A	A	A	F	D+	D
HCM2kAvgQ:	5	5	0	0	81	81	0	0	0	29	4	11

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
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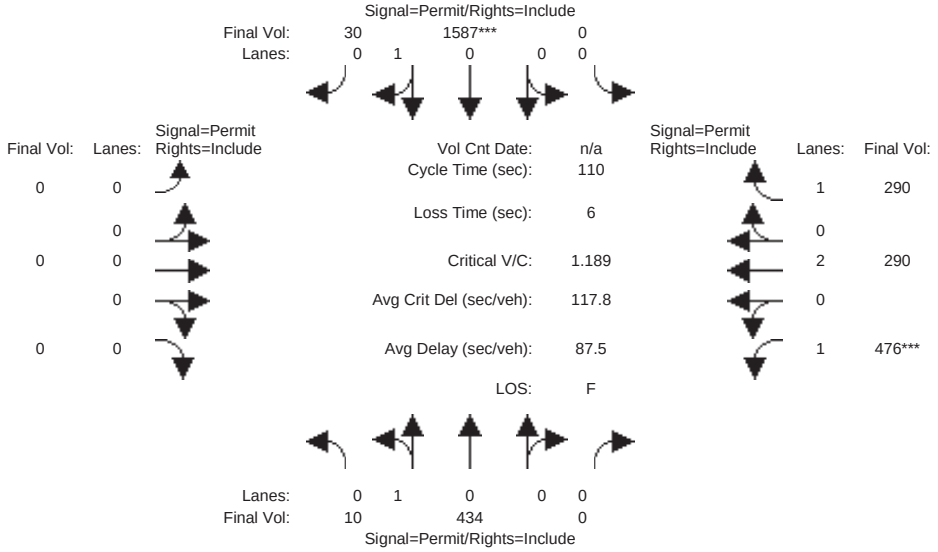
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	430	0	0	1580	30	0	0	0	460	290	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	430	0	0	1580	30	0	0	0	460	290	290
Added Vol:	0	4	0	0	7	0	0	0	0	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	434	0	0	1587	30	0	0	0	476	290	290
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	434	0	0	1587	30	0	0	0	476	290	290
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	434	0	0	1587	30	0	0	0	476	290	290
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	434	0	0	1587	30	0	0	0	476	290	290
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	43	1854	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	0.00	0.00	0.85	0.85	0.00	0.00	0.00	0.27	0.08	0.17
Crit Moves:					****					****		
Green Time:	78.8	78.8	0.0	0.0	78.8	78.8	0.0	0.0	0.0	25.2	25.2	25.2
Volume/Cap:	0.33	0.33	0.00	0.00	1.19	1.19	0.00	0.00	0.00	1.19	0.33	0.72
Delay/Veh:	5.9	5.9	0.0	0.0	108	108.4	0.0	0.0	0.0	150.0	35.7	45.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.9	5.9	0.0	0.0	108	108.4	0.0	0.0	0.0	150.0	35.7	45.7
LOS by Move:	A	A	A	A	F	F	A	A	A	F	D+	D
HCM2kAvgQ:	5	5	0	0	83	83	0	0	0	30	4	11

Note: Queue reported is the number of cars per lane.

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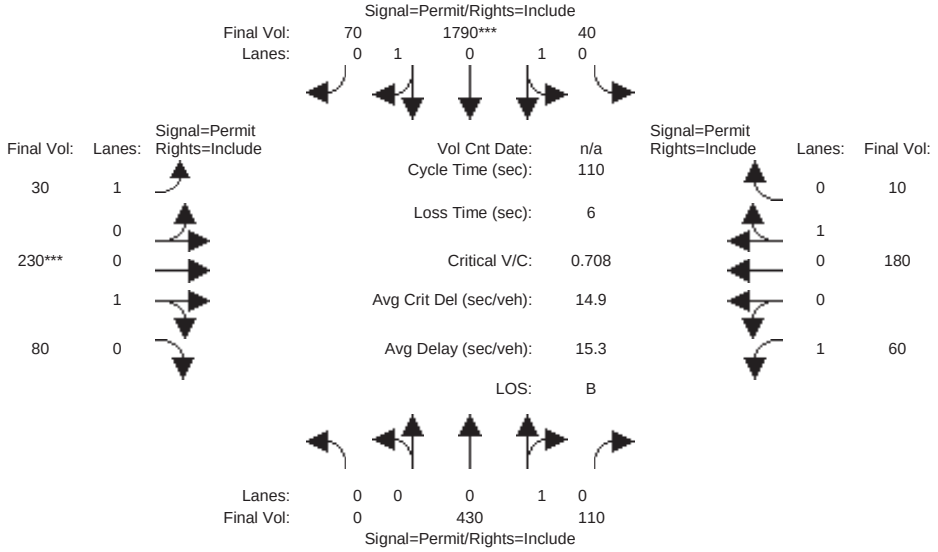
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	430	110	40	1790	70	30	230	80	60	180	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	430	110	40	1790	70	30	230	80	60	180	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	430	110	40	1790	70	30	230	80	60	180	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	430	110	40	1790	70	30	230	80	60	180	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	430	110	40	1790	70	30	230	80	60	180	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	430	110	40	1790	70	30	230	80	60	180	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.78	0.22	0.05	1.87	0.08	1.00	0.73	0.27	1.00	0.94	0.06
Final Sat.:	0	1487	380	80	3562	139	1750	1379	480	1750	1792	100
Capacity Analysis Module:												
Vol/Sat:	0.00	0.29	0.29	0.50	0.50	0.50	0.02	0.17	0.17	0.03	0.10	0.10
Crit Moves:					****			****				
Green Time:	0.0	78.1	78.1	78.1	78.1	78.1	25.9	25.9	25.9	25.9	25.9	25.9
Volume/Cap:	0.00	0.41	0.41	0.71	0.71	0.71	0.07	0.71	0.71	0.15	0.43	0.43
Delay/Veh:	0.0	6.7	6.7	10.2	10.2	10.2	32.8	43.8	43.8	33.4	36.4	36.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.7	6.7	10.2	10.2	10.2	32.8	43.8	43.8	33.4	36.4	36.4
LOS by Move:	A	A	A	B+	B+	B+	C-	D	D	C-	D+	D+
HCM2kAvgQ:	0	8	8	17	17	17	1	11	11	2	5	5

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Background PM

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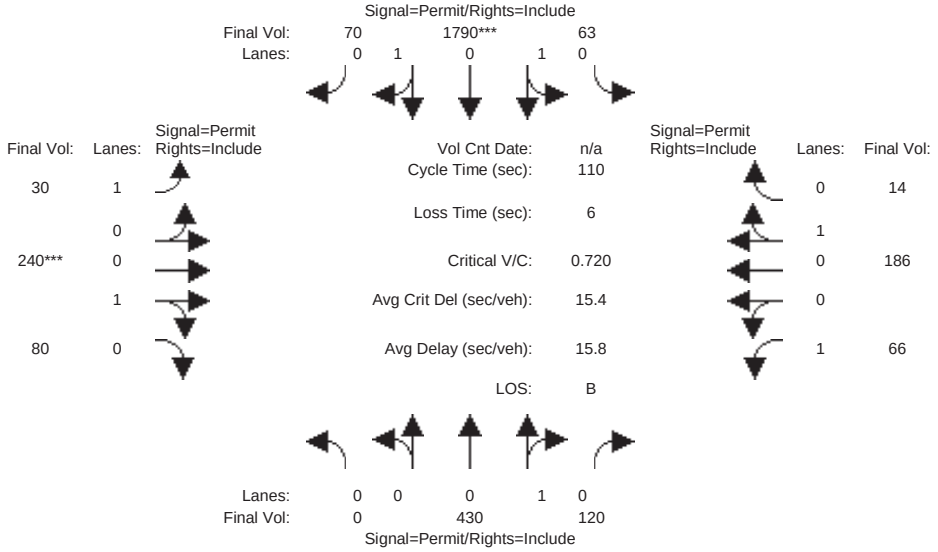
Background Plus Project PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	430	110	40	1790	70	30	230	80	60	180	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	430	110	40	1790	70	30	230	80	60	180	10
Added Vol:	0	0	10	23	0	0	0	10	0	6	6	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	430	120	63	1790	70	30	240	80	66	186	14
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	430	120	63	1790	70	30	240	80	66	186	14
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	430	120	63	1790	70	30	240	80	66	186	14
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	430	120	63	1790	70	30	240	80	66	186	14
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.77	0.23	0.07	1.85	0.08	1.00	0.73	0.27	1.00	0.92	0.08
Final Sat.:	0	1458	407	124	3516	138	1750	1395	465	1750	1756	132
Capacity Analysis Module:												
Vol/Sat:	0.00	0.29	0.29	0.51	0.51	0.51	0.02	0.17	0.17	0.04	0.11	0.11
Crit Moves:					****			****				
Green Time:	0.0	77.7	77.7	77.7	77.7	77.7	26.3	26.3	26.3	26.3	26.3	26.3
Volume/Cap:	0.00	0.42	0.42	0.72	0.72	0.72	0.07	0.72	0.72	0.16	0.44	0.44
Delay/Veh:	0.0	6.9	6.9	10.6	10.6	10.6	32.5	44.2	44.2	33.3	36.3	36.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.9	6.9	10.6	10.6	10.6	32.5	44.2	44.2	33.3	36.3	36.3
LOS by Move:	A	A	A	B+	B+	B+	C-	D	D	C-	D+	D+
HCM2kAvgQ:	0	8	8	18	18	18	1	11	11	2	6	6

Note: Queue reported is the number of cars per lane.

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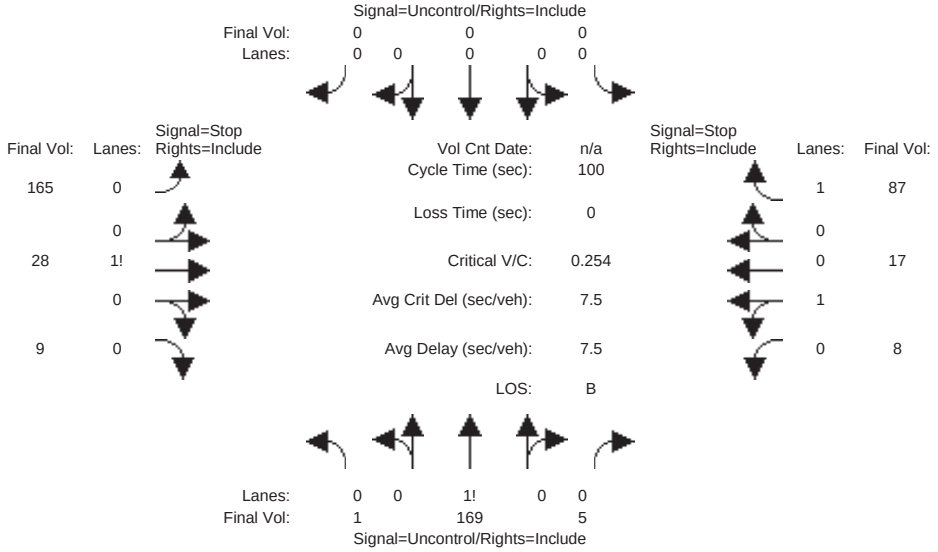
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #4: Alviso Street & Harrison Street

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Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  169     5     0    0     0   165   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  169     5     0    0     0   165   28     9     8   17    87
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  169     5     0    0     0   165   28     9     8   17    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  169     5     0    0     0   165   28     9     8   17    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  169     5     0    0     0   165   28     9     8   17    87
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   226  176     0   188  174   172
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   734  721  1091   777  723   877
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   649  721  1091   748  723   877
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.25 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  671 xxxxx   731 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.7 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             12.7              9.7
ApproachLOS:         *                *                B                A
Note: Queue reported is the number of cars per lane.
```


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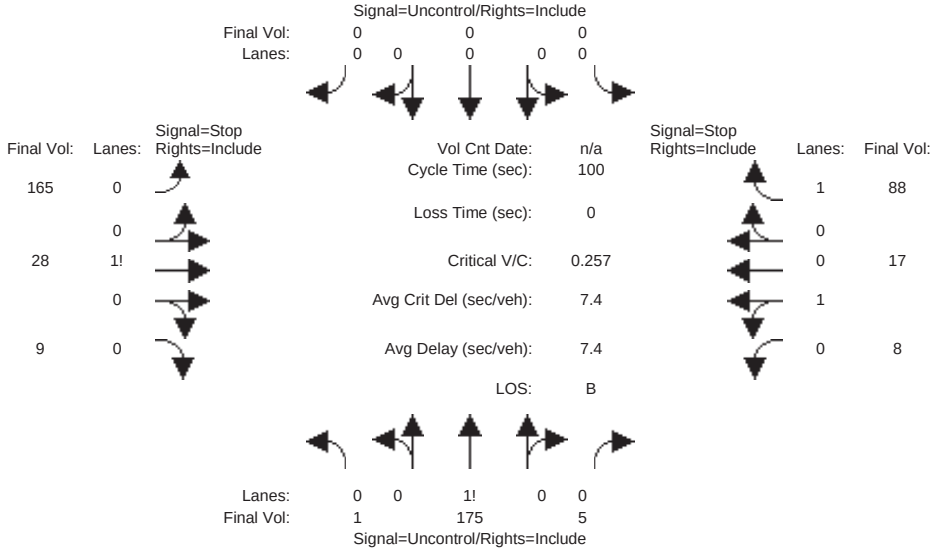
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  169     5     0    0     0   165   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  169     5     0    0     0   165   28     9     8   17    87
Added Vol:      0    6     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  175     5     0    0     0   165   28     9     8   17    88
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  175     5     0    0     0   165   28     9     8   17    88
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  175     5     0    0     0   165   28     9     8   17    88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   232  182     0   194  180   178
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   727  716  1091   770  718   871
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   641  715  1091   741  717   871
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.26 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  663 xxxxx   725 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.8 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             12.8              9.7
ApproachLOS:         *                *                B                A
Note: Queue reported is the number of cars per lane.
```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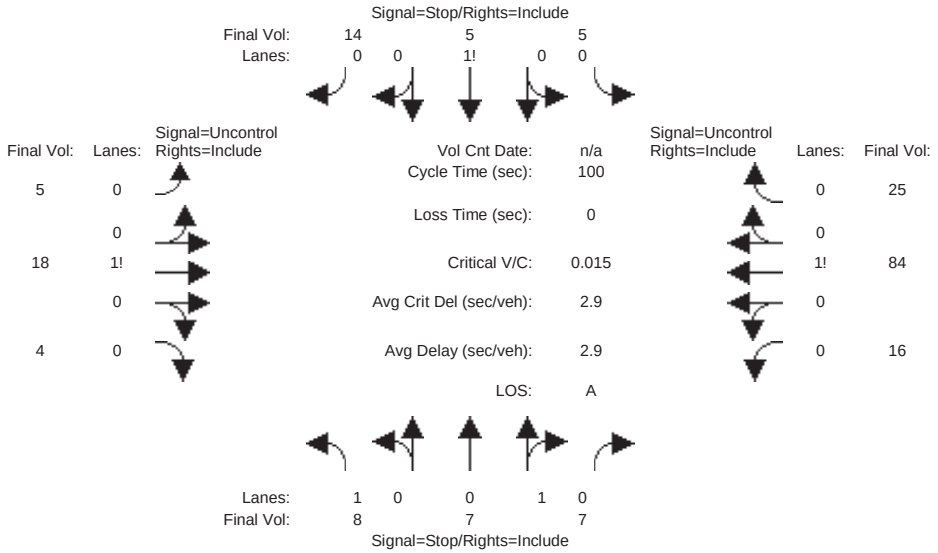
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    7     7     5    5    14     5   18     4    16   84    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    7     7     5    5    14     5   18     4    16   84    25
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8    7     7     5    5    14     5   18     4    16   84    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     8    7     7     5    5    14     5   18     4    16   84    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    8    7     7     5    5    14     5   18     4    16   84    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  168  171    20   166  161    97   109 xxxx xxxxx    22 xxxx xxxxx
Potent Cap.:  800  726  1064   803  735   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Move Cap.:    777  716  1064   784  726   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Volume/Cap:  0.01 0.01  0.01  0.01 0.01  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   856  xxxx  864 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.3 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.4              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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Background PM

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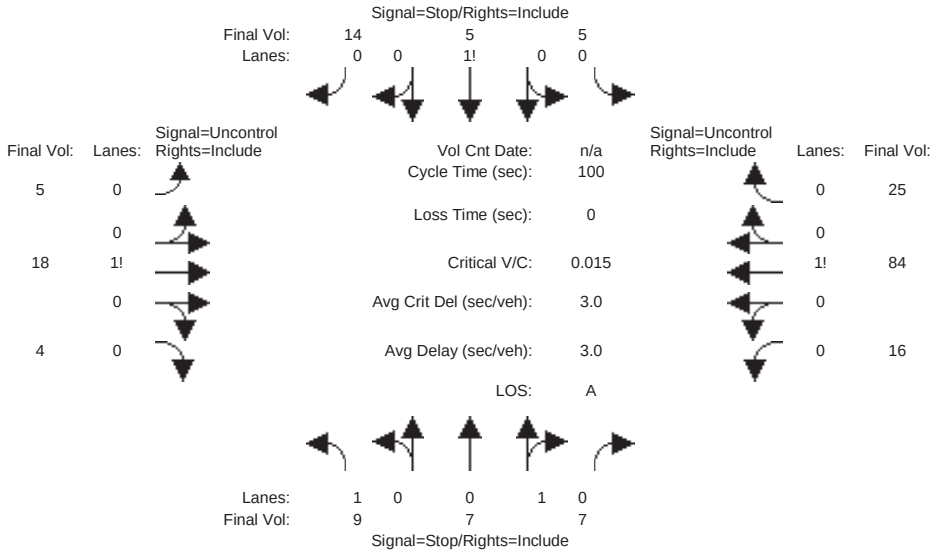
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    7     7     5    5    14     5   18     4    16   84    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    7     7     5    5    14     5   18     4    16   84    25
Added Vol:      1    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    7     7     5    5    14     5   18     4    16   84    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    7     7     5    5    14     5   18     4    16   84    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    7     7     5    5    14     5   18     4    16   84    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  168  171    20   166  161    97   109 xxxx xxxxx    22 xxxx xxxxx
Potent Cap.:  800  726  1064   803  735   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Move Cap.:    777  716  1064   784  726   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Volume/Cap:  0.01 0.01  0.01  0.01 0.01  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   856  xxxx  864 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.3 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.4              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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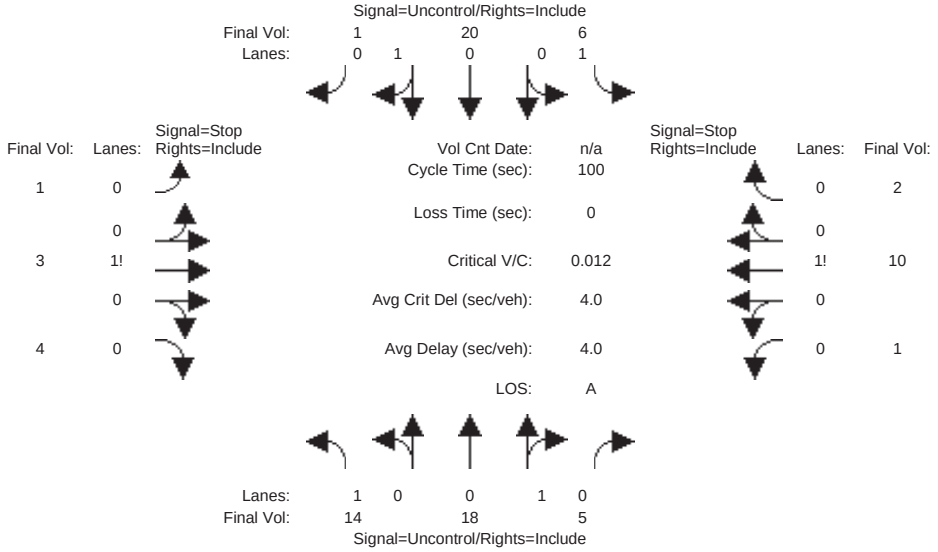
Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                         Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14   18     5     6   20     1     1    3     4     1   10     2
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14   18     5     6   20     1     1    3     4     1   10     2
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   18     5     6   20     1     1    3     4     1   10     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    14   18     5     6   20     1     1    3     4     1   10     2
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   14   18     5     6   20     1     1    3     4     1   10     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   21 xxxx xxxxx    23 xxxx xxxxx    87   84    21    85   82    21
Potent Cap.: 1608 xxxx xxxxx  1605 xxxx xxxxx   904  811  1063   907  813  1063
Move Cap.:   1608 xxxx xxxxx  1605 xxxx xxxxx   885  800  1063   892  802  1063
Volume/Cap:  0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.00 0.00  0.00  0.00 0.01  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx   7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  926 xxxxx  xxxx  841 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx  0.0 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.9 xxxxx xxxxx  9.3 xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    A     *
ApproachDel:    xxxxxx           xxxxxx               8.9              9.3
ApproachLOS:         *                *                 A                A
Note: Queue reported is the number of cars per lane.
```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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
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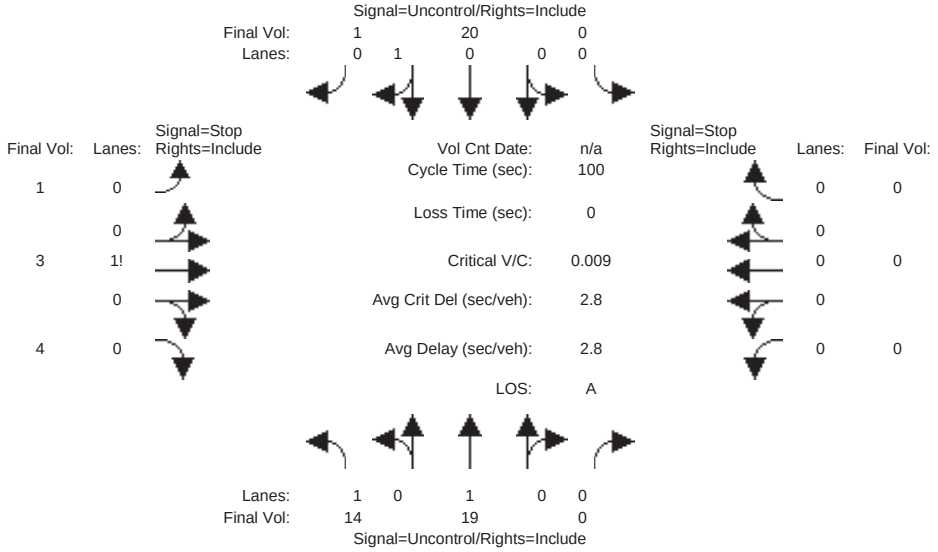
Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14   18     0     0   20     1     1    3     4     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14   18     0     0   20     1     1    3     4     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   19     0     0   20     1     1    3     4     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    14   19     0     0   20     1     1    3     4     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   14   19     0     0   20     1     1    3     4     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   21 xxxx xxxxx  xxxx xxxx xxxxx    68   68    21  xxxx xxxx xxxxx
Potent Cap.: 1608 xxxx xxxxx  xxxx xxxx xxxxx   943  827  1063  xxxx xxxx xxxxx
Move Cap.:   1608 xxxx xxxxx  xxxx xxxx xxxxx   936  820  1063  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  942 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.9           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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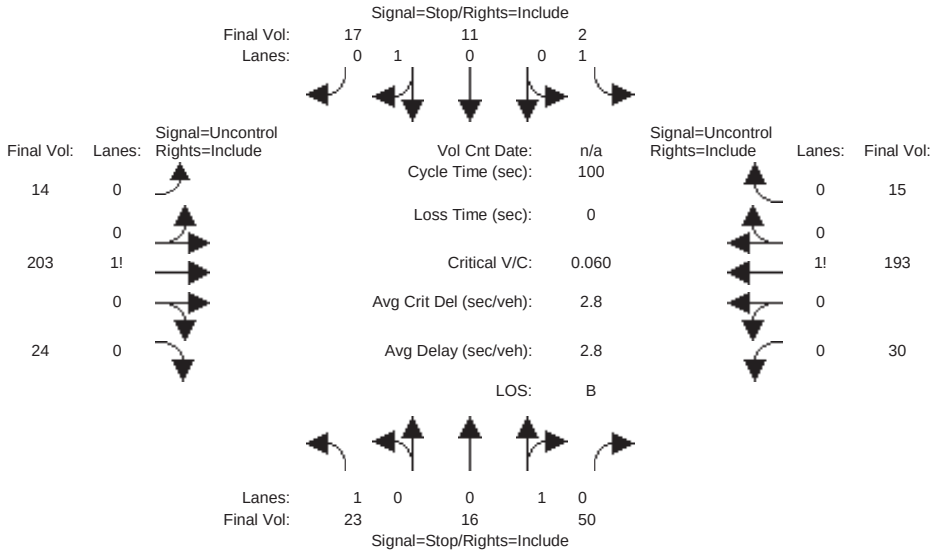
Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      23   16    50     2   11    17    14  203    24    30  193    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23   16    50     2   11    17    14  203    24    30  193    15
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23   16    50     2   11    17    14  203    24    30  193    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23   16    50     2   11    17    14  203    24    30  193    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   23   16    50     2   11    17    14  203    24    30  193    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  518  511   215   537  516   201   208 xxxx xxxxx   227 xxxx xxxxx
Potent Cap.:  472  469   830   458  466   846  1375 xxxx xxxxx  1353 xxxx xxxxx
Move Cap.:    442  454   830   409  451   846  1375 xxxx xxxxx  1353 xxxx xxxxx
Volume/Cap:  0.05 0.04  0.06  0.00 0.02  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 13.6 xxxx xxxxx  13.9 xxxx xxxxx   7.6 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   691  xxxx xxxx   629  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.3 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  10.8 xxxxx xxxx  11.0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:      11.5             11.2           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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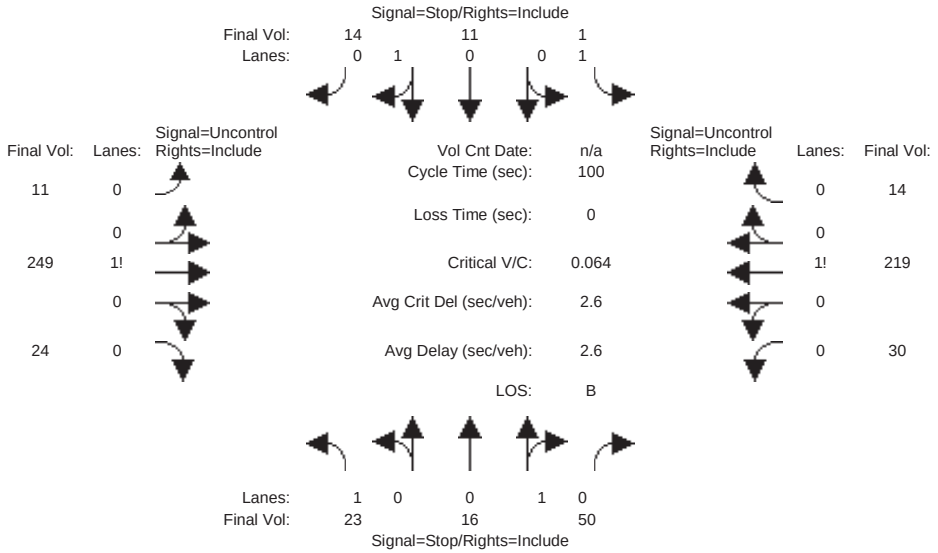
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      23   16    50     2   11    17    14  203    24    30  193    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23   16    50     2   11    17    14  203    24    30  193    15
Added Vol:      0    0     0    -1    0    -3    -3   46     0     0   26    -1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23   16    50     1   11    14    11  249    24    30  219    14
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23   16    50     1   11    14    11  249    24    30  219    14
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   23   16    50     1   11    14    11  249    24    30  219    14
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  582  576   261   602  581   226   233 xxxx xxxxx   273 xxxx xxxxx
Potent Cap.:  428  431   783   414  428   818  1346 xxxx xxxxx  1302 xxxx xxxxx
Move Cap.:    402  417   783   368  414   818  1346 xxxx xxxxx  1302 xxxx xxxxx
Volume/Cap:  0.06 0.04  0.06  0.00 0.03  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 14.5 xxxx xxxxx  14.8 xxxx xxxxx   7.7 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   645  xxxx xxxx   573  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.3 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  11.2 xxxxx xxxx  11.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:      12.1             11.7           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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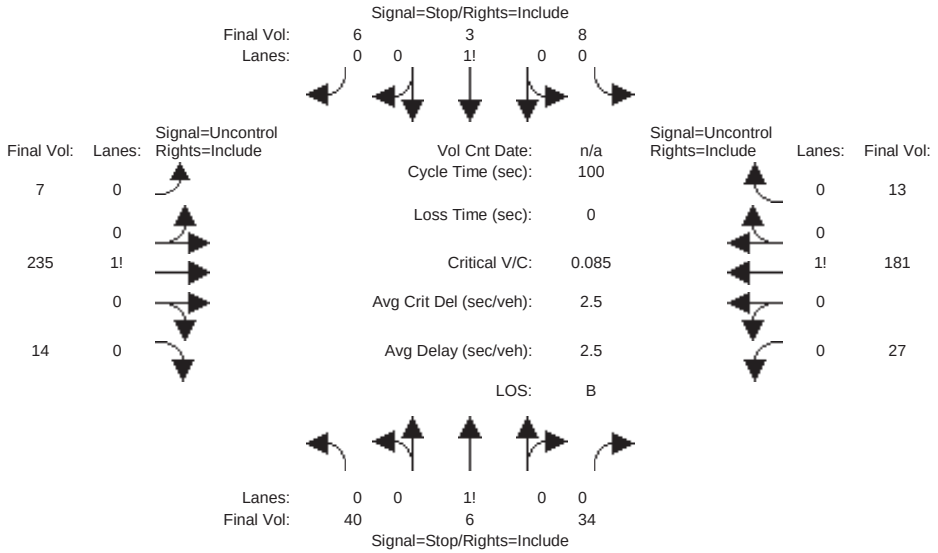
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    6    34     8    3     6     7  235    14    27  181    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    6    34     8    3     6     7  235    14    27  181    13
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    6    34     8    3     6     7  235    14    27  181    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    6    34     8    3     6     7  235    14    27  181    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    6    34     8    3     6     7  235    14    27  181    13
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  502  504   242   518  505   188   194 xxxx xxxxx   249 xxxx xxxxx
Potent Cap.:  483  473   802   472  473   860  1391 xxxx xxxxx  1328 xxxx xxxxx
Move Cap.:    468  461   802   438  461   860  1391 xxxx xxxxx  1328 xxxx xxxxx
Volume/Cap:  0.09 0.01  0.04  0.02 0.01  0.01  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  568 xxxxx  xxxx  536 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.4 xxxxx xxxxx 11.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      12.4             11.9           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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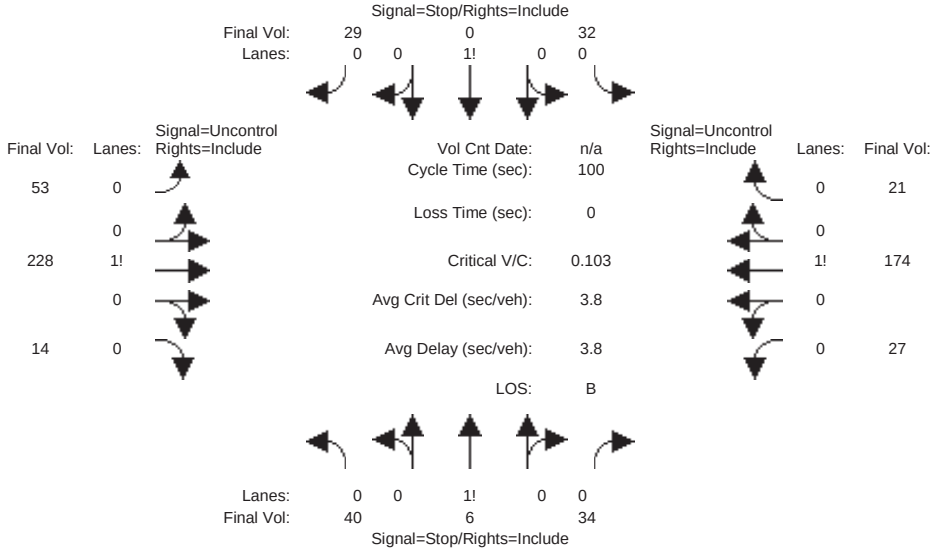
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    6    34     0    0     0     0  235    14    27  181     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    6    34     0    0     0     0  235    14    27  181     0
Added Vol:      0    0     0    30    0    29    51   -5     0     0   -7    21
PasserByVol:    0    0     0     2    0     0     2   -2     0     0    0     0
Initial Fut:   40    6    34    32    0    29    53  228    14    27  174    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    6    34    32    0    29    53  228    14    27  174    21
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    6    34    32    0    29    53  228    14    27  174    21
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  594  590   235   600  587   185   195 xxxx xxxxx   242 xxxx xxxxx
Potent Cap.:  420  423   809   416  425   863  1390 xxxx xxxxx  1336 xxxx xxxxx
Move Cap.:    387  398   809   376  400   863  1390 xxxx xxxxx  1336 xxxx xxxxx
Volume/Cap:  0.10 0.02  0.04  0.09 0.00  0.03  0.04 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  499 xxxxx  xxxx  514 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 13.6 xxxxx xxxxx 12.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      13.6             12.9           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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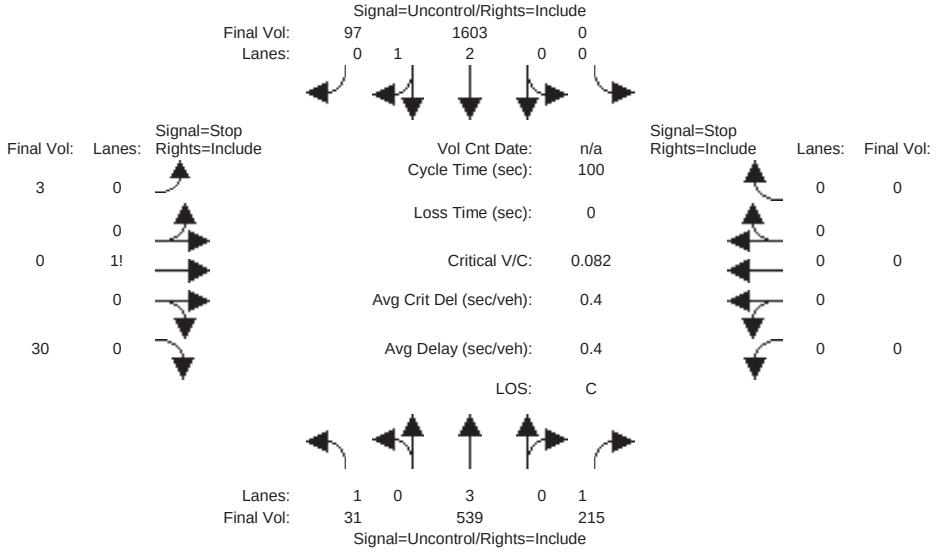
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31  539   215     0 1603    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31  539   215     0 1603    97     3    0    30     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31  539   215     0 1603    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31  539   215     0 1603    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31  539   215     0 1603    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1700 xxxx xxxxx  xxxx xxxx xxxxx  1893 2468   583  xxxx xxxx xxxxx
Potent Cap.:  380 xxxx xxxxx  xxxx xxxx xxxxx    63   31   461  xxxx xxxx xxxxx
Move Cap.:    380 xxxx xxxxx  xxxx xxxx xxxxx    59   28   461  xxxx xxxx xxxxx
Volume/Cap:  0.08 xxxx  xxxx  xxxx xxxx  xxxx  0.05 0.00  0.07  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 15.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  285 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 19.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             19.3           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```

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DN15-0483
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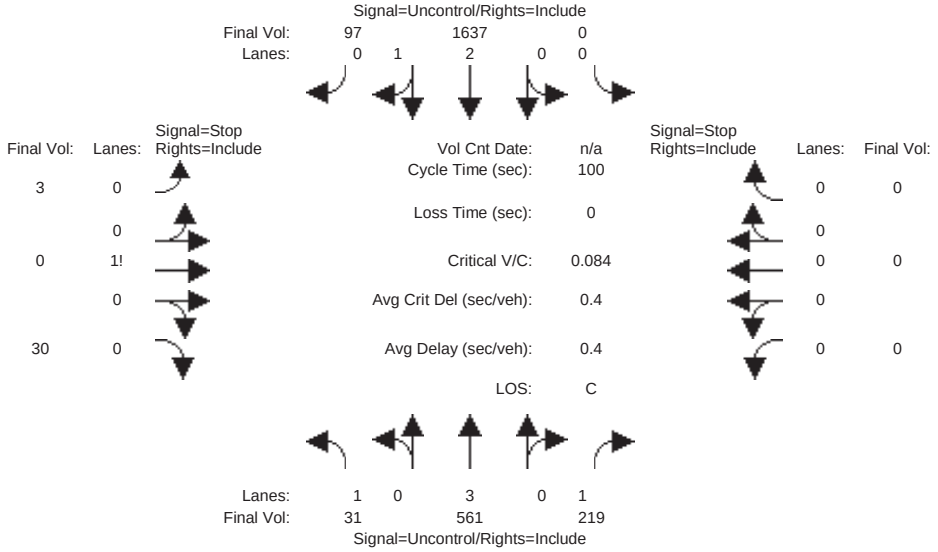
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31  539   215     0 1603    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31  539   215     0 1603    97     3    0    30     0    0     0
Added Vol:      0   22     4     0   34     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31  561   219     0 1637    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31  561   219     0 1637    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31  561   219     0 1637    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1734 xxxx xxxxx  xxxx xxxx xxxxx  1935 2528   594  xxxx xxxx xxxxx
Potent Cap.:  368 xxxx xxxxx  xxxx xxxx xxxxx    59   28   453  xxxx xxxx xxxxx
Move Cap.:    368 xxxx xxxxx  xxxx xxxx xxxxx    55   26   453  xxxx xxxx xxxxx
Volume/Cap:  0.08 xxxx  xxxx  xxxx xxxx  xxxx  0.05 0.00  0.07  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 15.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  274 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 19.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             19.9           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```

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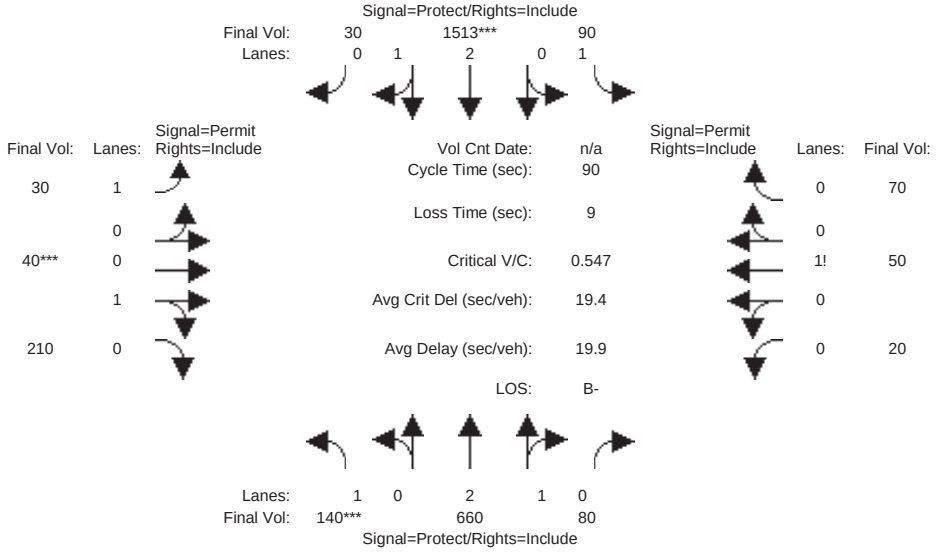
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	140	660	80	90	1513	30	30	40	210	20	50	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	660	80	90	1513	30	30	40	210	20	50	70
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	140	660	80	90	1513	30	30	40	210	20	50	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	140	660	80	90	1513	30	30	40	210	20	50	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	140	660	80	90	1513	30	30	40	210	20	50	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	140	660	80	90	1513	30	30	40	210	20	50	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.65	0.35	1.00	2.94	0.06	1.00	0.15	0.85	0.15	0.34	0.51
Final Sat.:	1750	5037	611	1750	5580	111	1750	284	1489	257	643	900
Capacity Analysis Module:												
Vol/Sat:	0.08	0.13	0.13	0.05	0.27	0.27	0.02	0.14	0.14	0.08	0.08	0.08
Crit Moves:	****				****			****				
Green Time:	13.2	36.3	36.3	21.5	44.6	44.6	23.2	23.2	23.2	23.2	23.2	23.2
Volume/Cap:	0.55	0.33	0.33	0.22	0.55	0.55	0.07	0.55	0.55	0.30	0.30	0.30
Delay/Veh:	38.1	18.5	18.5	27.7	15.9	15.9	25.3	30.2	30.2	27.2	27.2	27.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.1	18.5	18.5	27.7	15.9	15.9	25.3	30.2	30.2	27.2	27.2	27.2
LOS by Move:	D+	B-	B-	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	5	5	5	2	9	9	1	6	6	3	3	3

Note: Queue reported is the number of cars per lane.

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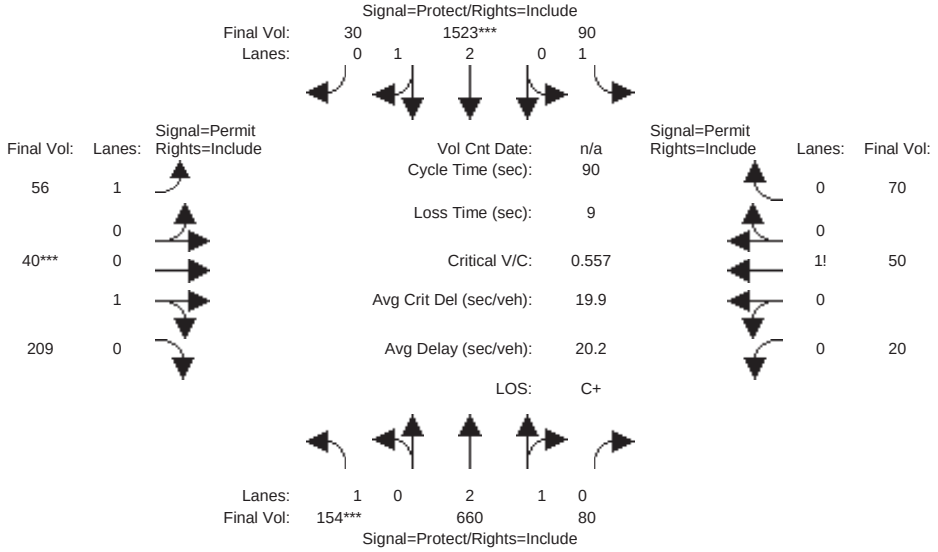
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	140	660	80	90	1513	30	30	40	210	20	50	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	660	80	90	1513	30	30	40	210	20	50	70
Added Vol:	14	0	0	0	10	0	26	0	-1	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	154	660	80	90	1523	30	56	40	209	20	50	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	154	660	80	90	1523	30	56	40	209	20	50	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	154	660	80	90	1523	30	56	40	209	20	50	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	154	660	80	90	1523	30	56	40	209	20	50	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.65	0.35	1.00	2.94	0.06	1.00	0.15	0.85	0.15	0.34	0.51
Final Sat.:	1750	5037	611	1750	5581	110	1750	285	1488	257	643	900
Capacity Analysis Module:												
Vol/Sat:	0.09	0.13	0.13	0.05	0.27	0.27	0.03	0.14	0.14	0.08	0.08	0.08
Crit Moves:	****				****			****				
Green Time:	14.2	36.6	36.6	21.7	44.1	44.1	22.7	22.7	22.7	22.7	22.7	22.7
Volume/Cap:	0.56	0.32	0.32	0.21	0.56	0.56	0.13	0.56	0.56	0.31	0.31	0.31
Delay/Veh:	37.5	18.3	18.3	27.6	16.4	16.4	26.1	30.8	30.8	27.7	27.7	27.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.5	18.3	18.3	27.6	16.4	16.4	26.1	30.8	30.8	27.7	27.7	27.7
LOS by Move:	D+	B-	B-	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	5	5	5	2	9	9	1	6	6	3	3	3

Note: Queue reported is the number of cars per lane.

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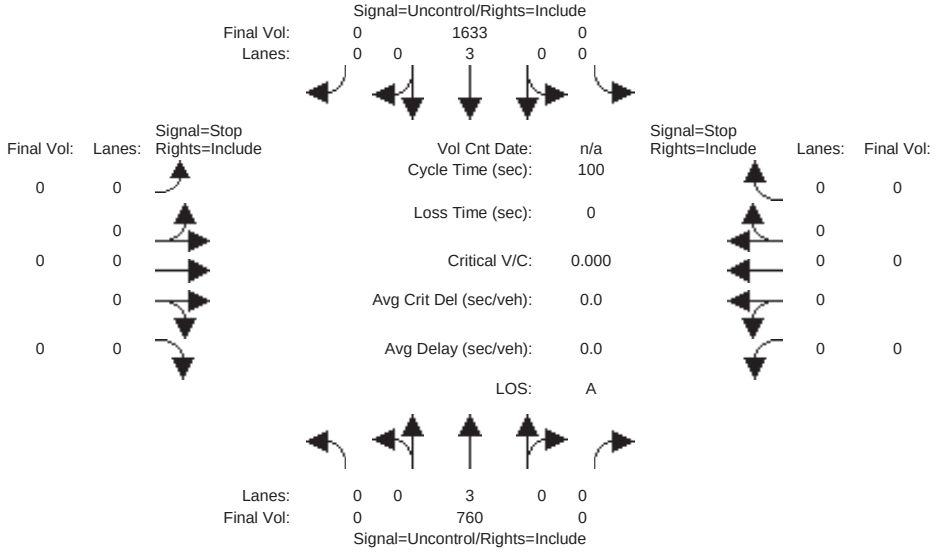
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  760     0     0 1633     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  760     0     0 1633     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  760     0     0 1633     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  760     0     0 1633     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  760     0     0 1633     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```

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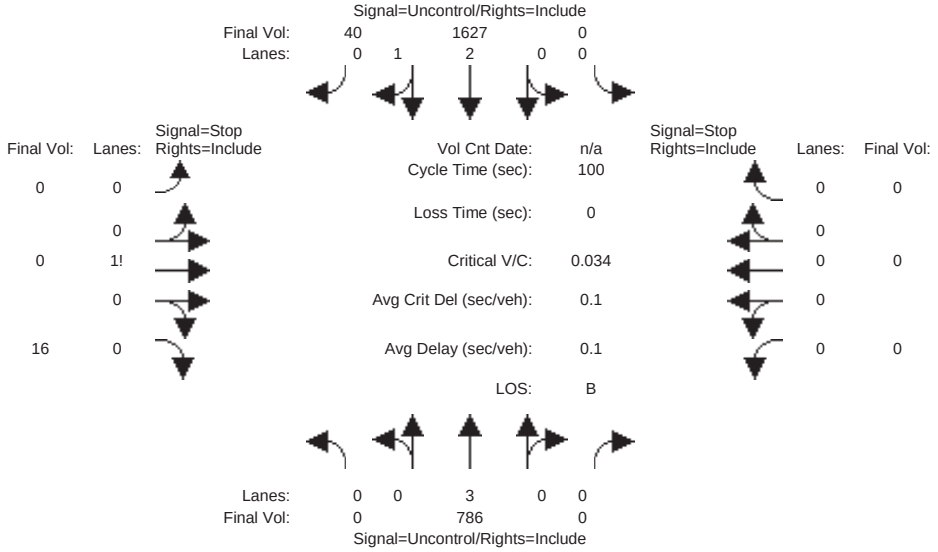
Mission Town Center TIA
DN15-0483
Background PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  760     0     0 1633     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  760     0     0 1633     0     0    0     0     0    0     0
Added Vol:      0   26     0     0    0    34     0    0    10     0    0     0
PasserByVol:    0    0     0     0   -6     6     0    0     6     0    0     0
Initial Fut:    0  786     0     0 1627    40     0    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  786     0     0 1627    40     0    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  786     0     0 1627    40     0    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   562  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   475  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   475  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  12.8 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     B     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             12.8           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Background AM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection	???				Background AM				Background Plus Project AM						???			
	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1 Lafavettee & El Camino Real	?	xx.x	x.xxx	xx.x	E+	57.0	0.976	73.7	E+	58.3	0.986	+ 0.011	76.2	+ 2.5	?	xx.x	x.xxx	xx.x
#2 Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	A	9.6	0.438	7.7	A	9.8	0.443	+ 0.006	8.0	+ 0.3	?	xx.x	x.xxx	xx.x
#3 Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	16.0	0.656	16.8	B	16.3	0.659	+ 0.003	16.9	+ 0.1	?	xx.x	x.xxx	xx.x
#4 Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	C	6.8	0.346	6.8	C	6.8	0.352	+ 0.006	6.8	+ 0.0	?	xx.x	x.xxx	xx.x
#5 The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	2.2	0.008	2.2	A	2.3	0.008	+ 0.000	2.3	+ 0.0	?	xx.x	x.xxx	xx.x
#6 The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	3.0	0.007	3.0	A	2.6	0.007	+ 0.000	2.6	- 0.4	?	xx.x	x.xxx	xx.x
#7 The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	2.5	0.026	2.5	B	2.1	0.026	+ 0.000	2.1	- 0.4	?	xx.x	x.xxx	xx.x
#8 Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	1.2	0.020	1.2	B	3.1	0.079	+ 0.060	3.1	+ 1.9	?	xx.x	x.xxx	xx.x
#9 El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	B	0.2	0.022	0.2	B	0.2	0.023	+ 0.000	0.2	- 0.0	?	xx.x	x.xxx	xx.x
#10 El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	B	17.1	0.447	15.2	B	17.4	0.450	+ 0.003	15.4	+ 0.2	?	xx.x	x.xxx	xx.x
#11 El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	A	0.1	0.022	+ 0.022	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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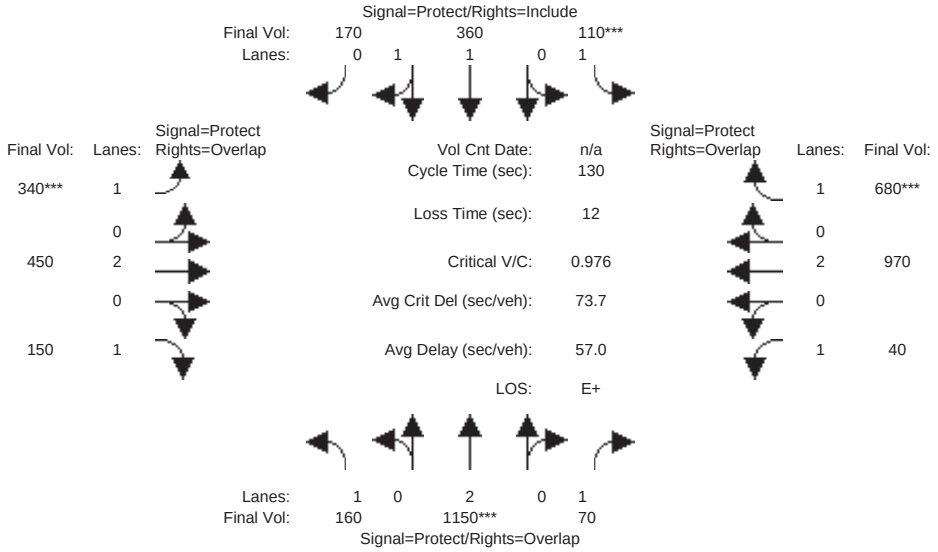
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	160	1150	70	110	360	170	340	450	150	40	970	680
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	160	1150	70	110	360	170	340	450	150	40	970	680
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	160	1150	70	110	360	170	340	450	150	40	970	680
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	160	1150	70	110	360	170	340	450	150	40	970	680
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	160	1150	70	110	360	170	340	450	150	40	970	680
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	160	1150	70	110	360	170	340	450	150	40	970	680
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.32	0.68	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	2512	1186	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.30	0.04	0.06	0.14	0.14	0.19	0.12	0.09	0.02	0.26	0.39
Crit Moves:		****		****			****					****
Green Time:	19.0	40.3	62.0	8.4	29.7	29.7	25.9	47.6	66.6	21.7	43.4	51.8
Volume/Cap:	0.63	0.98	0.08	0.98	0.63	0.63	0.98	0.32	0.17	0.14	0.76	0.98
Delay/Veh:	63.3	65.3	18.7	139.1	48.6	48.6	94.2	30.2	17.3	47.2	43.1	67.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	63.3	65.3	18.7	139.1	48.6	48.6	94.2	30.2	17.3	47.2	43.1	67.1
LOS by Move:	E	E	B-	F	D	D	F	C	B	D	D	E
HCM2kAvgQ:	7	28	2	8	10	10	19	6	3	1	18	35

Note: Queue reported is the number of cars per lane.

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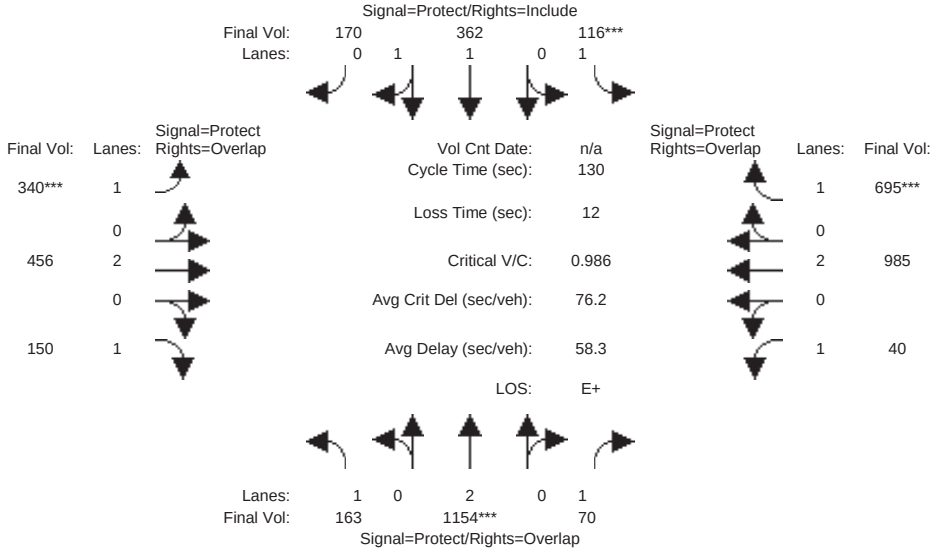
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	160	1150	70	110	360	170	340	450	150	40	970	680
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	160	1150	70	110	360	170	340	450	150	40	970	680
Added Vol:	3	4	0	6	2	0	0	6	0	0	15	15
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	163	1154	70	116	362	170	340	456	150	40	985	695
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	163	1154	70	116	362	170	340	456	150	40	985	695
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	163	1154	70	116	362	170	340	456	150	40	985	695
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	163	1154	70	116	362	170	340	456	150	40	985	695
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.32	0.68	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	2517	1182	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.30	0.04	0.07	0.14	0.14	0.19	0.12	0.09	0.02	0.26	0.40
Crit Moves:		****		****			****					****
Green Time:	19.2	40.0	61.5	8.7	29.6	29.6	25.6	47.8	67.0	21.4	43.6	52.4
Volume/Cap:	0.63	0.99	0.08	0.99	0.63	0.63	0.99	0.33	0.17	0.14	0.77	0.99
Delay/Veh:	63.3	67.9	19.0	139.9	48.9	48.9	97.1	30.2	17.1	47.4	43.3	69.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	63.3	67.9	19.0	139.9	48.9	48.9	97.1	30.2	17.1	47.4	43.3	69.2
LOS by Move:	E	E	B-	F	D	D	F	C	B	D	D	E
HCM2kAvgQ:	7	28	2	8	10	10	20	6	3	2	19	36

Note: Queue reported is the number of cars per lane.

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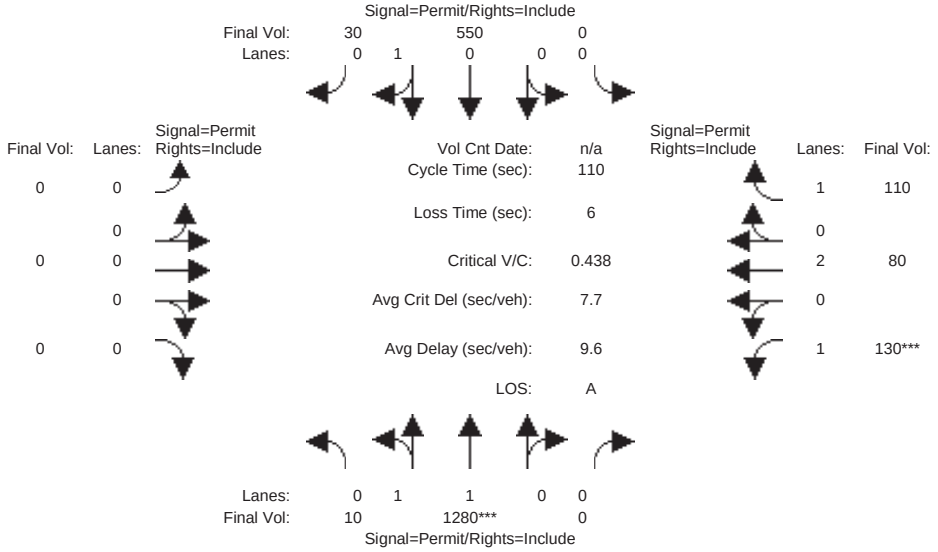
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	1280	0	0	550	30	0	0	0	130	80	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	1280	0	0	550	30	0	0	0	130	80	110
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	1280	0	0	550	30	0	0	0	130	80	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	1280	0	0	550	30	0	0	0	130	80	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	1280	0	0	550	30	0	0	0	130	80	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	1280	0	0	550	30	0	0	0	130	80	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.98	0.00	0.00	0.94	0.06	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	29	3768	0	0	1794	98	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.34	0.34	0.00	0.00	0.31	0.31	0.00	0.00	0.00	0.07	0.02	0.06
Crit Moves:		****								****		
Green Time:	85.3	85.3	0.0	0.0	85.3	85.3	0.0	0.0	0.0	18.7	18.7	18.7
Volume/Cap:	0.44	0.44	0.00	0.00	0.40	0.40	0.00	0.00	0.00	0.44	0.12	0.37
Delay/Veh:	4.3	4.3	0.0	0.0	4.2	4.2	0.0	0.0	0.0	42.0	38.8	41.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	4.3	4.3	0.0	0.0	4.2	4.2	0.0	0.0	0.0	42.0	38.8	41.2
LOS by Move:	A	A	A	A	A	A	A	A	A	D	D+	D
HCM2kAvgQ:	7	7	0	0	6	6	0	0	0	5	1	4

Note: Queue reported is the number of cars per lane.

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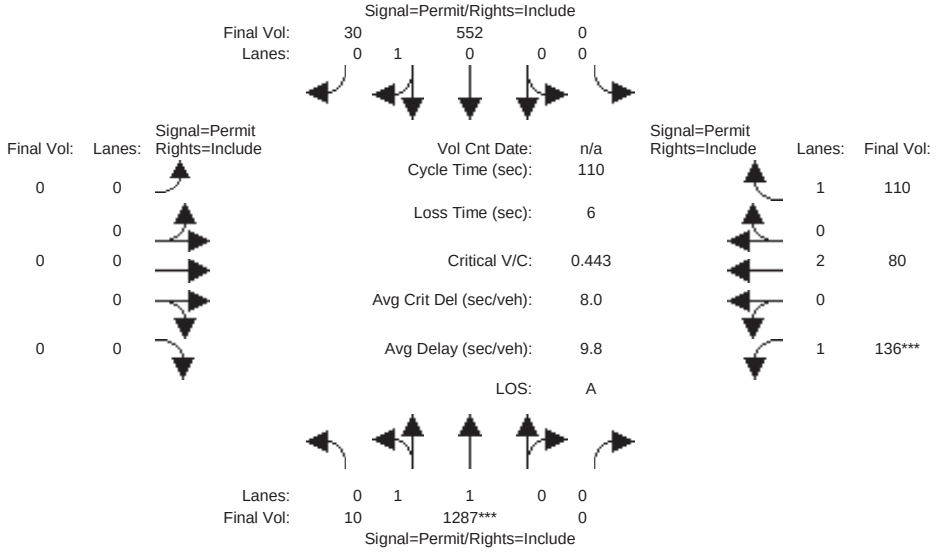
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	10	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	1280	0	0	550	30	0	0	0	130	80	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	1280	0	0	550	30	0	0	0	130	80	110
Added Vol:	0	7	0	0	2	0	0	0	0	6	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	1287	0	0	552	30	0	0	0	136	80	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	1287	0	0	552	30	0	0	0	136	80	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	1287	0	0	552	30	0	0	0	136	80	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	1287	0	0	552	30	0	0	0	136	80	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.98	0.00	0.00	0.94	0.06	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	29	3768	0	0	1794	98	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.34	0.34	0.00	0.00	0.31	0.31	0.00	0.00	0.00	0.08	0.02	0.06
Crit Moves:		****								****		
Green Time:	84.7	84.7	0.0	0.0	84.7	84.7	0.0	0.0	0.0	19.3	19.3	19.3
Volume/Cap:	0.44	0.44	0.00	0.00	0.40	0.40	0.00	0.00	0.00	0.44	0.12	0.36
Delay/Veh:	4.5	4.5	0.0	0.0	4.4	4.4	0.0	0.0	0.0	41.6	38.3	40.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	4.5	4.5	0.0	0.0	4.4	4.4	0.0	0.0	0.0	41.6	38.3	40.6
LOS by Move:	A	A	A	A	A	A	A	A	A	D	D+	D
HCM2kAvgQ:	7	7	0	0	6	6	0	0	0	5	1	4

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
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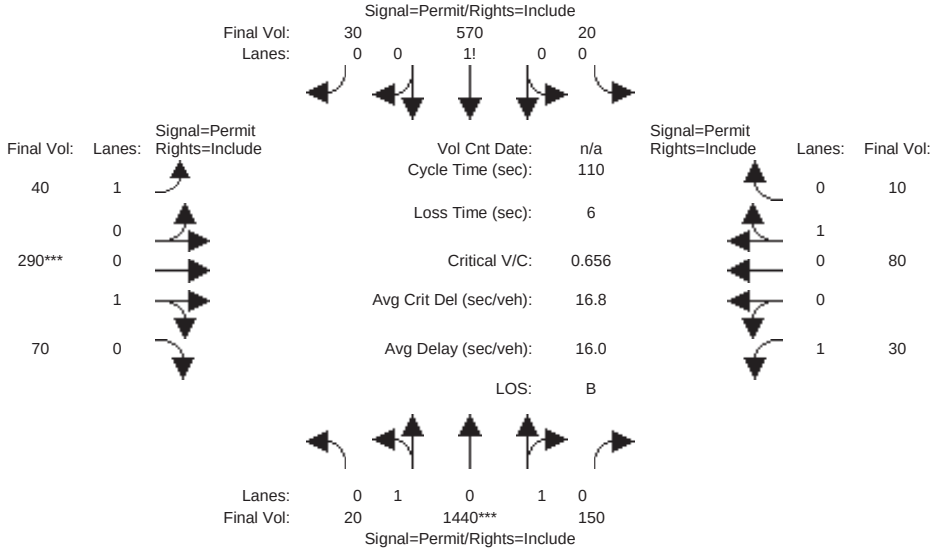
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	20	1440	150	20	570	30	40	290	70	30	80	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	1440	150	20	570	30	40	290	70	30	80	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	1440	150	20	570	30	40	290	70	30	80	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	20	1440	150	20	570	30	40	290	70	30	80	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	1440	150	20	570	30	40	290	70	30	80	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	20	1440	150	20	570	30	40	290	70	30	80	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.03	1.77	0.20	0.03	0.92	0.05	1.00	0.79	0.21	1.00	0.88	0.12
Final Sat.:	47	3368	351	61	1735	91	1750	1505	363	1750	1673	209
Capacity Analysis Module:												
Vol/Sat:	0.43	0.43	0.43	0.33	0.33	0.33	0.02	0.19	0.19	0.02	0.05	0.05
Crit Moves:		****						****				
Green Time:	71.7	71.7	71.7	71.7	71.7	71.7	32.3	32.3	32.3	32.3	32.3	32.3
Volume/Cap:	0.66	0.66	0.66	0.50	0.50	0.50	0.08	0.66	0.66	0.06	0.16	0.16
Delay/Veh:	12.3	12.3	12.3	10.3	10.3	10.3	28.1	36.9	36.9	28.0	29.0	29.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.3	12.3	12.3	10.3	10.3	10.3	28.1	36.9	36.9	28.0	29.0	29.0
LOS by Move:	B	B	B	B+	B+	B+	C	D+	D+	C	C	C
HCM2kAvgQ:	17	17	17	11	11	11	1	12	12	1	2	2

Note: Queue reported is the number of cars per lane.

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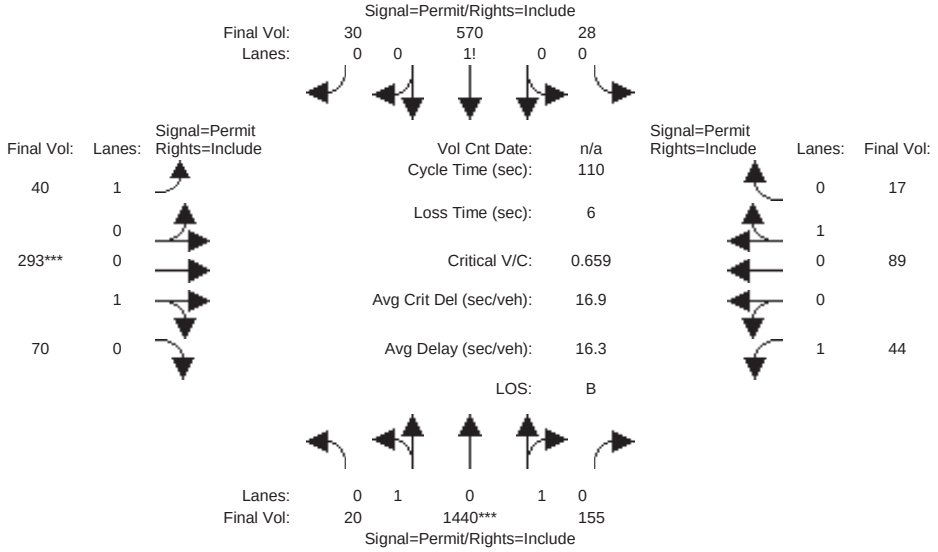
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	20	1440	150	20	570	30	40	290	70	30	80	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	1440	150	20	570	30	40	290	70	30	80	10
Added Vol:	0	0	5	8	0	0	0	3	0	14	9	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	1440	155	28	570	30	40	293	70	44	89	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	20	1440	155	28	570	30	40	293	70	44	89	17
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	1440	155	28	570	30	40	293	70	44	89	17
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	20	1440	155	28	570	30	40	293	70	44	89	17
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.03	1.77	0.20	0.05	0.90	0.05	1.00	0.79	0.21	1.00	0.83	0.17
Final Sat.:	47	3357	361	84	1711	90	1750	1509	360	1750	1574	301
Capacity Analysis Module:												
Vol/Sat:	0.43	0.43	0.43	0.33	0.33	0.33	0.02	0.19	0.19	0.03	0.06	0.06
Crit Moves:		****						****				
Green Time:	71.6	71.6	71.6	71.6	71.6	71.6	32.4	32.4	32.4	32.4	32.4	32.4
Volume/Cap:	0.66	0.66	0.66	0.51	0.51	0.51	0.08	0.66	0.66	0.09	0.19	0.19
Delay/Veh:	12.4	12.4	12.4	10.4	10.4	10.4	28.1	36.9	36.9	28.1	29.2	29.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.4	12.4	12.4	10.4	10.4	10.4	28.1	36.9	36.9	28.1	29.2	29.2
LOS by Move:	B	B	B	B+	B+	B+	C	D+	D+	C	C	C
HCM2kAvgQ:	17	17	17	11	11	11	1	12	12	1	3	3

Note: Queue reported is the number of cars per lane.

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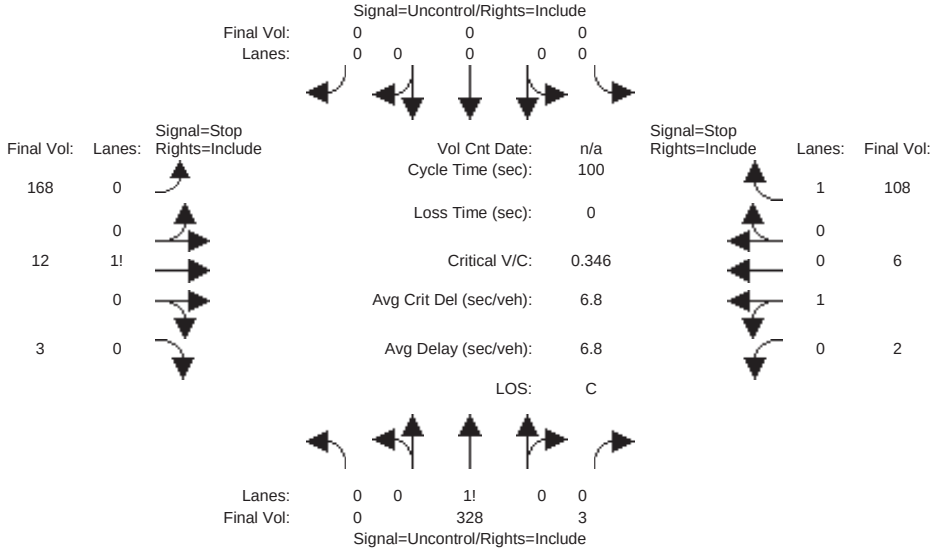
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  328     3     0    0     0   168   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  328     3     0    0     0   168   12     3     2    6   108
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  328     3     0    0     0   168   12     3     2    6   108
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  328     3     0    0     0   168   12     3     2    6   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  328     3     0    0     0   168   12     3     2    6   108
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   387  331     0   336  330   330
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   576  592  1091   622  593   717
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   485  592  1091   611  593   717
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.35 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.9
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  496 xxxxx   597 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.7 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.5 xxxxx  11.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             16.5             10.9
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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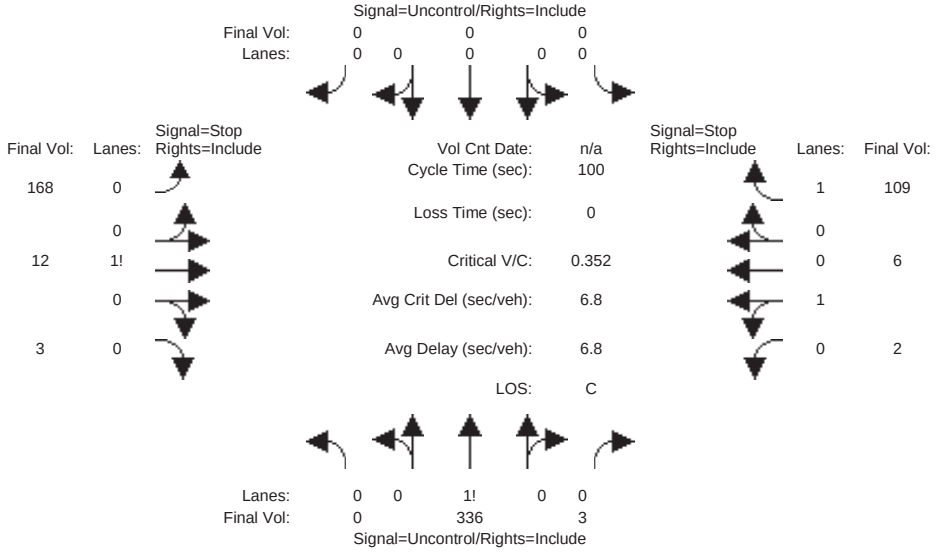
Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  328     3     0    0     0   168   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  328     3     0    0     0   168   12     3     2    6   108
Added Vol:      0    8     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  336     3     0    0     0   168   12     3     2    6   109
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  336     3     0    0     0   168   12     3     2    6   109
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  336     3     0    0     0   168   12     3     2    6   109
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   395  339     0   344  338   338
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   568  586  1091   614  587   709
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   477  586  1091   603  587   709
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.35 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.0
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  488 xxxxx   591 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.7 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.7 xxxxx  11.2 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             16.7             11.0
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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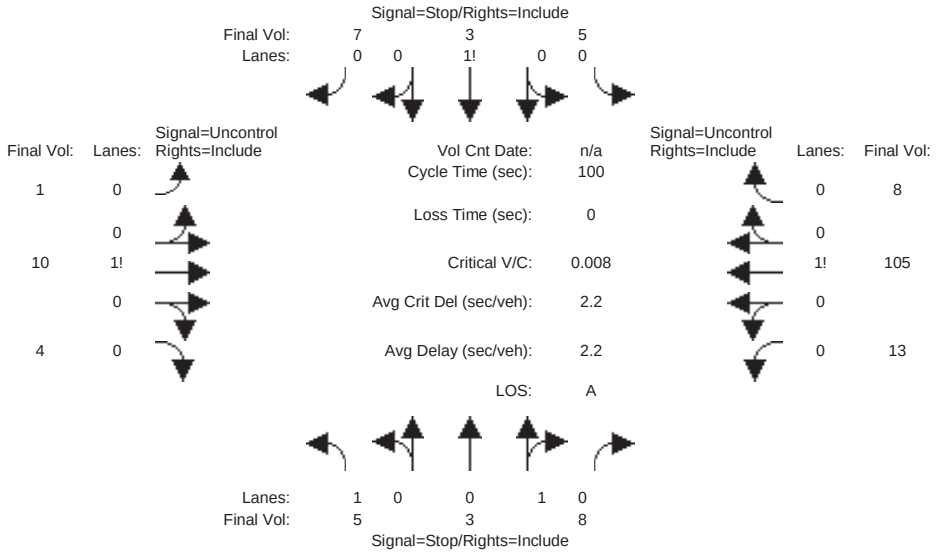
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5    3     8     5    3     7     1   10     4    13  105     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    3     8     5    3     7     1   10     4    13  105     8
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5    3     8     5    3     7     1   10     4    13  105     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5    3     8     5    3     7     1   10     4    13  105     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5    3     8     5    3     7     1   10     4    13  105     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  154  153    12   155  151   109   113 xxxx xxxxx    14 xxxx xxxxx
Potent Cap.:  817  742  1074   817  744   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Move Cap.:    803  736  1074   803  738   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.01  0.01 0.00  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.2 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   955  xxxx  849 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   8.8 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.0              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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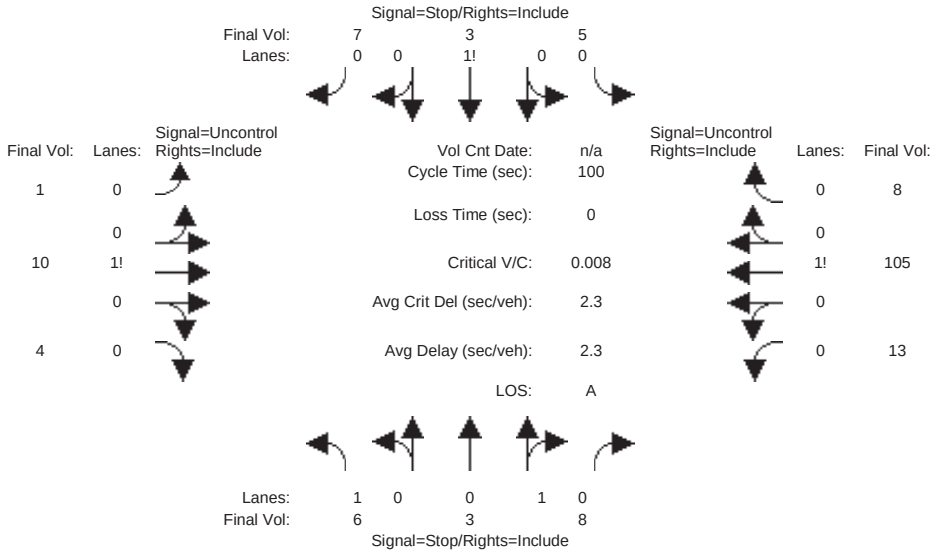
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5    3     8     5    3     7     1   10     4    13  105     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    3     8     5    3     7     1   10     4    13  105     8
Added Vol:      1    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6    3     8     5    3     7     1   10     4    13  105     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6    3     8     5    3     7     1   10     4    13  105     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    6    3     8     5    3     7     1   10     4    13  105     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  154  153    12   155  151   109   113 xxxx xxxxx    14 xxxx xxxxx
Potent Cap.:  817  742  1074   817  744   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Move Cap.:    803  736  1074   803  738   950  1489 xxxx xxxxx  1617 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.01  0.01 0.00  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.2 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   955  xxxx  849 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.0 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   8.8 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.1              9.3           xxxxxx           xxxxxx
ApproachLOS:         A                A                *                *
Note: Queue reported is the number of cars per lane.
```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Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
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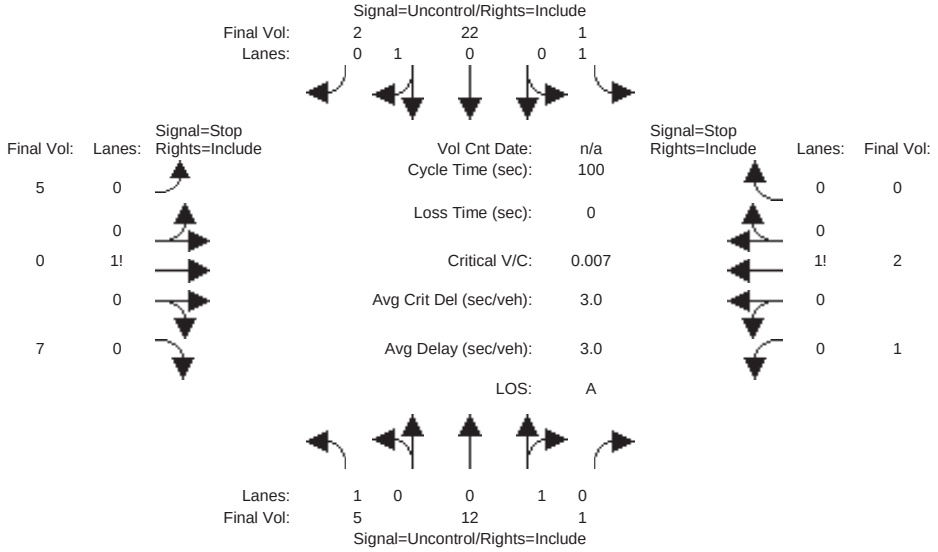
Background AM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   12     1     1   22     2     5    0     7     1    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5   12     1     1   22     2     5    0     7     1    2     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5   12     1     1   22     2     5    0     7     1    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5   12     1     1   22     2     5    0     7     1    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5   12     1     1   22     2     5    0     7     1    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   24 xxxx xxxxx    13 xxxx xxxxx    49   48    23    51   49 xxxxx
Potent Cap.: 1604 xxxx xxxxx  1619 xxxx xxxxx   957  847  1060   953  847 xxxxx
Move Cap.:   1604 xxxx xxxxx  1619 xxxx xxxxx   953  844  1060   944  844 xxxxx
Volume/Cap:  0.00 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.00  0.01  0.00 0.00  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx   7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1012 xxxxx   875 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx   9.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     A    *     *
ApproachDel:    xxxxxx           xxxxxx               8.6              9.1
ApproachLOS:         *                *                A                A
Note: Queue reported is the number of cars per lane.
```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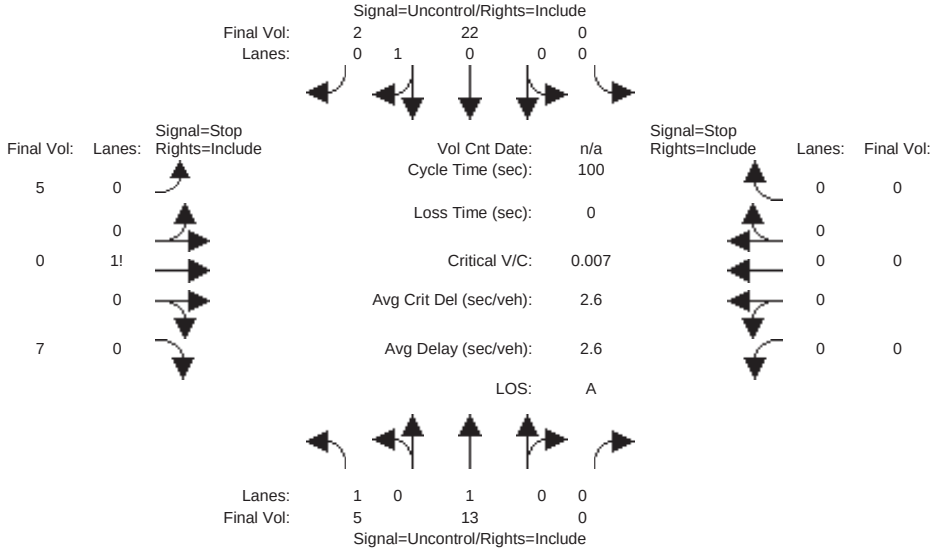
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                         Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   12     0     0   22     2     5    0     7     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5   12     0     0   22     2     5    0     7     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5   13     0     0   22     2     5    0     7     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5   13     0     0   22     2     5    0     7     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5   13     0     0   22     2     5    0     7     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   24 xxxx xxxxx  xxxx xxxx xxxxx    46   46    23  xxxx xxxx xxxxx
Potent Cap.: 1604 xxxx xxxxx  xxxx xxxx xxxxx   969  850  1060  xxxx xxxx xxxxx
Move Cap.:   1604 xxxx xxxxx  xxxx xxxx xxxxx   967  847  1060  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1019 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.6           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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2000 HCM Unsignalized (Future Volume Alternative)
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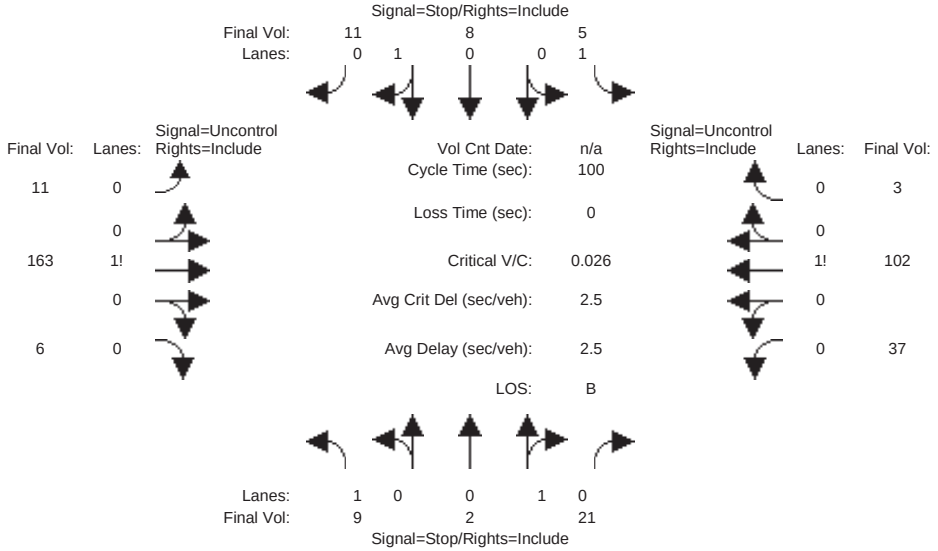
Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9    2    21     5    8    11    11  163     6    37  102     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    2    21     5    8    11    11  163     6    37  102     3
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    2    21     5    8    11    11  163     6    37  102     3
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    2    21     5    8    11    11  163     6    37  102     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    2    21     5    8    11    11  163     6    37  102     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  375  367   166   377  369   104   105 xxxx xxxxx   169 xxxx xxxxx
Potent Cap.:  586  565   884   584  564   957  1499 xxxx xxxxx  1421 xxxx xxxxx
Move Cap.:    558  546   884   554  545   957  1499 xxxx xxxxx  1421 xxxx xxxxx
Volume/Cap:  0.02 0.00  0.02  0.01 0.01  0.01  0.01 xxxx  xxxx  0.03 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 11.6 xxxx xxxxx  11.6 xxxx xxxxx   7.4 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   838  xxxx xxxx   726  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.1 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.4 xxxxx xxxx  10.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    *     B     *    *     *     *    *     *
ApproachDel:      10.0             10.4           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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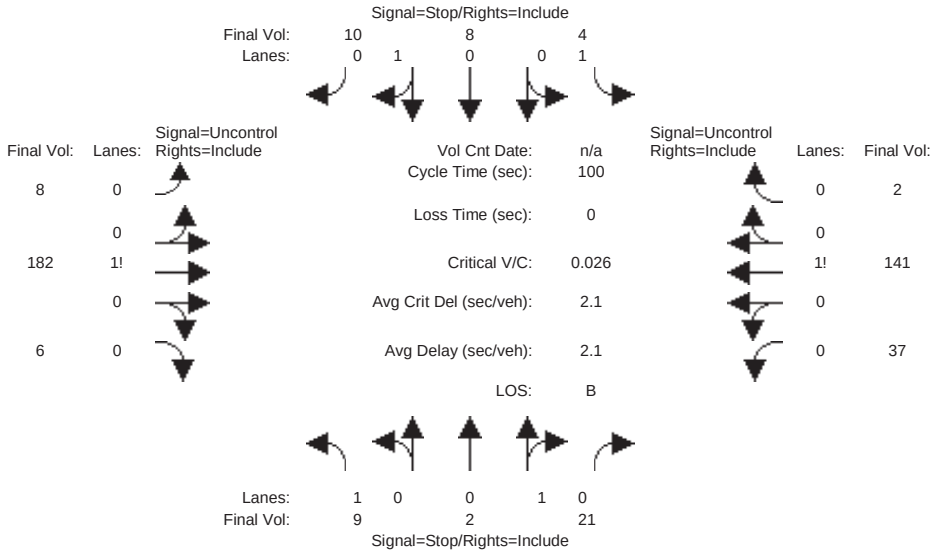
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9    2    21     5    8    11    11  163     6    37  102     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    2    21     5    8    11    11  163     6    37  102     3
Added Vol:      0    0     0    -1    0    -1    -3   19     0     0   39    -1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    2    21     4    8    10     8  182     6    37  141     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    2    21     4    8    10     8  182     6    37  141     2
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    2    21     4    8    10     8  182     6    37  141     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  426  418   185   429  420   142   143 xxxx xxxxx   188 xxxx xxxxx
Potent Cap.:  542  529   862   540  528   911  1452 xxxx xxxxx  1398 xxxx xxxxx
Move Cap.:    517  512   862   512  511   911  1452 xxxx xxxxx  1398 xxxx xxxxx
Volume/Cap:  0.02 0.00  0.02  0.01 0.02  0.01  0.01 xxxx  xxxx  0.03 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 12.1 xxxx xxxxx  12.1 xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   814  xxxx xxxx   675  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.1 xxxxx xxxx   0.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.6 xxxxx xxxx  10.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    *     B     *    *     *     *    *     *
ApproachDel:      10.3             10.8           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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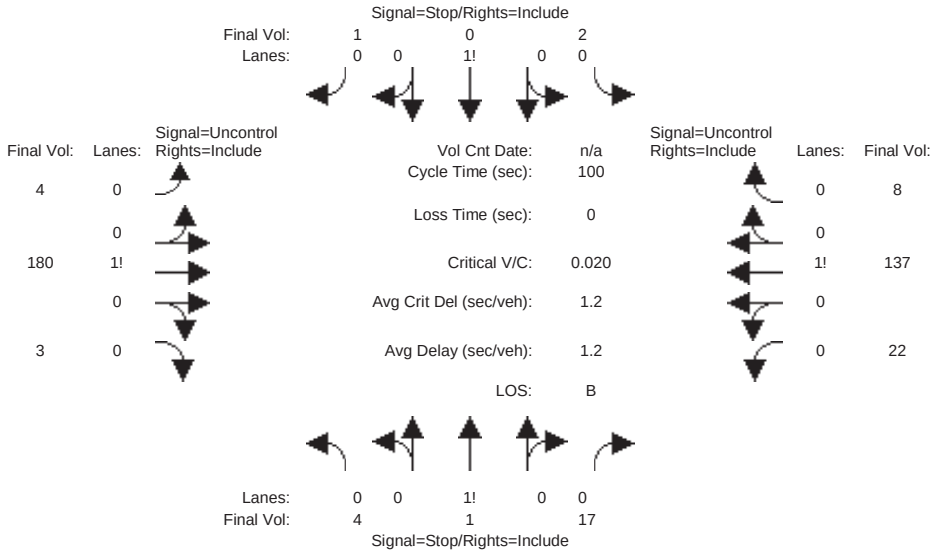
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    1    17     2    0     1     4  180     3    22  137     8
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4    1    17     2    0     1     4  180     3    22  137     8
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4    1    17     2    0     1     4  180     3    22  137     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4    1    17     2    0     1     4  180     3    22  137     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4    1    17     2    0     1     4  180     3    22  137     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  375  379   182   384  376   141   145 xxxx xxxxx   183 xxxx xxxxx
Potent Cap.:  586  557   866   578  558   912  1450 xxxx xxxxx  1404 xxxx xxxxx
Move Cap.:    577  546   866   558  548   912  1450 xxxx xxxxx  1404 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.02  0.00 0.00  0.00  0.00 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  775 xxxxx  xxxx  641 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.1 xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.8 xxxxx xxxxx 10.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    B     *     *    *     *     *    *     *
ApproachDel:       9.8             10.6           xxxxxx           xxxxxx
ApproachLOS:         A                B                *                *
Note: Queue reported is the number of cars per lane.
```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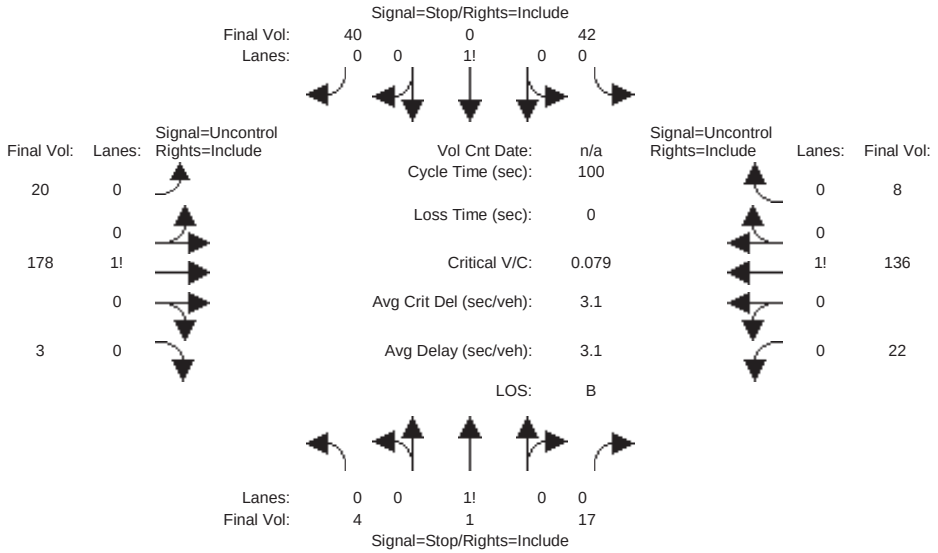
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    1    17     0    0     0     0  180     3    22  137     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4    1    17     0    0     0     0  180     3    22  137     0
Added Vol:      0    0     0    41    0    40    19   -1     0     0   -1     8
PasserByVol:    0    0     0     1    0     0     1   -1     0     0    0     0
Initial Fut:    4    1    17    42    0    40    20  178     3    22  136     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4    1    17    42    0    40    20  178     3    22  136     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4    1    17    42    0    40    20  178     3    22  136     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  424  408   180   413  405   140   144 xxxx xxxxx   181 xxxx xxxxx
Potent Cap.:  544  536   869   553  538   913  1451 xxxx xxxxx  1407 xxxx xxxxx
Move Cap.:    509  520   869   530  522   913  1451 xxxx xxxxx  1407 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.02  0.08 0.00  0.04  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  749 xxxxx  xxxx  666 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.1 xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.9 xxxxx xxxxx 11.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    B     *     *    *     *     *    *     *
ApproachDel:       9.9             11.2           xxxxxx           xxxxxx
ApproachLOS:         A                B                *                *
Note: Queue reported is the number of cars per lane.
```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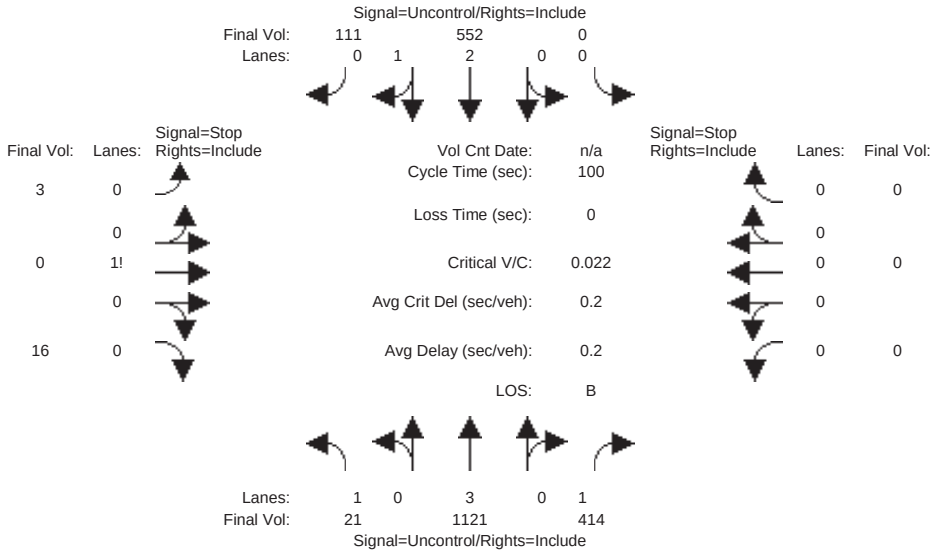
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21 1121   414     0  552   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21 1121   414     0  552   111     3    0    16     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21 1121   414     0  552   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21 1121   414     0  552   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21 1121   414     0  552   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  663 xxxx xxxxx  xxxx xxxx xxxxx  1023 2185   240  xxxx xxxx xxxxx
Potent Cap.:  935 xxxx xxxxx  xxxx xxxx xxxxx   235   46   768  xxxx xxxx xxxxx
Move Cap.:    935 xxxx xxxxx  xxxx xxxx xxxxx   231   45   768  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  562 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.6 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.6           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```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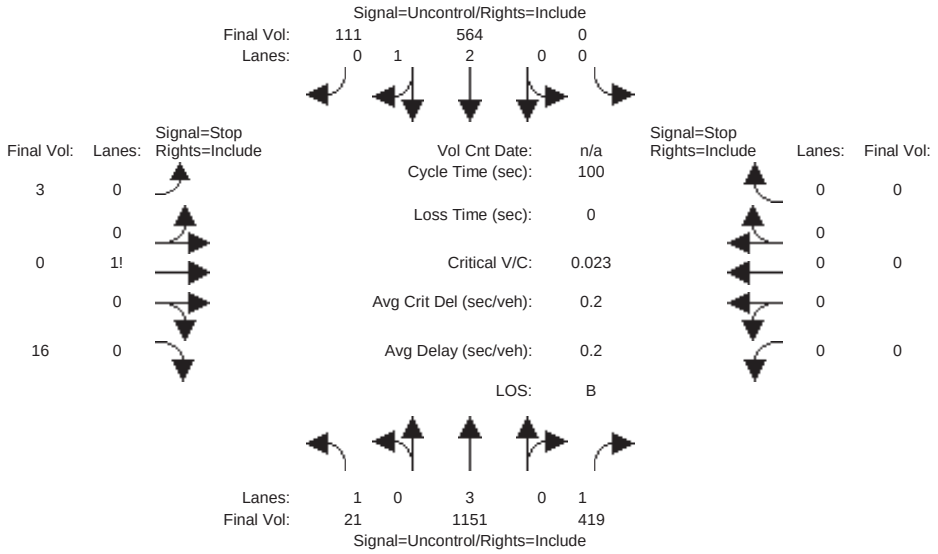
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21 1121   414     0  552   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21 1121   414     0  552   111     3    0    16     0    0     0
Added Vol:      0   30     5     0   12     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21 1151   419     0  564   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21 1151   419     0  564   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21 1151   419     0  564   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  675 xxxx xxxxx  xxxx xxxx xxxxx  1045 2232   244  xxxx xxxx xxxxx
Potent Cap.:  926 xxxx xxxxx  xxxx xxxx xxxxx   227   43   763  xxxx xxxx xxxxx
Move Cap.:    926 xxxx xxxxx  xxxx xxxx xxxxx   224   42   763  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  553 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.7           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```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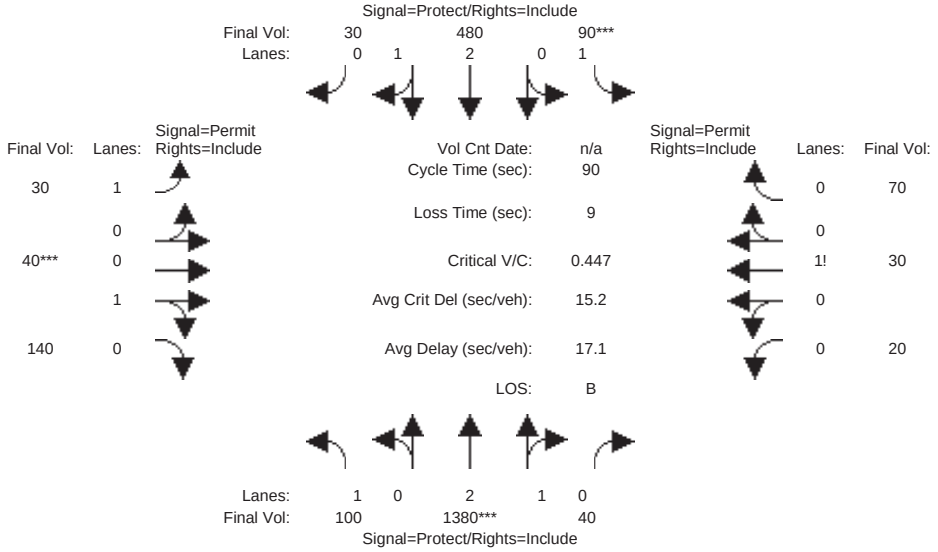
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	100	1380	40	90	480	30	30	40	140	20	30	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	100	1380	40	90	480	30	30	40	140	20	30	70
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	100	1380	40	90	480	30	30	40	140	20	30	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	100	1380	40	90	480	30	30	40	140	20	30	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	100	1380	40	90	480	30	30	40	140	20	30	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	100	1380	40	90	480	30	30	40	140	20	30	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.91	0.09	1.00	2.81	0.19	1.00	0.21	0.79	0.17	0.23	0.60
Final Sat.:	1750	5526	160	1750	5338	334	1750	396	1385	298	446	1041
Capacity Analysis Module:												
Vol/Sat:	0.06	0.25	0.25	0.05	0.09	0.09	0.02	0.10	0.10	0.07	0.07	0.07
Crit Moves:		****		****				****				
Green Time:	25.0	50.3	50.3	10.4	35.7	35.7	20.4	20.4	20.4	20.4	20.4	20.4
Volume/Cap:	0.21	0.45	0.45	0.45	0.23	0.23	0.08	0.45	0.45	0.30	0.30	0.30
Delay/Veh:	25.1	11.8	11.8	38.7	18.1	18.1	27.5	30.8	30.8	29.3	29.3	29.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.1	11.8	11.8	38.7	18.1	18.1	27.5	30.8	30.8	29.3	29.3	29.3
LOS by Move:	C	B+	B+	D+	B-	B-	C	C	C	C	C	C
HCM2kAvgQ:	2	8	8	2	3	3	1	4	4	3	3	3

Note: Queue reported is the number of cars per lane.

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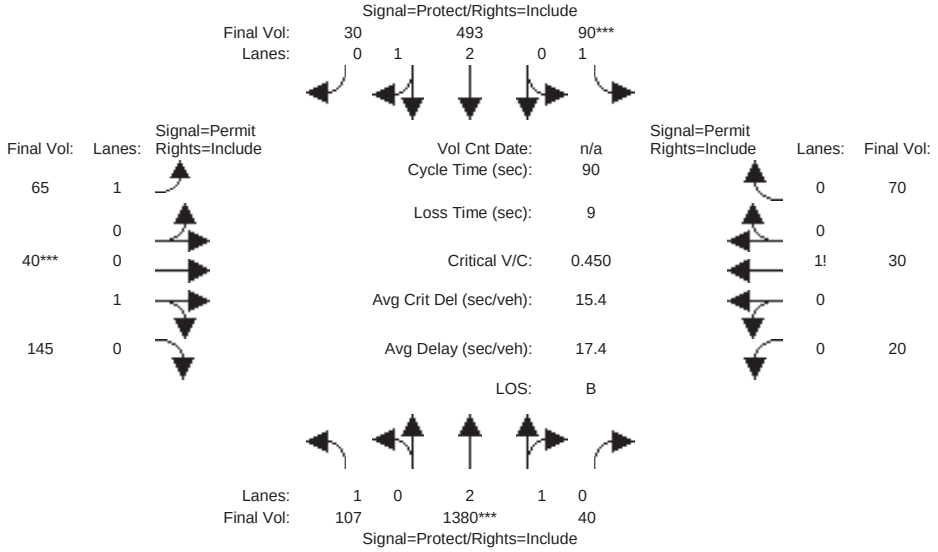
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	100	1380	40	90	480	30	30	40	140	20	30	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	100	1380	40	90	480	30	30	40	140	20	30	70
Added Vol:	7	0	0	0	13	0	35	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	107	1380	40	90	493	30	65	40	145	20	30	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	107	1380	40	90	493	30	65	40	145	20	30	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	107	1380	40	90	493	30	65	40	145	20	30	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	107	1380	40	90	493	30	65	40	145	20	30	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.91	0.09	1.00	2.81	0.19	1.00	0.20	0.80	0.17	0.23	0.60
Final Sat.:	1750	5526	160	1750	5347	325	1750	385	1395	298	446	1041
Capacity Analysis Module:												
Vol/Sat:	0.06	0.25	0.25	0.05	0.09	0.09	0.04	0.10	0.10	0.07	0.07	0.07
Crit Moves:		****		****				****				
Green Time:	24.8	49.9	49.9	10.3	35.4	35.4	20.8	20.8	20.8	20.8	20.8	20.8
Volume/Cap:	0.22	0.45	0.45	0.45	0.23	0.23	0.16	0.45	0.45	0.29	0.29	0.29
Delay/Veh:	25.4	12.0	12.0	38.8	18.3	18.3	27.8	30.5	30.5	28.9	28.9	28.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.4	12.0	12.0	38.8	18.3	18.3	27.8	30.5	30.5	28.9	28.9	28.9
LOS by Move:	C	B+	B+	D+	B-	B-	C	C	C	C	C	C
HCM2kAvgQ:	3	8	8	2	3	3	1	4	4	3	3	3

Note: Queue reported is the number of cars per lane.

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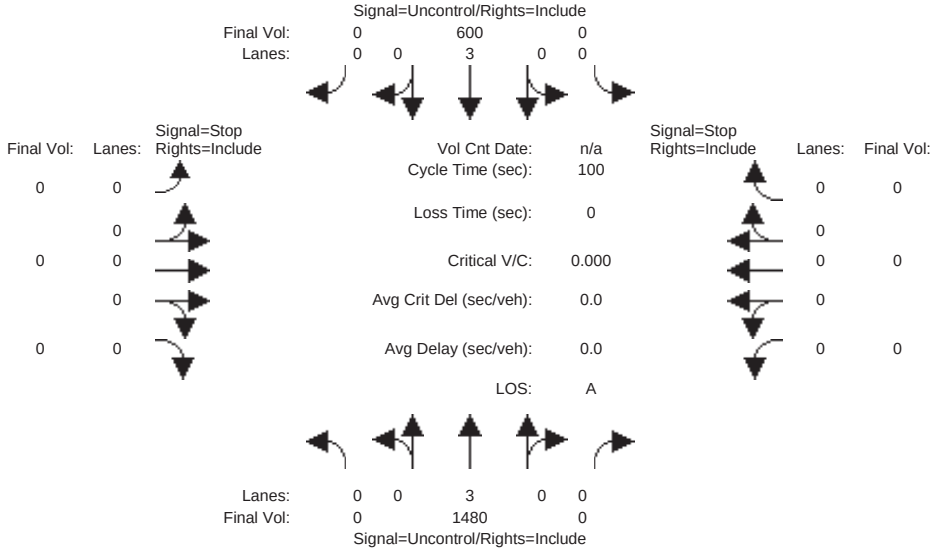
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1480     0     0  600     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1480     0     0  600     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0 1480     0     0  600     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1480     0     0  600     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1480     0     0  600     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```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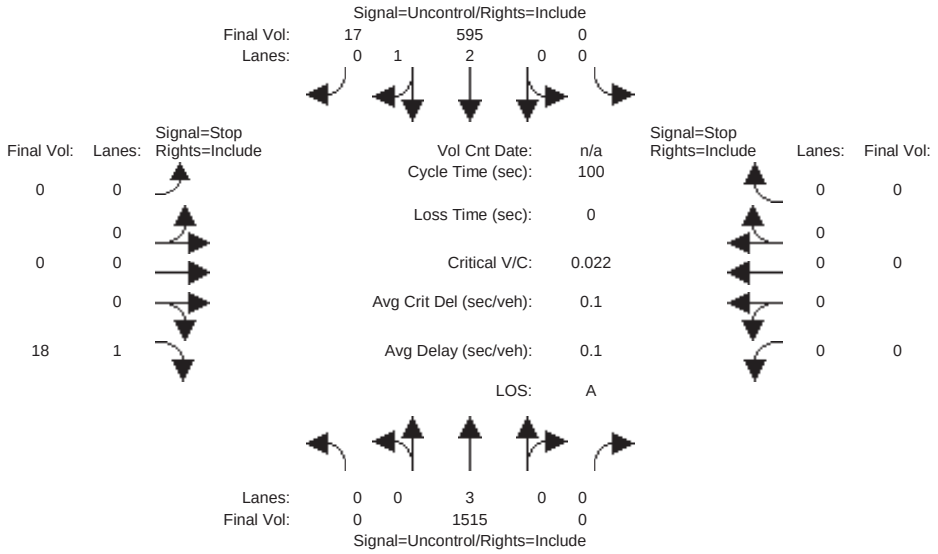
Mission Town Center TIA
DN15-0483
Background AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background Plus Project AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1480     0     0  600     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1480     0     0  600     0     0    0     0     0    0     0
Added Vol:      0   35     0     0    0    12     0    0    13     0    0     0
PasserByVol:    0    0     0     0   -5     5     0    0     5     0    0     0
Initial Fut:    0 1515     0     0  595    17     0    0    18     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1515     0     0  595    17     0    0    18     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1515     0     0  595    17     0    0    18     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   207  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   806  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   806  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.02  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     A     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               9.6           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Cumulative PM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection		???				Cumulative PM				Cumulative Plus Project PM						???			
		LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1	Lafayettee & El Camino Real	?	xx.x	x.xxx	xx.x	F	83.2	1.111	107.9	F	85.2	1.116	+ 0.006	110.0	+ 2.2	?	xx.x	x.xxx	xx.x
#2	Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	F	128.7	1.337	184.6	F	132.9	1.351	+ 0.014	190.7	+ 6.1	?	xx.x	x.xxx	xx.x
#3	Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	16.0	0.752	15.3	B	16.5	0.765	+ 0.013	15.9	+ 0.6	?	xx.x	x.xxx	xx.x
#4	Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	B	7.9	0.293	7.9	B	7.9	0.296	+ 0.004	7.9	- 0.0	?	xx.x	x.xxx	xx.x
#5	The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	3.0	0.015	3.0	A	3.0	0.015	+ 0.000	3.0	+ 0.0	?	xx.x	x.xxx	xx.x
#6	The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	4.0	0.013	4.0	A	2.5	0.009	- 0.003	2.5	- 1.5	?	xx.x	x.xxx	xx.x
#7	The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	2.5	0.061	2.5	B	2.3	0.068	+ 0.006	2.3	- 0.2	?	xx.x	x.xxx	xx.x
#8	Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	2.3	0.101	2.3	B	3.4	0.122	+ 0.022	3.4	+ 1.1	?	xx.x	x.xxx	xx.x
#9	El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	C	0.4	0.084	0.4	C	0.4	0.087	+ 0.003	0.4	+ 0.0	?	xx.x	x.xxx	xx.x
#10	El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	C	25.6	0.715	26.4	C	25.8	0.726	+ 0.011	27.0	+ 0.6	?	xx.x	x.xxx	xx.x
#11	El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	B	0.1	0.034	+ 0.034	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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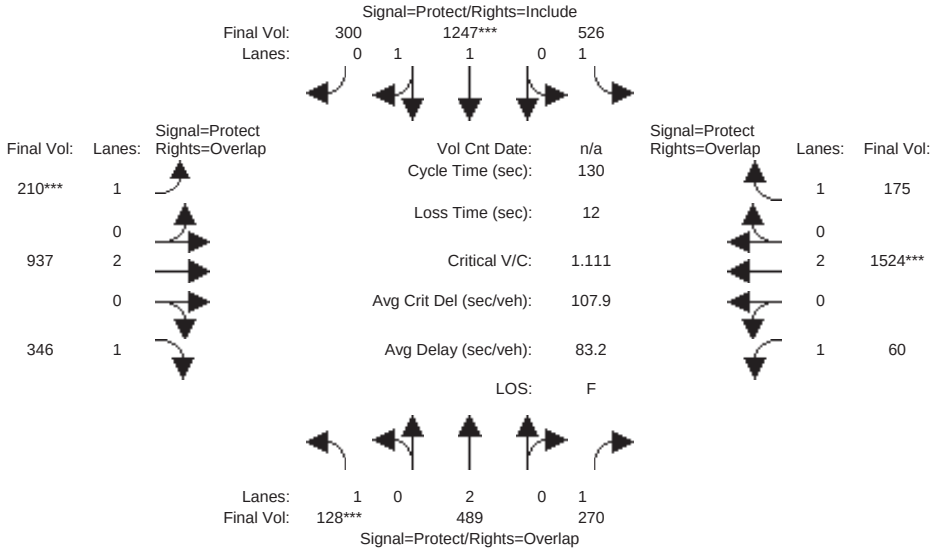
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	128	489	270	526	1247	300	210	937	346	60	1524	175
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	489	270	526	1247	300	210	937	346	60	1524	175
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	489	270	526	1247	300	210	937	346	60	1524	175
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	128	489	270	526	1247	300	210	937	346	60	1524	175
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	489	270	526	1247	300	210	937	346	60	1524	175
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	128	489	270	526	1247	300	210	937	346	60	1524	175
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.59	0.41	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	3013	725	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.13	0.15	0.30	0.41	0.41	0.12	0.25	0.20	0.03	0.40	0.10
Crit Moves:	****				****		****				****	
Green Time:	8.6	17.1	28.0	39.9	48.4	48.4	14.0	50.1	58.6	10.9	46.9	86.9
Volume/Cap:	1.11	0.98	0.72	0.98	1.11	1.11	1.11	0.64	0.44	0.41	1.11	0.15
Delay/Veh:	177.4	91.6	58.4	78.6	101	101.2	156.2	34.8	26.2	64.6	102	8.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	177.4	91.6	58.4	78.6	101	101.2	156.2	34.8	26.2	64.6	102	8.2
LOS by Move:	F	F	E+	E-	F	F	F	C-	C	E	F	A
HCM2kAvgQ:	8	12	11	28	44	44	15	16	10	3	43	3

Note: Queue reported is the number of cars per lane.

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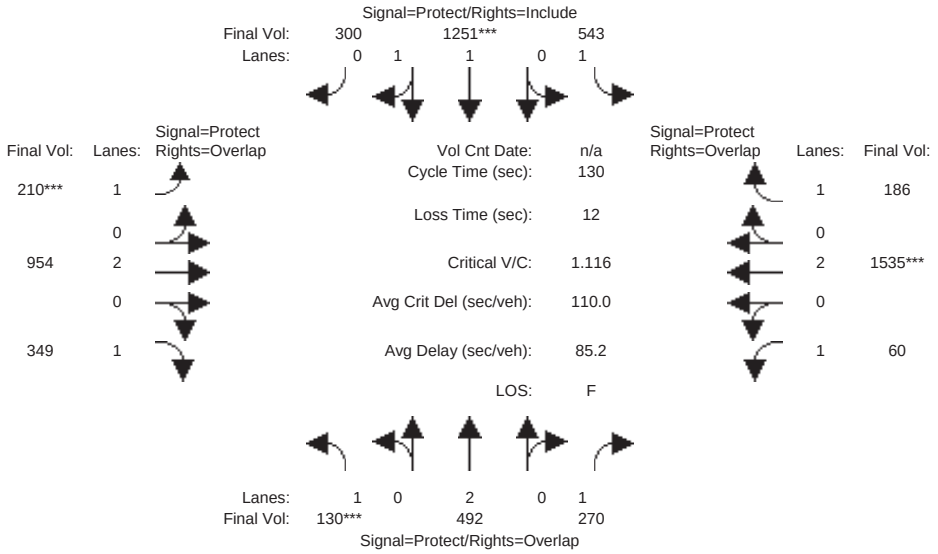
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	128	489	270	526	1247	300	210	937	346	60	1524	175
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	489	270	526	1247	300	210	937	346	60	1524	175
Added Vol:	2	3	0	17	4	0	0	17	3	0	11	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	130	492	270	543	1251	300	210	954	349	60	1535	186
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	130	492	270	543	1251	300	210	954	349	60	1535	186
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	130	492	270	543	1251	300	210	954	349	60	1535	186
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	130	492	270	543	1251	300	210	954	349	60	1535	186
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.59	0.41	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	3015	723	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.13	0.15	0.31	0.41	0.41	0.12	0.25	0.20	0.03	0.40	0.11
Crit Moves:	****				****		****				****	
Green Time:	8.7	16.8	27.6	40.2	48.3	48.3	14.0	50.2	58.9	10.8	47.0	87.2
Volume/Cap:	1.12	1.00	0.73	1.00	1.12	1.12	1.12	0.65	0.44	0.41	1.12	0.16
Delay/Veh:	178.7	98.1	59.6	84.4	104	103.5	158.2	34.9	26.1	65.1	104	8.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	178.7	98.1	59.6	84.4	104	103.5	158.2	34.9	26.1	65.1	104	8.2
LOS by Move:	F	F	E+	F	F	F	F	C-	C	E	F	A
HCM2kAvgQ:	8	13	11	30	45	45	15	16	10	3	44	3

Note: Queue reported is the number of cars per lane.

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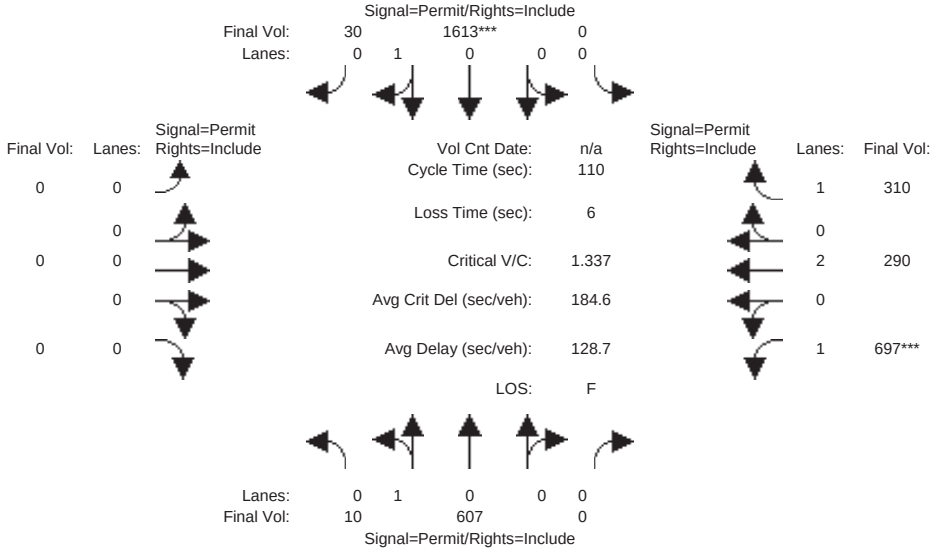
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	607	0	0	1613	30	0	0	0	697	290	310
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	607	0	0	1613	30	0	0	0	697	290	310
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	607	0	0	1613	30	0	0	0	697	290	310
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	607	0	0	1613	30	0	0	0	697	290	310
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	607	0	0	1613	30	0	0	0	697	290	310
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	607	0	0	1613	30	0	0	0	697	290	310
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	31	1867	0	0	1862	35	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.33	0.33	0.00	0.00	0.87	0.87	0.00	0.00	0.00	0.40	0.08	0.18
Crit Moves:					****					****		
Green Time:	71.2	71.2	0.0	0.0	71.2	71.2	0.0	0.0	0.0	32.8	32.8	32.8
Volume/Cap:	0.50	0.50	0.00	0.00	1.34	1.34	0.00	0.00	0.00	1.34	0.26	0.59
Delay/Veh:	10.4	10.4	0.0	0.0	177	176.8	0.0	0.0	0.0	203.1	29.5	34.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.4	10.4	0.0	0.0	177	176.8	0.0	0.0	0.0	203.1	29.5	34.8
LOS by Move:	B+	B+	A	A	F	F	A	A	A	F	C	C-
HCM2kAvgQ:	11	11	0	0	102	102	0	0	0	50	4	10

Note: Queue reported is the number of cars per lane.

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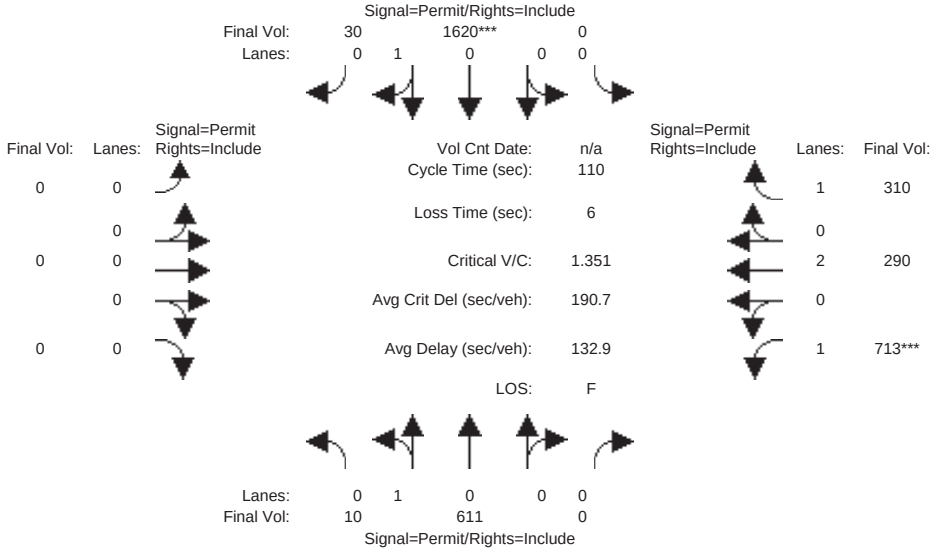
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	607	0	0	1613	30	0	0	0	697	290	310
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	607	0	0	1613	30	0	0	0	697	290	310
Added Vol:	0	4	0	0	7	0	0	0	0	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	611	0	0	1620	30	0	0	0	713	290	310
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	611	0	0	1620	30	0	0	0	713	290	310
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	611	0	0	1620	30	0	0	0	713	290	310
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	611	0	0	1620	30	0	0	0	713	290	310
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	0.98	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	31	1867	0	0	1863	34	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.33	0.33	0.00	0.00	0.87	0.87	0.00	0.00	0.00	0.41	0.08	0.18
Crit Moves:					****					****		
Green Time:	70.8	70.8	0.0	0.0	70.8	70.8	0.0	0.0	0.0	33.2	33.2	33.2
Volume/Cap:	0.51	0.51	0.00	0.00	1.35	1.35	0.00	0.00	0.00	1.35	0.25	0.59
Delay/Veh:	10.7	10.7	0.0	0.0	183	183.0	0.0	0.0	0.0	208.5	29.2	34.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.7	10.7	0.0	0.0	183	183.0	0.0	0.0	0.0	208.5	29.2	34.3
LOS by Move:	B+	B+	A	A	F	F	A	A	A	F	C	C-
HCM2kAvgQ:	11	11	0	0	104	104	0	0	0	52	4	10

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Cumulative PM

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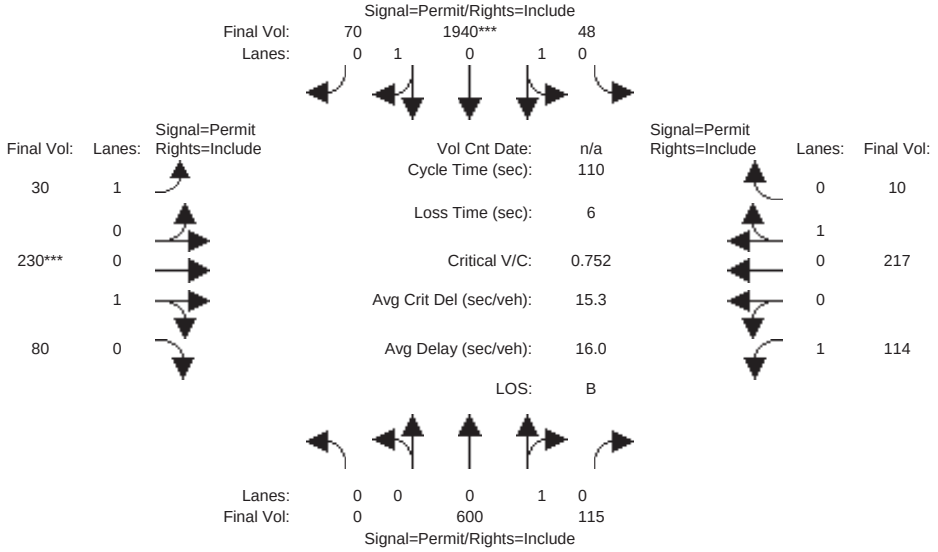
Cumulative PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	600	115	48	1940	70	30	230	80	114	217	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	600	115	48	1940	70	30	230	80	114	217	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	600	115	48	1940	70	30	230	80	114	217	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	600	115	48	1940	70	30	230	80	114	217	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	600	115	48	1940	70	30	230	80	114	217	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	600	115	48	1940	70	30	230	80	114	217	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.83	0.17	0.05	1.88	0.07	1.00	0.73	0.27	1.00	0.95	0.05
Final Sat.:	0	1573	301	88	3565	129	1750	1379	480	1750	1809	83
Capacity Analysis Module:												
Vol/Sat:	0.00	0.38	0.38	0.54	0.54	0.54	0.02	0.17	0.17	0.07	0.12	0.12
Crit Moves:					****			****				
Green Time:	0.0	79.6	79.6	79.6	79.6	79.6	24.4	24.4	24.4	24.4	24.4	24.4
Volume/Cap:	0.00	0.53	0.53	0.75	0.75	0.75	0.08	0.75	0.75	0.29	0.54	0.54
Delay/Veh:	0.0	7.2	7.2	10.4	10.4	10.4	34.0	47.6	47.6	36.1	39.3	39.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.2	7.2	10.4	10.4	10.4	34.0	47.6	47.6	36.1	39.3	39.3
LOS by Move:	A	A	A	B+	B+	B+	C-	D	D	D+	D	D
HCM2kAvgQ:	0	11	11	19	19	19	1	12	12	3	6	6

Note: Queue reported is the number of cars per lane.

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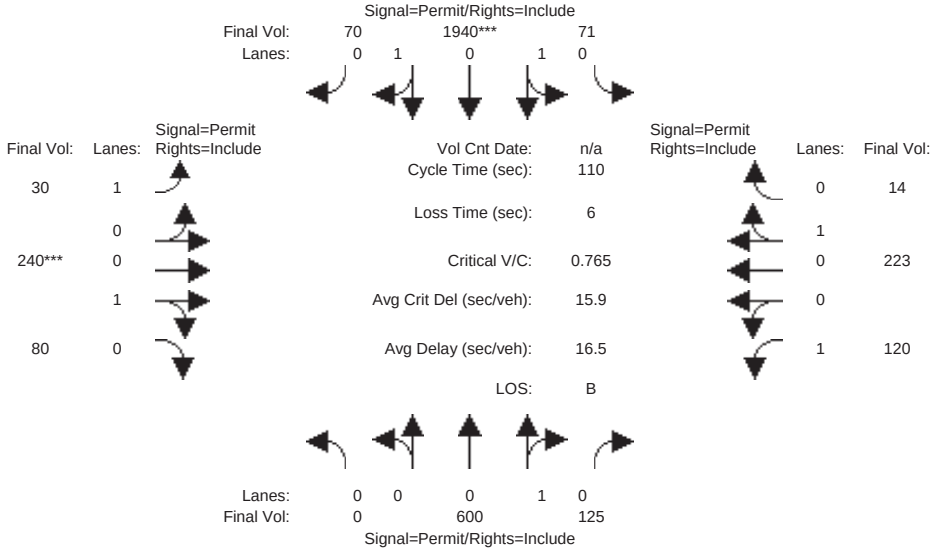
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	600	115	48	1940	70	30	230	80	114	217	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	600	115	48	1940	70	30	230	80	114	217	10
Added Vol:	0	0	10	23	0	0	0	10	0	6	6	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	600	125	71	1940	70	30	240	80	120	223	14
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	600	125	71	1940	70	30	240	80	120	223	14
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	600	125	71	1940	70	30	240	80	120	223	14
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	600	125	71	1940	70	30	240	80	120	223	14
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.00	0.82	0.18	0.07	1.86	0.07	1.00	0.73	0.27	1.00	0.94	0.06
Final Sat.:	0	1550	323	129	3522	127	1750	1395	465	1750	1779	112
Capacity Analysis Module:												
Vol/Sat:	0.00	0.39	0.39	0.55	0.55	0.55	0.02	0.17	0.17	0.07	0.13	0.13
Crit Moves:					****			****				
Green Time:	0.0	79.2	79.2	79.2	79.2	79.2	24.8	24.8	24.8	24.8	24.8	24.8
Volume/Cap:	0.00	0.54	0.54	0.76	0.76	0.76	0.08	0.76	0.76	0.30	0.56	0.56
Delay/Veh:	0.0	7.4	7.4	10.9	10.9	10.9	33.7	48.1	48.1	35.9	39.4	39.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.4	7.4	10.9	10.9	10.9	33.7	48.1	48.1	35.9	39.4	39.4
LOS by Move:	A	A	A	B+	B+	B+	C-	D	D	D+	D	D
HCM2kAvgQ:	0	11	11	20	20	20	1	12	12	3	7	7

Note: Queue reported is the number of cars per lane.

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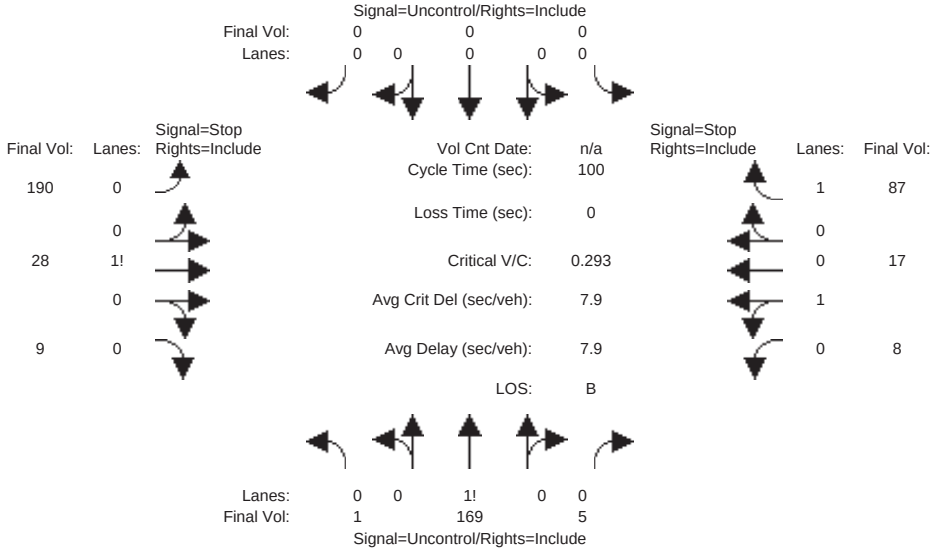
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  169     5     0    0     0   190   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  169     5     0    0     0   190   28     9     8   17    87
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  169     5     0    0     0   190   28     9     8   17    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  169     5     0    0     0   190   28     9     8   17    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  169     5     0    0     0   190   28     9     8   17    87
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   226  176     0   188  174   172
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   734  721  1091   777  723   877
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   649  721  1091   748  723   877
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.29 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  668 xxxxx   731 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.5 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.1 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             13.1              9.7
ApproachLOS:         *                *                B                A
Note: Queue reported is the number of cars per lane.
```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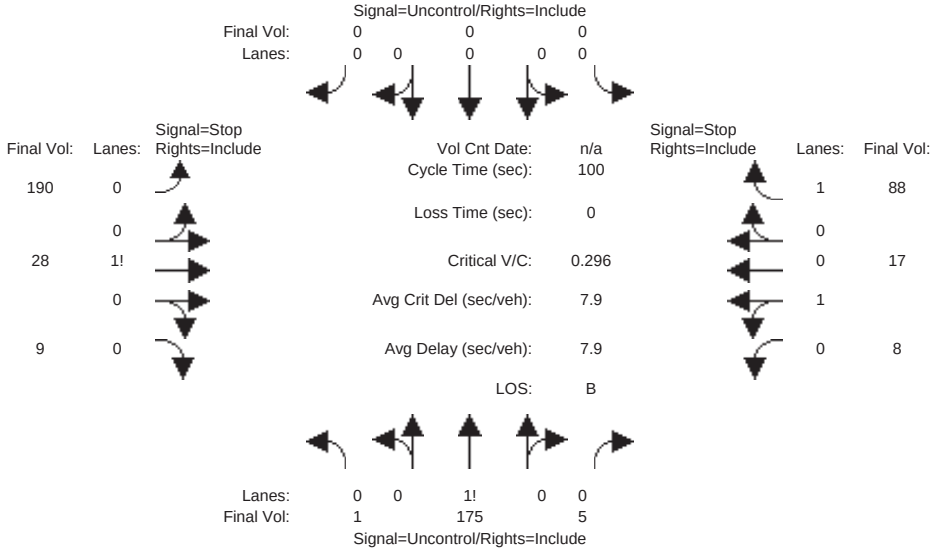
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  169     5     0    0     0   190   28     9     8   17    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  169     5     0    0     0   190   28     9     8   17    87
Added Vol:      0    6     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    1  175     5     0    0     0   190   28     9     8   17    88
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     1  175     5     0    0     0   190   28     9     8   17    88
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    1  175     5     0    0     0   190   28     9     8   17    88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx   232  182     0   194  180   178
Potent Cap.: 1636 xxxx xxxxx  xxxx xxxx xxxxx   727  716  1091   770  718   871
Move Cap.:   1636 xxxx xxxxx  xxxx xxxx xxxxx   641  715  1091   741  717   871
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.30 0.04  0.01  0.01 0.02  0.10
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.3
Control Del:  7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.6
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     A
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  661 xxxxx   725 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.5 xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.3 xxxxx  10.1 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             13.3              9.7
ApproachLOS:         *                *                B                A
Note: Queue reported is the number of cars per lane.
```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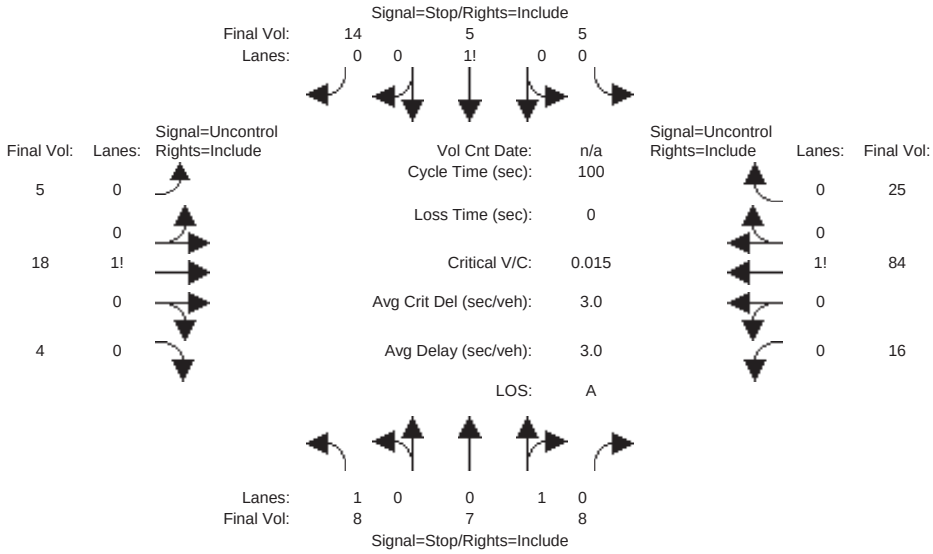
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #5: The Alameda & Harrison Street



Street Name:	The Alameda						Harrison Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	8	7	8	5	5	14	5	18	4	16	84	25
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	7	8	5	5	14	5	18	4	16	84	25
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	7	8	5	5	14	5	18	4	16	84	25
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	8	7	8	5	5	14	5	18	4	16	84	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	8	7	8	5	5	14	5	18	4	16	84	25
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	168	171	20	166	161	97	109	xxxx	xxxxx	22	xxxx	xxxxx
Potent Cap.:	800	726	1064	803	735	965	1494	xxxx	xxxxx	1607	xxxx	xxxxx
Move Cap.:	777	716	1064	783	726	965	1494	xxxx	xxxxx	1607	xxxx	xxxxx
Volume/Cap:	0.01	0.01	0.01	0.01	0.01	0.01	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	7.3	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	867	xxxx	864	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.1	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	9.2	xxxxx	9.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	A	*	*	*	*	*	*	*
ApproachDel:	9.4			9.3			xxxxxx			xxxxxx		
ApproachLOS:	A			A			*			*		

Note: Queue reported is the number of cars per lane.

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Cumulative PM

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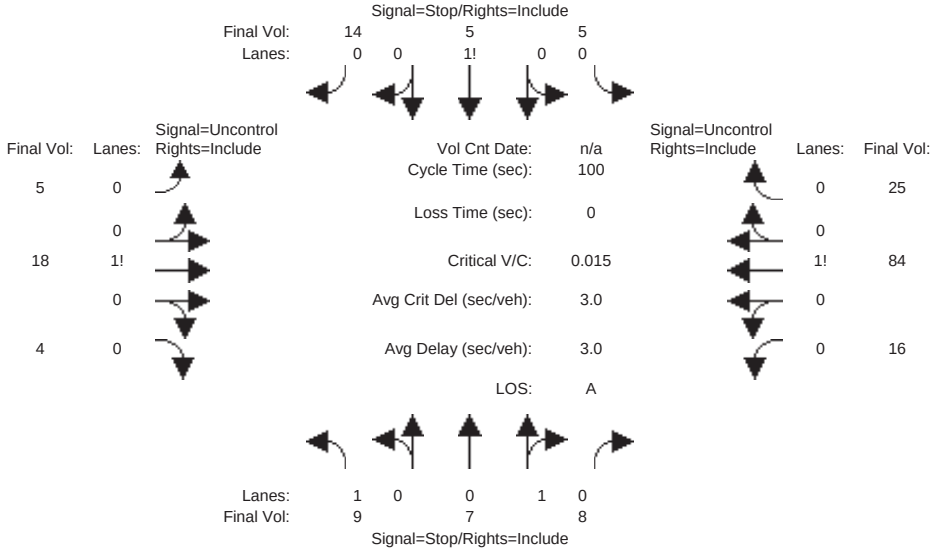
Cumulative Plus Project PM

Intersection #5: The Alameda & Harrison Street




```
Street Name:            The Alameda                     Harrison Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    7     8     5    5    14     5   18     4    16   84    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    7     8     5    5    14     5   18     4    16   84    25
Added Vol:      1    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    7     8     5    5    14     5   18     4    16   84    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9    7     8     5    5    14     5   18     4    16   84    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    7     8     5    5    14     5   18     4    16   84    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  168  171    20   166  161    97   109 xxxx xxxxx    22 xxxx xxxxx
Potent Cap.:  800  726  1064   803  735   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Move Cap.:    777  716  1064   783  726   965  1494 xxxx xxxxx  1607 xxxx xxxxx
Volume/Cap:  0.01 0.01  0.01  0.01 0.01  0.01  0.00 xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:  9.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   867  xxxx  864 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.1 xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx   9.2 xxxxx  9.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     A     *    A     *     *    *     *     *    *     *
ApproachDel:       9.4               9.3           xxxxxx           xxxxxx
ApproachLOS:         A                 A                *                *
Note: Queue reported is the number of cars per lane.
```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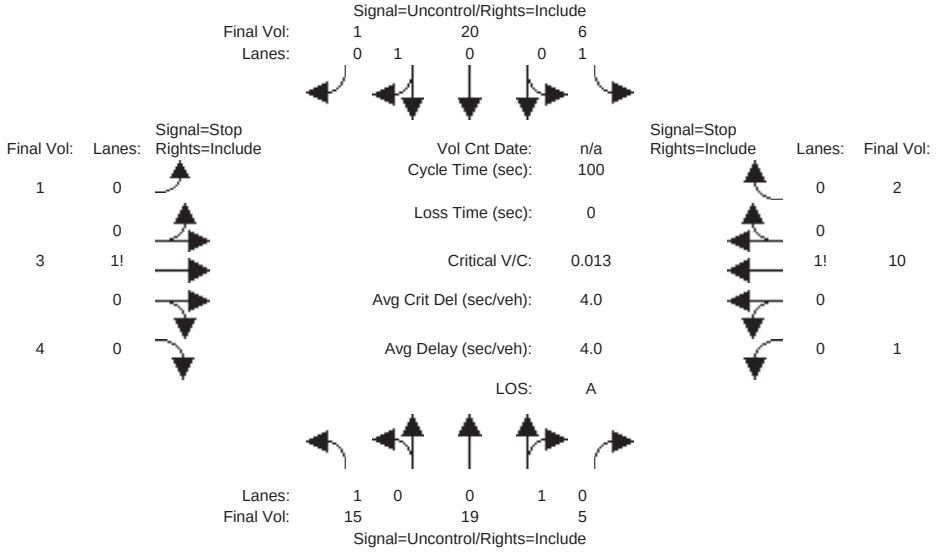
Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15   19     5     6   20     1     1    3     4     1   10     2
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15   19     5     6   20     1     1    3     4     1   10     2
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   15   19     5     6   20     1     1    3     4     1   10     2
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15   19     5     6   20     1     1    3     4     1   10     2
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   15   19     5     6   20     1     1    3     4     1   10     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   21 xxxx xxxxx    24 xxxx xxxxx    90   87    21    88   85    22
Potent Cap.: 1608 xxxx xxxxx  1604 xxxx xxxxx   900  807  1063   903  809  1062
Move Cap.:   1608 xxxx xxxxx  1604 xxxx xxxxx   880  797  1063   888  799  1062
Volume/Cap:  0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.00 0.00  0.00  0.00 0.01  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx   7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  923 xxxxx  xxxx  837 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx  0.0 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.9 xxxxx xxxxx  9.4 xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    A     *
ApproachDel:    xxxxxx           xxxxxx               8.9              9.4
ApproachLOS:         *                *                 A                A
Note: Queue reported is the number of cars per lane.
```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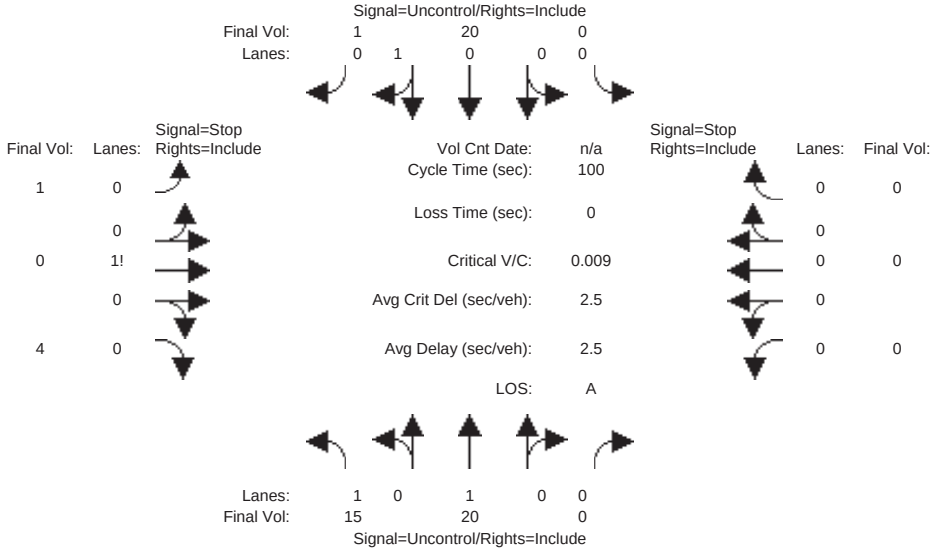
Cumulative Plus Project PM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                         Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15   19     0     0   20     1     1    0     4     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15   19     0     0   20     1     1    0     4     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   15   20     0     0   20     1     1    0     4     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15   20     0     0   20     1     1    0     4     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   15   20     0     0   20     1     1    0     4     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   21 xxxx xxxxx  xxxx xxxx xxxxx    71   71    21  xxxx xxxx xxxxx
Potent Cap.: 1608 xxxx xxxxx  xxxx xxxx xxxxx   939  824  1063  xxxx xxxx xxxxx
Move Cap.:   1608 xxxx xxxxx  xxxx xxxx xxxxx   932  816  1063  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1034 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.5           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```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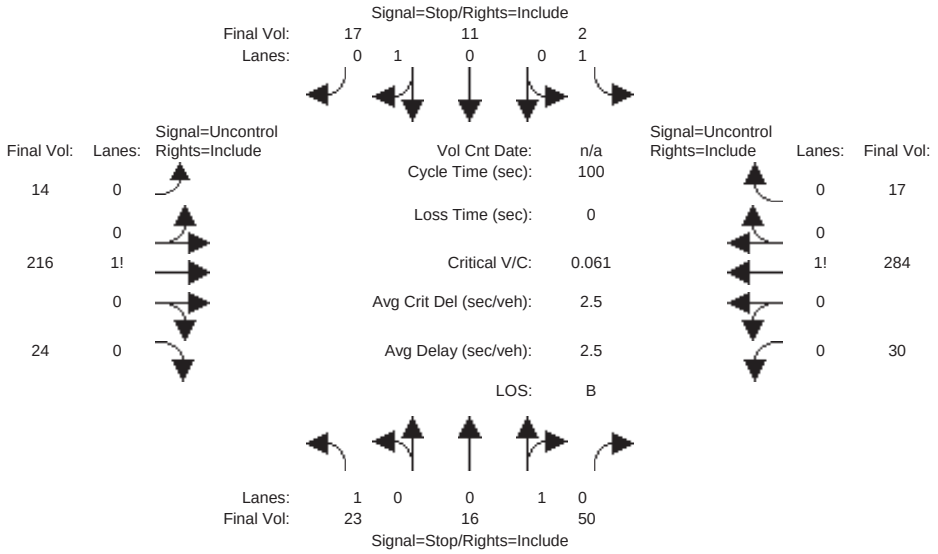
Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                         Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       23   16    50     2   11    17    14  216    24    30  284    17
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    23   16    50     2   11    17    14  216    24    30  284    17
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    23   16    50     2   11    17    14  216    24    30  284    17
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     23   16    50     2   11    17    14  216    24    30  284    17
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    23   16    50     2   11    17    14  216    24    30  284    17
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:   3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   623  617   228   642  621   293   301 xxxx xxxxx   240 xxxx xxxxx
Potent Cap.:   402  408   816   390  406   752  1272 xxxx xxxxx  1339 xxxx xxxxx
Move Cap.:     374  394   816   346  393   752  1272 xxxx xxxxx  1339 xxxx xxxxx
Volume/Cap:   0.06 0.04  0.06  0.01 0.03  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:     0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:  15.2 xxxx xxxxx  15.5 xxxx xxxxx   7.9 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:     C    *     *     C    *     *     A    *     *     A    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx xxxx   648  xxxx xxxx   553  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.3 xxxxx xxxx   0.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  11.2 xxxxx xxxx  11.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:       12.2             12.1           xxxxxx           xxxxxx
ApproachLOS:          B                B                *                *
Note: Queue reported is the number of cars per lane.
```

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2000 HCM Unsignalized (Future Volume Alternative)
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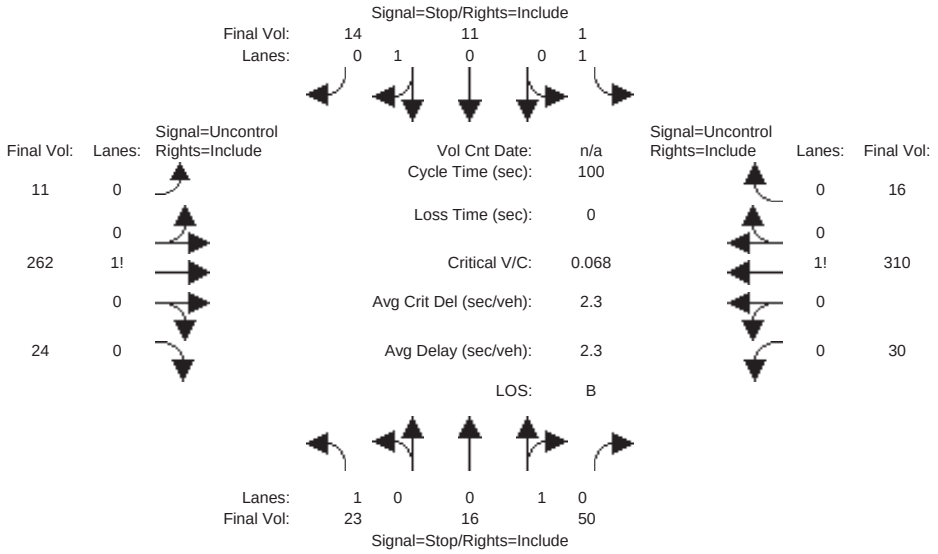
Intersection #7: The Alameda & Benton Street




```
Street Name:            The Alameda                        Benton Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      23   16    50     2   11    17    14  216    24    30  284    17
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23   16    50     2   11    17    14  216    24    30  284    17
Added Vol:      0    0     0    -1    0    -3    -3   46     0     0   26    -1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23   16    50     1   11    14    11  262    24    30  310    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23   16    50     1   11    14    11  262    24    30  310    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   23   16    50     1   11    14    11  262    24    30  310    16
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  687  682   274   707  686   318   326 xxxx xxxxx   286 xxxx xxxxx
Potent Cap.:  364  375   770   353  373   727  1245 xxxx xxxxx  1288 xxxx xxxxx
Move Cap.:    340  363   770   311  361   727  1245 xxxx xxxxx  1288 xxxx xxxxx
Volume/Cap:  0.07 0.04  0.06  0.00 0.03  0.02  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del: 16.4 xxxx xxxxx  16.6 xxxx xxxxx   7.9 xxxx xxxxx   7.9 xxxx xxxxx
LOS by Move:    C    *     *     C    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   605  xxxx xxxx   503  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   0.4 xxxxx xxxx   0.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx  11.7 xxxxx xxxx  12.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:      12.9             12.7           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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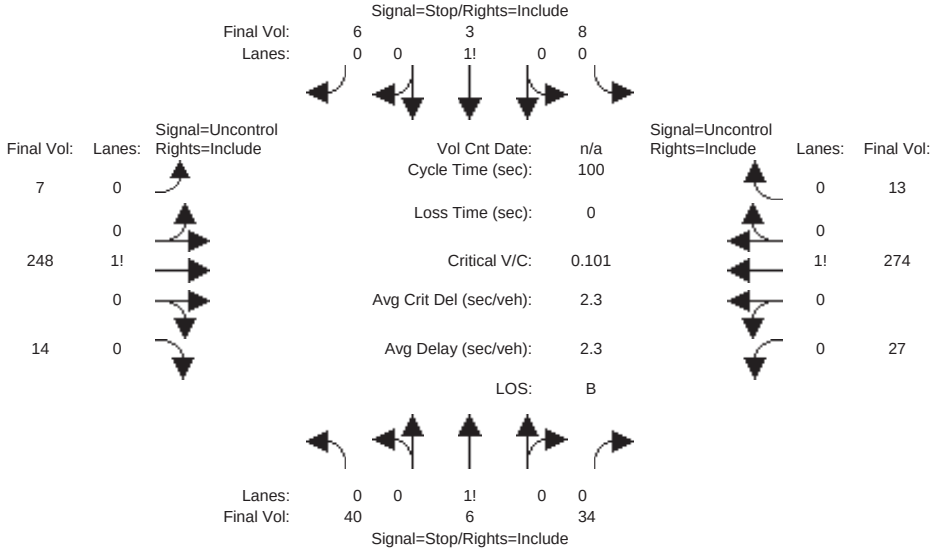
Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    6    34     8    3     6     7  248    14    27  274    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    6    34     8    3     6     7  248    14    27  274    13
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    6    34     8    3     6     7  248    14    27  274    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    6    34     8    3     6     7  248    14    27  274    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    6    34     8    3     6     7  248    14    27  274    13
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  608  610   255   624  611   281   287 xxxx xxxxx   262 xxxx xxxxx
Potent Cap.:  411  412   789   401  412   763  1287 xxxx xxxxx  1314 xxxx xxxxx
Move Cap.:    397  401   789   372  401   763  1287 xxxx xxxxx  1314 xxxx xxxxx
Volume/Cap:  0.10 0.01  0.04  0.02 0.01  0.01  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  504 xxxxx  xxxx  461 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 13.5 xxxxx xxxxx 13.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      13.5             13.1           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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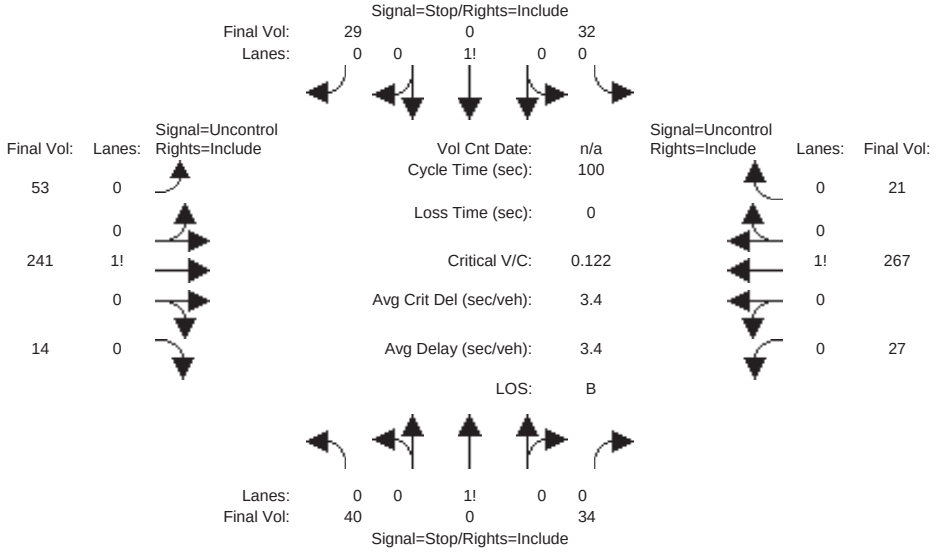
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40    0    34     0    0     0     0  248    14    27  274     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    34     0    0     0     0  248    14    27  274     0
Added Vol:      0    0     0    30    0    29    51   -5     0     0   -7    21
PasserByVol:    0    0     0     2    0     0     2   -2     0     0    0     0
Initial Fut:   40    0    34    32    0    29    53  241    14    27  267    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    40    0    34    32    0    29    53  241    14    27  267    21
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   40    0    34    32    0    29    53  241    14    27  267    21
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  700  696   248   703  693   278   288 xxxx xxxxx   255 xxxx xxxxx
Potent Cap.:  357  368   796   355  370   766  1286 xxxx xxxxx  1322 xxxx xxxxx
Move Cap.:    327  345   796   324  346   766  1286 xxxx xxxxx  1322 xxxx xxxxx
Volume/Cap:  0.12 0.00  0.04  0.10 0.00  0.04  0.04 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  448 xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.6 xxxxx xxxxx 14.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      14.6             14.3           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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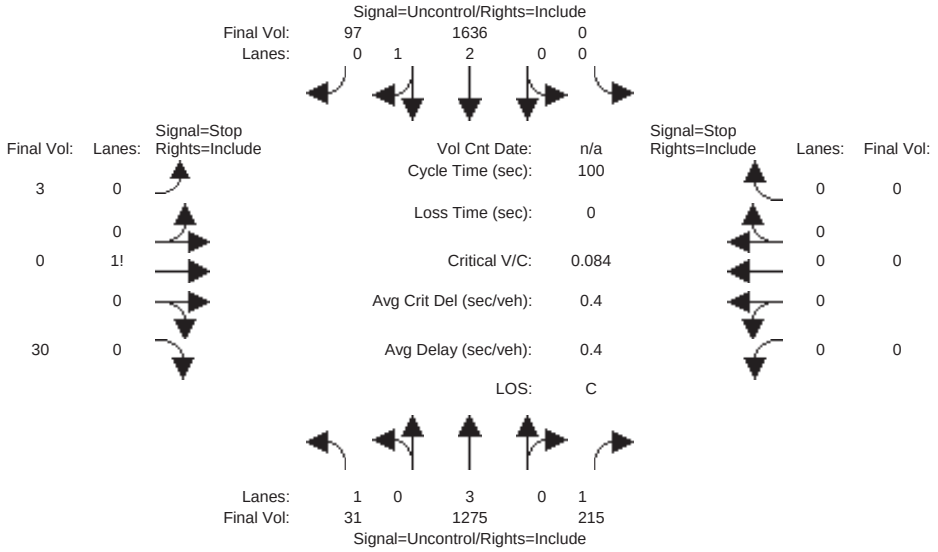
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31 1275   215     0 1636    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31 1275   215     0 1636    97     3    0    30     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31 1275   215     0 1636    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31 1275   215     0 1636    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31 1275   215     0 1636    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1733 xxxx xxxxx  xxxx xxxx xxxxx  2172 3237   594  xxxx xxxx xxxxx
Potent Cap.:  369 xxxx xxxxx  xxxx xxxx xxxxx    41   10   453  xxxx xxxx xxxxx
Move Cap.:    369 xxxx xxxxx  xxxx xxxx xxxxx    38    9   453  xxxx xxxx xxxxx
Volume/Cap:  0.08 xxxx  xxxx  xxxx xxxx  xxxx  0.08 0.00  0.07  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 15.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  228 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 23.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             23.4           xxxxxx
ApproachLOS:         *                *               C                *
Note: Queue reported is the number of cars per lane.
```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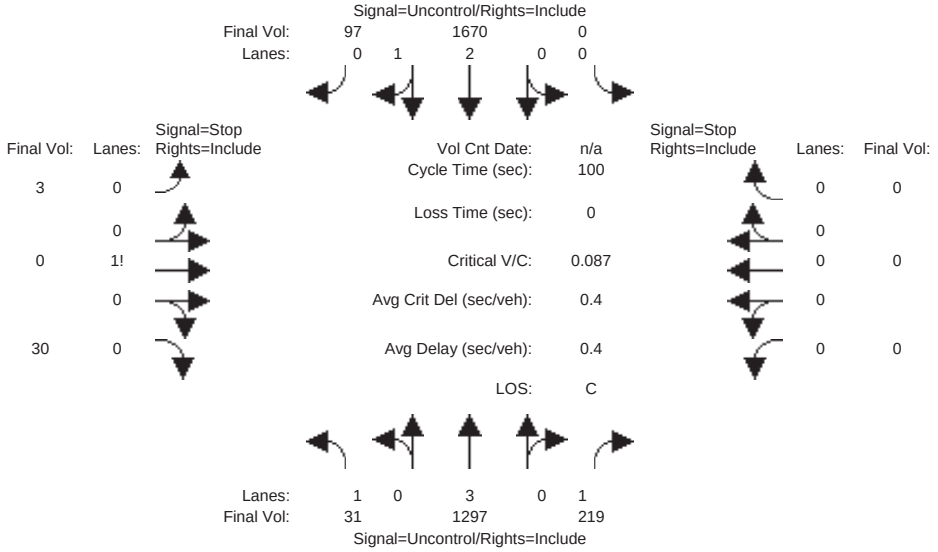
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31 1275   215     0 1636    97     3    0    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31 1275   215     0 1636    97     3    0    30     0    0     0
Added Vol:      0   22     4     0   34     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   31 1297   219     0 1670    97     3    0    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31 1297   219     0 1670    97     3    0    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   31 1297   219     0 1670    97     3    0    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1767 xxxx xxxxx  xxxx xxxx xxxxx  2213 3297   605  xxxx xxxx xxxxx
Potent Cap.:  358 xxxx xxxxx  xxxx xxxx xxxxx    38    9   446  xxxx xxxx xxxxx
Move Cap.:    358 xxxx xxxxx  xxxx xxxx xxxxx    36    8   446  xxxx xxxx xxxxx
Volume/Cap:  0.09 xxxx  xxxx  xxxx xxxx  xxxx  0.08 0.00  0.07  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 16.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  218 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 24.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             24.4           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```

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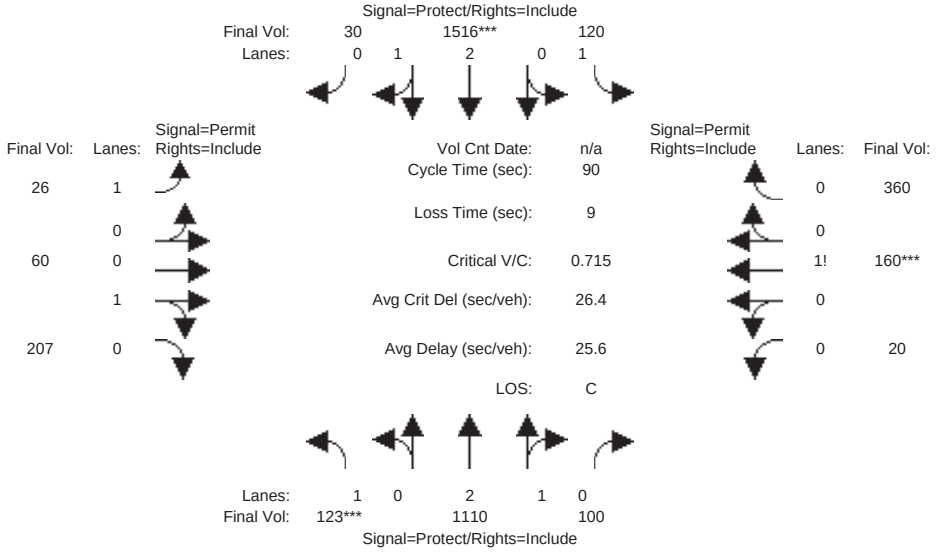
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	123	1110	100	120	1516	30	26	60	207	20	160	360
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	123	1110	100	120	1516	30	26	60	207	20	160	360
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	123	1110	100	120	1516	30	26	60	207	20	160	360
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	123	1110	100	120	1516	30	26	60	207	20	160	360
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	123	1110	100	120	1516	30	26	60	207	20	160	360
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	123	1110	100	120	1516	30	26	60	207	20	160	360
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.73	0.27	1.00	2.94	0.06	1.00	0.21	0.79	0.04	0.28	0.68
Final Sat.:	1750	5192	468	1750	5580	110	1750	400	1381	66	531	1195
Capacity Analysis Module:												
Vol/Sat:	0.07	0.21	0.21	0.07	0.27	0.27	0.01	0.15	0.15	0.30	0.30	0.30
Crit Moves:	****				****						****	
Green Time:	8.8	31.6	31.6	11.5	34.2	34.2	37.9	37.9	37.9	37.9	37.9	37.9
Volume/Cap:	0.71	0.61	0.61	0.54	0.71	0.71	0.04	0.36	0.36	0.71	0.71	0.71
Delay/Veh:	52.7	24.7	24.7	39.4	24.9	24.9	15.3	18.0	18.0	24.8	24.8	24.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	52.7	24.7	24.7	39.4	24.9	24.9	15.3	18.0	18.0	24.8	24.8	24.8
LOS by Move:	D-	C	C	D	C	C	B	B	B	C	C	C
HCM2kAvgQ:	5	10	10	3	11	11	0	5	5	14	14	14

Note: Queue reported is the number of cars per lane.

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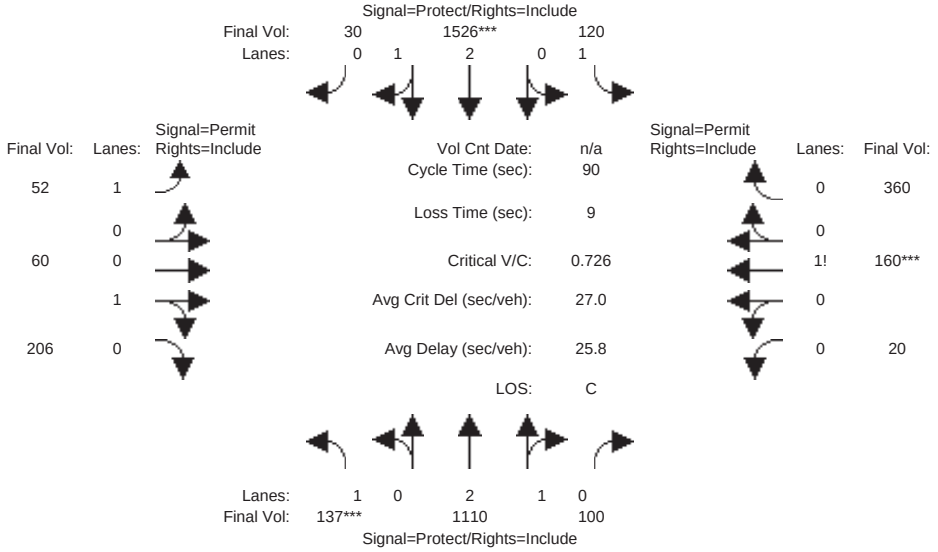
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	123	1110	100	120	1516	30	26	60	207	20	160	360
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	123	1110	100	120	1516	30	26	60	207	20	160	360
Added Vol:	14	0	0	0	10	0	26	0	-1	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	137	1110	100	120	1526	30	52	60	206	20	160	360
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	137	1110	100	120	1526	30	52	60	206	20	160	360
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	137	1110	100	120	1526	30	52	60	206	20	160	360
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	137	1110	100	120	1526	30	52	60	206	20	160	360
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.73	0.27	1.00	2.94	0.06	1.00	0.21	0.79	0.04	0.28	0.68
Final Sat.:	1750	5192	468	1750	5581	110	1750	402	1380	66	531	1195
Capacity Analysis Module:												
Vol/Sat:	0.08	0.21	0.21	0.07	0.27	0.27	0.03	0.15	0.15	0.30	0.30	0.30
Crit Moves:	****				****						****	
Green Time:	9.7	32.0	32.0	11.6	33.9	33.9	37.4	37.4	37.4	37.4	37.4	37.4
Volume/Cap:	0.73	0.60	0.60	0.53	0.73	0.73	0.07	0.36	0.36	0.73	0.73	0.73
Delay/Veh:	52.0	24.3	24.3	39.0	25.3	25.3	15.9	18.4	18.4	25.6	25.6	25.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	52.0	24.3	24.3	39.0	25.3	25.3	15.9	18.4	18.4	25.6	25.6	25.6
LOS by Move:	D-	C	C	D	C	C	B	B-	B-	C	C	C
HCM2kAvgQ:	6	10	10	3	11	11	1	5	5	14	14	14

Note: Queue reported is the number of cars per lane.

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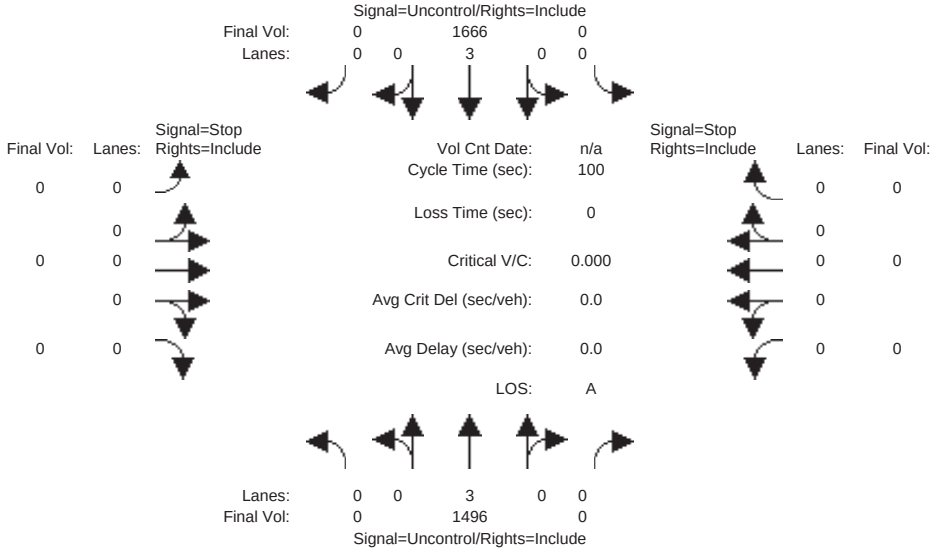
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1496     0     0 1666     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1496     0     0 1666     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0 1496     0     0 1666     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1496     0     0 1666     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1496     0     0 1666     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```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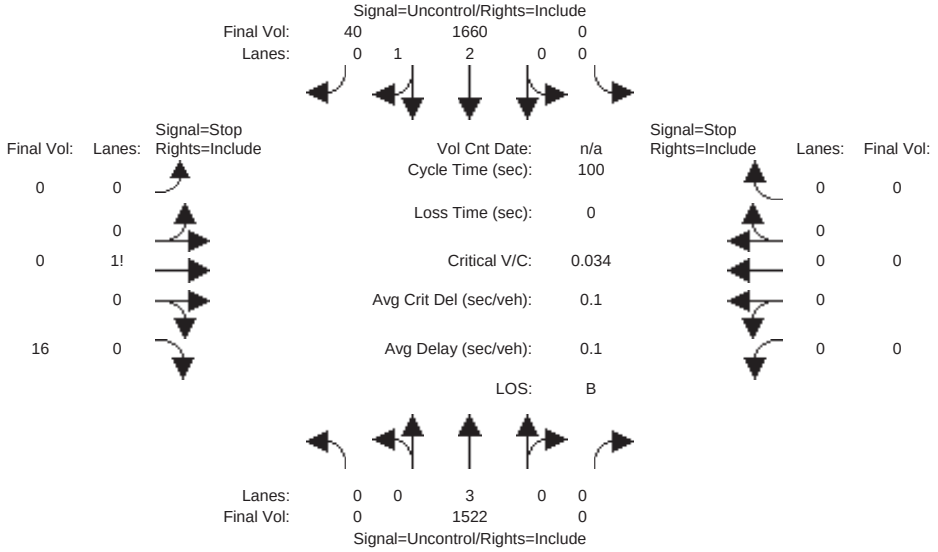
Mission Town Center TIA
DN15-0483
Cumulative PM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1496     0     0 1666     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1496     0     0 1666     0     0    0     0     0    0     0
Added Vol:      0   26     0     0    0    34     0    0    10     0    0     0
PasserByVol:    0    0     0     0   -6     6     0    0     6     0    0     0
Initial Fut:    0 1522     0     0 1660    40     0    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1522     0     0 1660    40     0    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 1522     0     0 1660    40     0    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   573  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   467  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   467  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     B     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             13.0           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Cumulative AM

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection		???				Cumulative AM				Cumulative Plus Project AM						???			
		LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#1	Lafayettee & El Camino Real	?	xx.x	x.xxx	xx.x	F	125.0	1.274	179.6	F	127.7	1.283	+ 0.009	183.6	+ 4.0	?	xx.x	x.xxx	xx.x
#2	Lafayette Street & Lewis Street	?	xx.x	x.xxx	xx.x	A	8.5	0.547	6.7	A	8.7	0.553	+ 0.006	7.0	+ 0.3	?	xx.x	x.xxx	xx.x
#3	Lafayette Street & Benton Street	?	xx.x	x.xxx	xx.x	B	17.9	0.782	19.3	B-	18.2	0.785	+ 0.003	19.4	+ 0.2	?	xx.x	x.xxx	xx.x
#4	Alviso Street & Harrison Street	?	xx.x	x.xxx	xx.x	C	6.8	0.350	6.8	C	6.8	0.356	+ 0.006	6.8	+ 0.0	?	xx.x	x.xxx	xx.x
#5	The Alameda & Harrison Street	?	xx.x	x.xxx	xx.x	A	2.2	0.008	2.2	A	2.3	0.008	+ 0.000	2.3	+ 0.0	?	xx.x	x.xxx	xx.x
#6	The Alameda & Fremont Street	?	xx.x	x.xxx	xx.x	A	3.0	0.007	3.0	A	2.6	0.007	+ 0.000	2.6	- 0.4	?	xx.x	x.xxx	xx.x
#7	The Alameda & Benton Street	?	xx.x	x.xxx	xx.x	B	2.2	0.027	2.2	B	1.9	0.028	+ 0.000	1.9	- 0.3	?	xx.x	x.xxx	xx.x
#8	Sherman Street & Benton Street	?	xx.x	x.xxx	xx.x	B	1.0	0.021	1.0	B	2.8	0.087	+ 0.066	2.8	+ 1.8	?	xx.x	x.xxx	xx.x
#9	El Camino Real & Harrison Street	?	xx.x	x.xxx	xx.x	C	0.2	0.035	0.2	C	0.2	0.036	+ 0.001	0.2	- 0.0	?	xx.x	x.xxx	xx.x
#10	El Camino Real & Benton Street	?	xx.x	x.xxx	xx.x	C	26.7	0.793	27.9	C	26.9	0.796	+ 0.003	28.2	+ 0.2	?	xx.x	x.xxx	xx.x
#11	El Camino Real & Driveway	?	xx.x	x.xxx	xx.x	A	0.0	0.000	0.0	B	0.1	0.027	+ 0.027	0.1	+ 0.1	?	xx.x	x.xxx	xx.x

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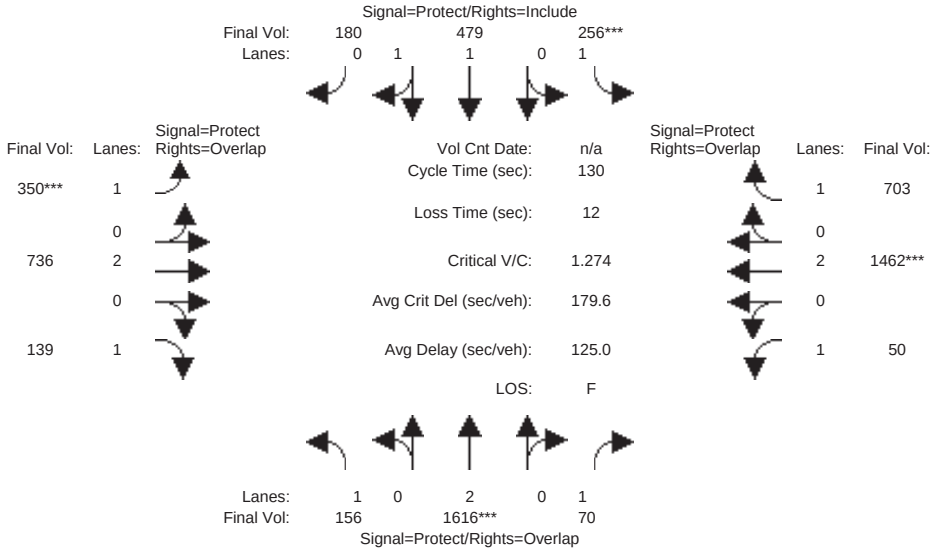
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	156	1616	70	256	479	180	350	736	139	50	1462	703
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	156	1616	70	256	479	180	350	736	139	50	1462	703
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	156	1616	70	256	479	180	350	736	139	50	1462	703
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	156	1616	70	256	479	180	350	736	139	50	1462	703
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	156	1616	70	256	479	180	350	736	139	50	1462	703
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	156	1616	70	256	479	180	350	736	139	50	1462	703
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.42	0.58	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	2699	1014	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.43	0.04	0.15	0.18	0.18	0.20	0.19	0.08	0.03	0.38	0.40
Crit Moves:		****		****			****				****	
Green Time:	19.5	43.4	56.4	14.9	38.8	38.8	20.4	46.7	66.2	13.0	39.3	54.2
Volume/Cap:	0.59	1.27	0.09	1.27	0.59	0.59	1.27	0.54	0.16	0.29	1.27	0.96
Delay/Veh:	61.1	173	22.0	213.7	41.2	41.2	203.3	34.6	17.4	58.3	176	62.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.1	173	22.0	213.7	41.2	41.2	203.3	34.6	17.4	58.3	176	62.5
LOS by Move:	E	F	C+	F	D	D	F	C-	B	E+	F	E
HCM2kAvgQ:	6	54	2	21	12	12	27	12	3	2	50	35

Note: Queue reported is the number of cars per lane.

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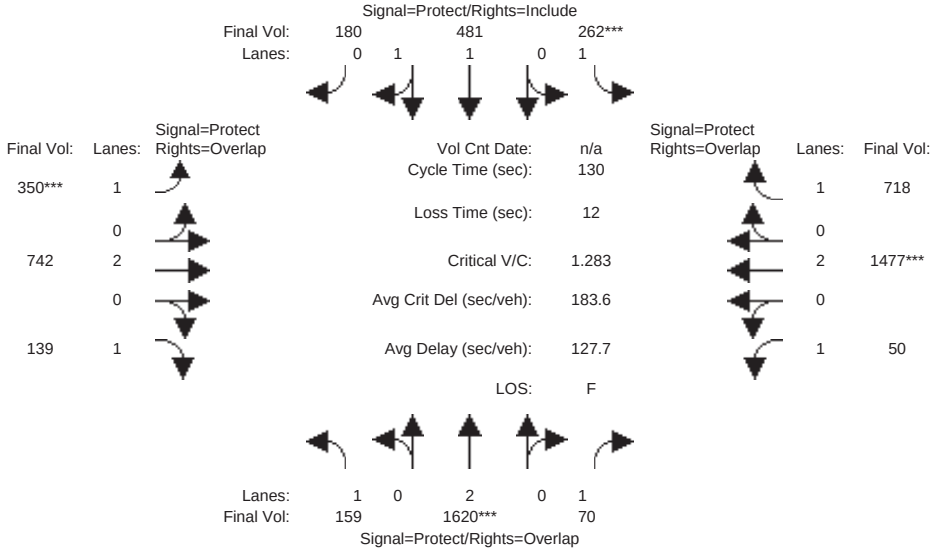
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #1: LAFAYETTEE & EL CAMINO REAL



Street Name:	Lafayettee Street						El Camino Real					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	156	1616	70	256	479	180	350	736	139	50	1462	703
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	156	1616	70	256	479	180	350	736	139	50	1462	703
Added Vol:	3	4	0	6	2	0	0	6	0	0	15	15
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	159	1620	70	262	481	180	350	742	139	50	1477	718
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	159	1620	70	262	481	180	350	742	139	50	1477	718
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	159	1620	70	262	481	180	350	742	139	50	1477	718
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	159	1620	70	262	481	180	350	742	139	50	1477	718
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.00	1.00	1.00	1.42	0.58	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1750	3800	1750	1750	2702	1011	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.43	0.04	0.15	0.18	0.18	0.20	0.20	0.08	0.03	0.39	0.41
Crit Moves:		****		****			****				****	
Green Time:	19.7	43.2	56.1	15.2	38.6	38.6	20.3	46.7	66.5	12.9	39.4	54.5
Volume/Cap:	0.60	1.28	0.09	1.28	0.60	0.60	1.28	0.54	0.16	0.29	1.28	0.98
Delay/Veh:	61.1	177	22.1	216.8	41.5	41.5	207.3	34.7	17.2	58.4	179	65.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.1	177	22.1	216.8	41.5	41.5	207.3	34.7	17.2	58.4	179	65.4
LOS by Move:	E	F	C+	F	D	D	F	C-	B	E+	F	E
HCM2kAvgQ:	7	55	2	21	12	12	28	12	3	2	51	37

Note: Queue reported is the number of cars per lane.

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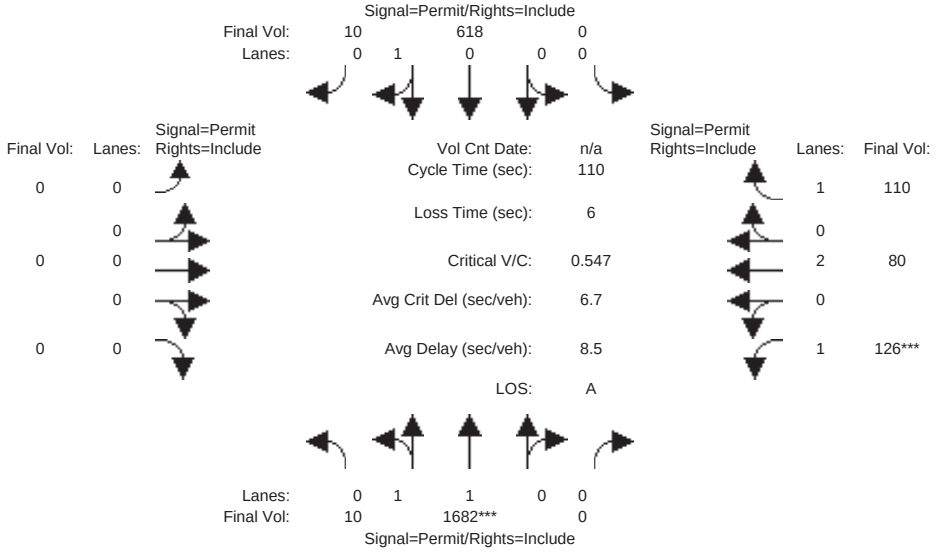
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	0	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	1682	0	0	618	10	0	0	0	126	80	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	1682	0	0	618	10	0	0	0	126	80	110
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	1682	0	0	618	10	0	0	0	126	80	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	1682	0	0	618	10	0	0	0	126	80	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	1682	0	0	618	10	0	0	0	126	80	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	1682	0	0	618	10	0	0	0	126	80	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.01	1.99	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	22	3776	0	0	1867	30	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.45	0.45	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.07	0.02	0.06
Crit Moves:		****								****		
Green Time:	89.5	89.5	0.0	0.0	89.5	89.5	0.0	0.0	0.0	14.5	14.5	14.5
Volume/Cap:	0.55	0.55	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.55	0.16	0.48
Delay/Veh:	3.6	3.6	0.0	0.0	3.0	3.0	0.0	0.0	0.0	47.5	42.5	45.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	3.6	3.6	0.0	0.0	3.0	3.0	0.0	0.0	0.0	47.5	42.5	45.8
LOS by Move:	A	A	A	A	A	A	A	A	A	D	D	D
HCM2kAvgQ:	9	9	0	0	6	6	0	0	0	5	1	4

Note: Queue reported is the number of cars per lane.

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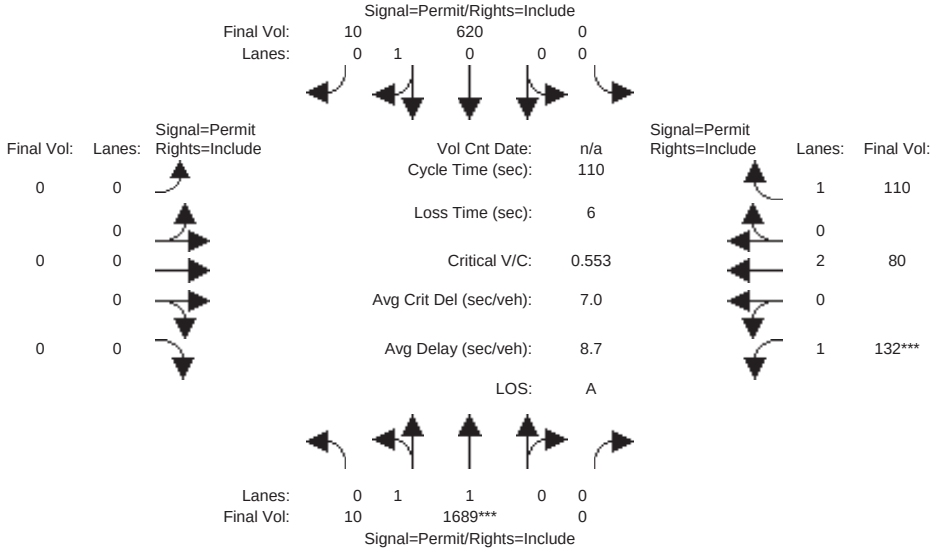
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #2: Lafayette Street & Lewis Street



Street Name:	Lafayette Street						Lewis Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	0	10	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	10	1682	0	0	618	10	0	0	0	126	80	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	1682	0	0	618	10	0	0	0	126	80	110
Added Vol:	0	7	0	0	2	0	0	0	0	6	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	1689	0	0	620	10	0	0	0	132	80	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	1689	0	0	620	10	0	0	0	132	80	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	1689	0	0	620	10	0	0	0	132	80	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	1689	0	0	620	10	0	0	0	132	80	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.01	1.99	0.00	0.00	0.98	0.02	0.00	0.00	0.00	1.00	2.00	1.00
Final Sat.:	22	3776	0	0	1867	30	0	0	0	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.45	0.45	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.08	0.02	0.06
Crit Moves:		****								****		
Green Time:	89.0	89.0	0.0	0.0	89.0	89.0	0.0	0.0	0.0	15.0	15.0	15.0
Volume/Cap:	0.55	0.55	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.55	0.15	0.46
Delay/Veh:	3.8	3.8	0.0	0.0	3.2	3.2	0.0	0.0	0.0	47.2	42.0	45.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	3.8	3.8	0.0	0.0	3.2	3.2	0.0	0.0	0.0	47.2	42.0	45.2
LOS by Move:	A	A	A	A	A	A	A	A	A	D	D	D
HCM2kAvgQ:	10	10	0	0	6	6	0	0	0	5	1	4

Note: Queue reported is the number of cars per lane.

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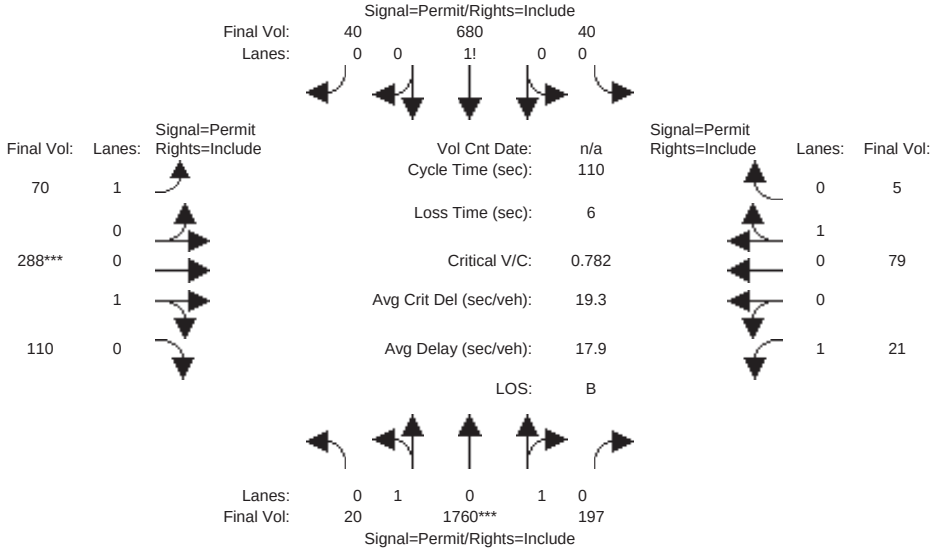
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	20	1760	197	40	680	40	70	288	110	21	79	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	1760	197	40	680	40	70	288	110	21	79	5
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	1760	197	40	680	40	70	288	110	21	79	5
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	20	1760	197	40	680	40	70	288	110	21	79	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	1760	197	40	680	40	70	288	110	21	79	5
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	20	1760	197	40	680	40	70	288	110	21	79	5
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.77	0.21	0.05	0.89	0.06	1.00	0.71	0.29	1.00	0.94	0.06
Final Sat.:	38	3351	375	99	1685	99	1750	1343	513	1750	1778	113
Capacity Analysis Module:												
Vol/Sat:	0.53	0.53	0.53	0.40	0.40	0.40	0.04	0.21	0.21	0.01	0.04	0.04
Crit Moves:		****						****				
Green Time:	73.8	73.8	73.8	73.8	73.8	73.8	30.2	30.2	30.2	30.2	30.2	30.2
Volume/Cap:	0.78	0.78	0.78	0.60	0.60	0.60	0.15	0.78	0.78	0.04	0.16	0.16
Delay/Veh:	14.2	14.2	14.2	10.8	10.8	10.8	30.3	44.6	44.6	29.4	30.5	30.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.2	14.2	14.2	10.8	10.8	10.8	30.3	44.6	44.6	29.4	30.5	30.5
LOS by Move:	B	B	B	B+	B+	B+	C	D	D	C	C	C
HCM2kAvgQ:	24	24	24	14	14	14	2	14	14	1	2	2

Note: Queue reported is the number of cars per lane.

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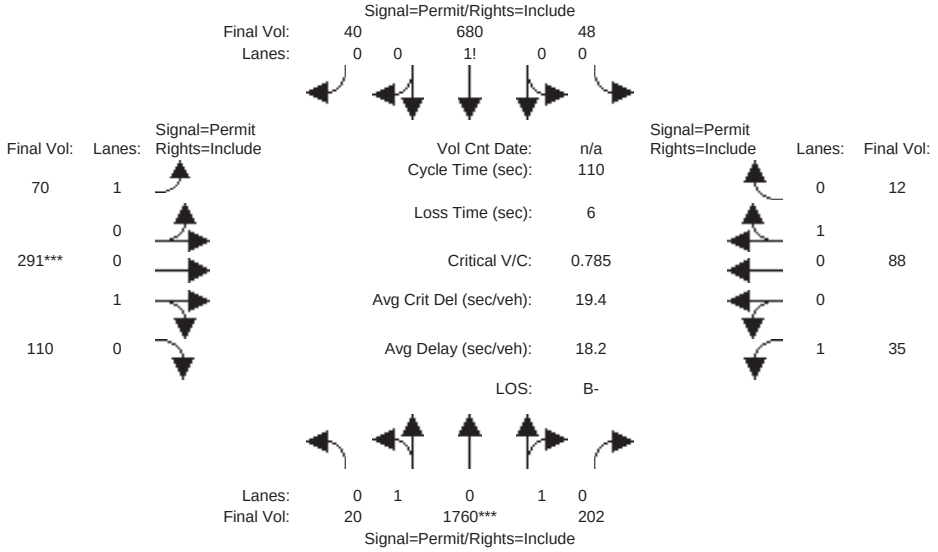
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #3: Lafayette Street & Benton Street



Street Name:	Lafayette Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	20	1760	197	40	680	40	70	288	110	21	79	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	1760	197	40	680	40	70	288	110	21	79	5
Added Vol:	0	0	5	8	0	0	0	3	0	14	9	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	1760	202	48	680	40	70	291	110	35	88	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	20	1760	202	48	680	40	70	291	110	35	88	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	1760	202	48	680	40	70	291	110	35	88	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	20	1760	202	48	680	40	70	291	110	35	88	12
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	0.02	1.76	0.22	0.07	0.88	0.05	1.00	0.71	0.29	1.00	0.87	0.13
Final Sat.:	38	3342	384	118	1666	98	1750	1347	509	1750	1655	226
Capacity Analysis Module:												
Vol/Sat:	0.53	0.53	0.53	0.41	0.41	0.41	0.04	0.22	0.22	0.02	0.05	0.05
Crit Moves:		****						****				
Green Time:	73.7	73.7	73.7	73.7	73.7	73.7	30.3	30.3	30.3	30.3	30.3	30.3
Volume/Cap:	0.79	0.79	0.79	0.61	0.61	0.61	0.15	0.79	0.79	0.07	0.19	0.19
Delay/Veh:	14.3	14.3	14.3	11.0	11.0	11.0	30.3	44.7	44.7	29.6	30.7	30.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.3	14.3	14.3	11.0	11.0	11.0	30.3	44.7	44.7	29.6	30.7	30.7
LOS by Move:	B	B	B	B+	B+	B+	C	D	D	C	C	C
HCM2kAvgQ:	25	25	25	14	14	14	2	15	15	1	2	2

Note: Queue reported is the number of cars per lane.

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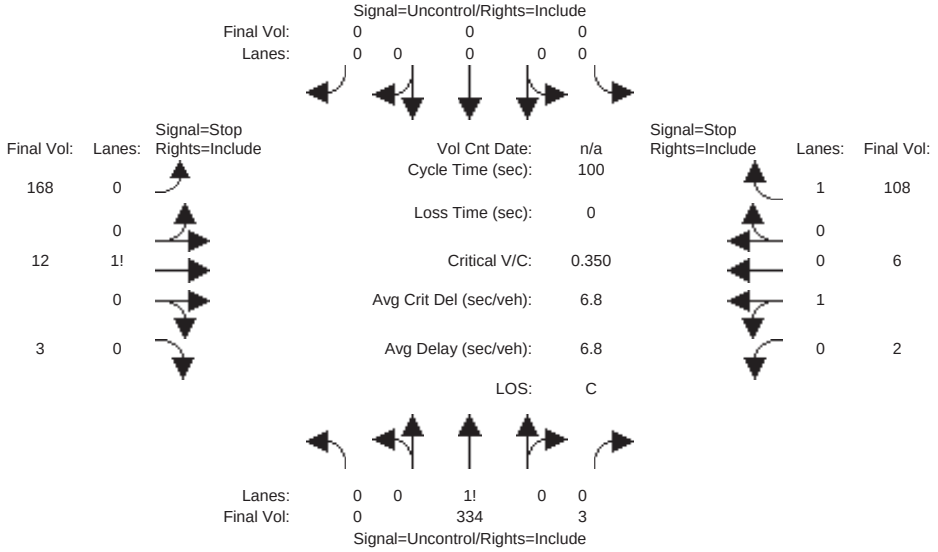
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  334     3     0    0     0   168   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  334     3     0    0     0   168   12     3     2    6   108
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  334     3     0    0     0   168   12     3     2    6   108
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  334     3     0    0     0   168   12     3     2    6   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  334     3     0    0     0   168   12     3     2    6   108
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   393  337     0   342  336   336
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   571  587  1091   616  588   711
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   480  587  1091   605  588   711
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.35 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.0
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  490 xxxxx   592 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.7 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.6 xxxxx  11.2 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             16.6             11.0
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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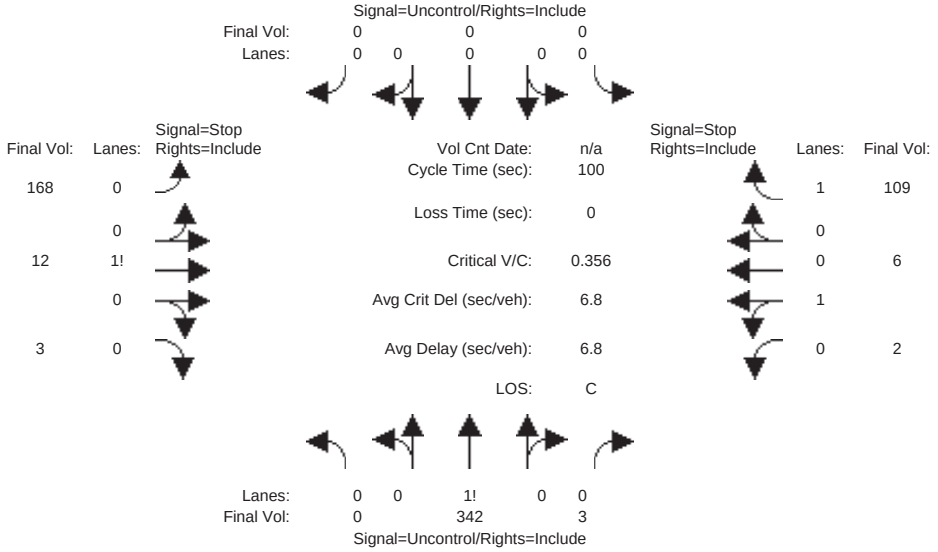
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #4: Alviso Street & Harrison Street




```
Street Name:          Alviso Street                     Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  334     3     0    0     0   168   12     3     2    6   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  334     3     0    0     0   168   12     3     2    6   108
Added Vol:      0    8     0     0    0     0     0    0     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  342     3     0    0     0   168   12     3     2    6   109
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  342     3     0    0     0   168   12     3     2    6   109
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  342     3     0    0     0   168   12     3     2    6   109
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  345     0   350  344   344
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   563  581  1091   609  582   704
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   472  581  1091   598  582   704
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.36 0.02  0.00  0.00 0.01  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.5
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.1
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  483 xxxxx   586 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.8 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.9 xxxxx  11.2 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     B    *     *
ApproachDel:    xxxxxx           xxxxxx             16.9             11.1
ApproachLOS:         *                *                C                B
Note: Queue reported is the number of cars per lane.
```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Mission Town Center TIA
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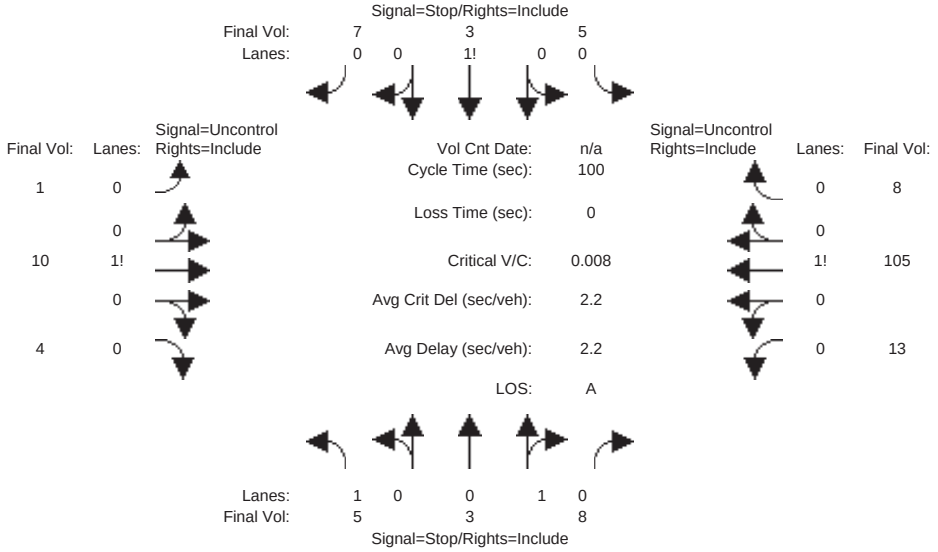
Cumulative AM

Intersection #5: The Alameda & Harrison Street



Street Name:	The Alameda						Harrison Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	5	3	8	5	3	7	1	10	4	13	105	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	3	8	5	3	7	1	10	4	13	105	8
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	3	8	5	3	7	1	10	4	13	105	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	5	3	8	5	3	7	1	10	4	13	105	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	5	3	8	5	3	7	1	10	4	13	105	8
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	154	153	12	155	151	109	113	xxxx	xxxxx	14	xxxx	xxxxx
Potent Cap.:	817	742	1074	817	744	950	1489	xxxx	xxxxx	1617	xxxx	xxxxx
Move Cap.:	803	736	1074	803	738	950	1489	xxxx	xxxxx	1617	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.01	0.01	0.00	0.01	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	7.2	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	955	xxxx	849	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.0	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	8.8	xxxxx	9.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	A	*	*	*	*	*	*	*
ApproachDel:		9.0			9.3			xxxxxx			xxxxxx	
ApproachLOS:		A			A			*			*	

Note: Queue reported is the number of cars per lane.

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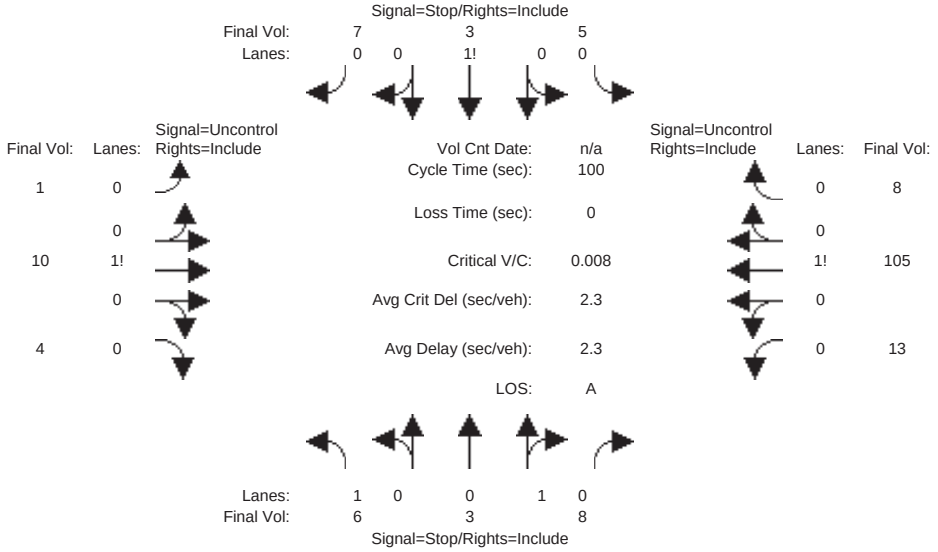
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #5: The Alameda & Harrison Street



Street Name:	The Alameda						Harrison Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	5	3	8	5	3	7	1	10	4	13	105	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	3	8	5	3	7	1	10	4	13	105	8
Added Vol:	1	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	3	8	5	3	7	1	10	4	13	105	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	6	3	8	5	3	7	1	10	4	13	105	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	6	3	8	5	3	7	1	10	4	13	105	8
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	154	153	12	155	151	109	113	xxxx	xxxxx	14	xxxx	xxxxx
Potent Cap.:	817	742	1074	817	744	950	1489	xxxx	xxxxx	1617	xxxx	xxxxx
Move Cap.:	803	736	1074	803	738	950	1489	xxxx	xxxxx	1617	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.01	0.01	0.00	0.01	0.00	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	7.2	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	955	xxxx	849	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.0	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	8.8	xxxxx	9.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	A	*	*	*	*	*	*	*
ApproachDel:	9.1			9.3			xxxxxx			xxxxxx		
ApproachLOS:	A			A			*			*		

Note: Queue reported is the number of cars per lane.

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Cumulative AM

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Intersection #6: The Alameda & Fremont Street

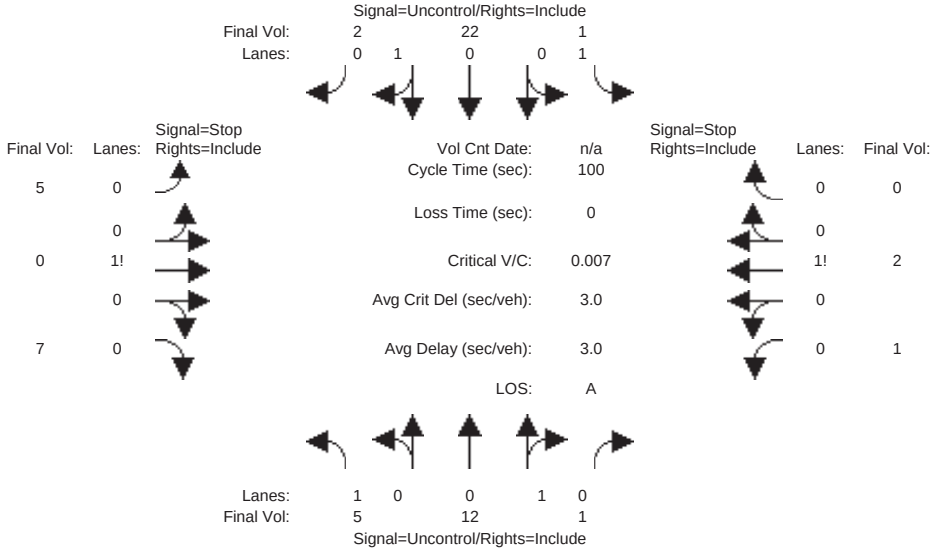
Signal=Uncontrol/Rights=Include

Final Vol:	2		22		1
Lanes:	0	1	0	0	1

Final Vol:	Lanes:	Signal=Stop Rights=Include	Vol Cnt Date:	n/a	Signal=Stop Rights=Include	Lanes:	Final Vol:
			Cycle Time (sec):	100			
5	0					0	0
	0		Loss Time (sec):	0		0	
0	1!		Critical V/C:	0.007		1!	2
	0		Avg Crit Del (sec/veh):	3.0		0	
7	0		Avg Delay (sec/veh):	3.0		0	1
			LOS:	A			

Lanes:	1	0	0	1	0
Final Vol:	5		12		1

Signal=Uncontrol/Rights=Include



```
Street Name:            The Alameda                        Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        5   12     1     1   22     2     5    0     7     1    2     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5   12     1     1   22     2     5    0     7     1    2     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     5   12     1     1   22     2     5    0     7     1    2     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      5   12     1     1   22     2     5    0     7     1    2     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     5   12     1     1   22     2     5    0     7     1    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:   2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    24 xxxx xxxxx    13 xxxx xxxxx    49   48    23    51   49 xxxxx
Potent Cap.:  1604 xxxx xxxxx  1619 xxxx xxxxx   957  847  1060   953  847 xxxxx
Move Cap.:    1604 xxxx xxxxx  1619 xxxx xxxxx   953  844  1060   944  844 xxxxx
Volume/Cap:   0.00 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.00  0.01  0.00 0.00  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:     0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:   7.3 xxxx xxxxx   7.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *     A    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1012 xxxxx   875 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx   9.1 xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    A     *     A    *     *
ApproachDel:     xxxxxx           xxxxxx              8.6              9.1
ApproachLOS:          *                *                A                A
Note: Queue reported is the number of cars per lane.
```

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Mission Town Center TIA
DN15-0483
Cumulative AM

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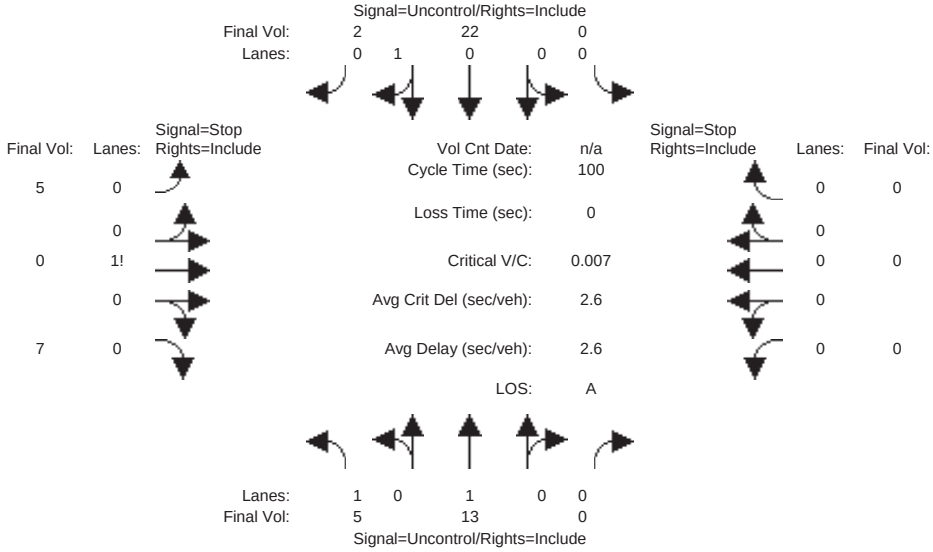
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #6: The Alameda & Fremont Street




```
Street Name:            The Alameda                         Fremont Street
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   12     0     0   22     2     5    0     7     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5   12     0     0   22     2     5    0     7     0    0     0
Added Vol:      0    1     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5   13     0     0   22     2     5    0     7     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5   13     0     0   22     2     5    0     7     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    5   13     0     0   22     2     5    0     7     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   24 xxxx xxxxx  xxxx xxxx xxxxx    46   46    23  xxxx xxxx xxxxx
Potent Cap.: 1604 xxxx xxxxx  xxxx xxxx xxxxx   969  850  1060  xxxx xxxx xxxxx
Move Cap.:   1604 xxxx xxxxx  xxxx xxxx xxxxx   967  847  1060  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx 1019 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.6 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx               8.6           xxxxxx
ApproachLOS:         *                *                 A                *
Note: Queue reported is the number of cars per lane.
```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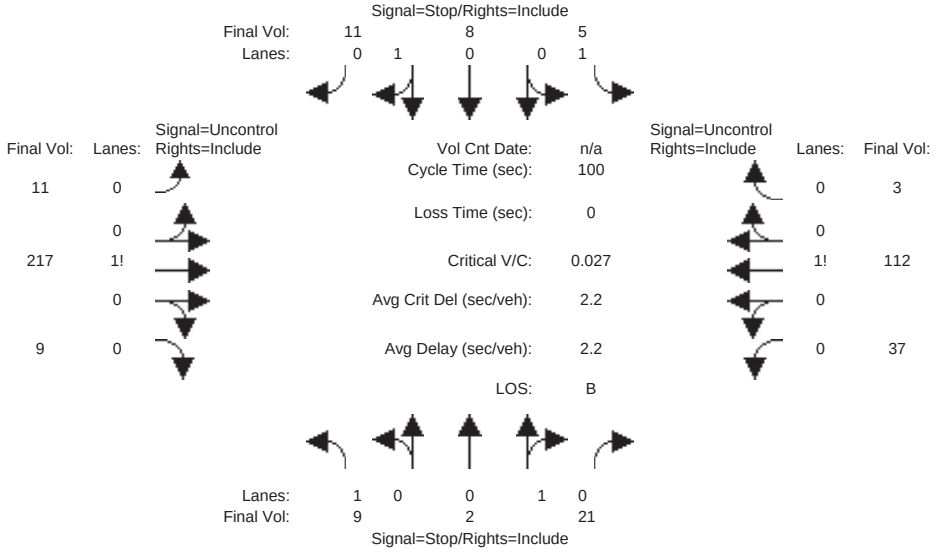
Intersection #7: The Alameda & Benton Street



Street Name:	The Alameda						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	9	2	21	5	8	11	11	217	9	37	112	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	2	21	5	8	11	11	217	9	37	112	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	2	21	5	8	11	11	217	9	37	112	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	9	2	21	5	8	11	11	217	9	37	112	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	2	21	5	8	11	11	217	9	37	112	3
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	441	433	222	443	436	114	115	xxxx	xxxxx	226	xxxx	xxxxx
Potent Cap.:	530	519	823	529	517	945	1487	xxxx	xxxxx	1354	xxxx	xxxxx
Move Cap.:	504	501	823	500	499	945	1487	xxxx	xxxxx	1354	xxxx	xxxxx
Volume/Cap:	0.02	0.00	0.03	0.01	0.02	0.01	0.01	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	12.3	xxxx	xxxxx	12.3	xxxx	xxxxx	7.4	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	B	*	*	B	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	780	xxxx	xxxx	686	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.1	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	9.8	xxxxx	xxxx	10.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	*	B	*	*	*	*	*	*
ApproachDel:	10.5			10.8			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #7: The Alameda & Benton Street

Signal=Stop/Rights=Include

Final Vol:	10		8		4
Lanes:	0	1	0	0	1

Final Vol:	Lanes:	Signal=Uncontrol Rights=Include			Signal=Uncontrol Rights=Include	Lanes:	Final Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
8	0					0	2
			Loss Time (sec):	0			
	0					0	
236	1!		Critical V/C:	0.028		1!	151
	0		Avg Crit Del (sec/veh):	1.9		0	
9	0		Avg Delay (sec/veh):	1.9		0	37
			LOS:	B			

Lanes:	1	0	0	1	0
Final Vol:	9		2		21

Signal=Stop/Rights=Include

Street Name:	The Alameda						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	9	2	21	5	8	11	11	217	9	37	112	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	2	21	5	8	11	11	217	9	37	112	3
Added Vol:	0	0	0	-1	0	-1	-3	19	0	0	39	-1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	2	21	4	8	10	8	236	9	37	151	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	9	2	21	4	8	10	8	236	9	37	151	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	2	21	4	8	10	8	236	9	37	151	2
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	492	484	241	494	487	152	153	xxxx	xxxxx	245	xxxx	xxxxx
Potent Cap.:	491	486	803	489	484	900	1440	xxxx	xxxxx	1333	xxxx	xxxxx
Move Cap.:	467	470	803	462	467	900	1440	xxxx	xxxxx	1333	xxxx	xxxxx
Volume/Cap:	0.02	0.00	0.03	0.01	0.02	0.01	0.01	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	12.9	xxxx	xxxxx	12.9	xxxx	xxxxx	7.5	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	B	*	*	B	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	757	xxxx	xxxx	638	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	0.1	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	9.9	xxxxx	xxxx	10.8	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	*	B	*	*	*	*	*	*
ApproachDel:	10.7			11.2			xxxxxx			xxxxxx		
ApproachLOS:	B			B			*			*		

Note: Queue reported is the number of cars per lane.

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Cumulative AM

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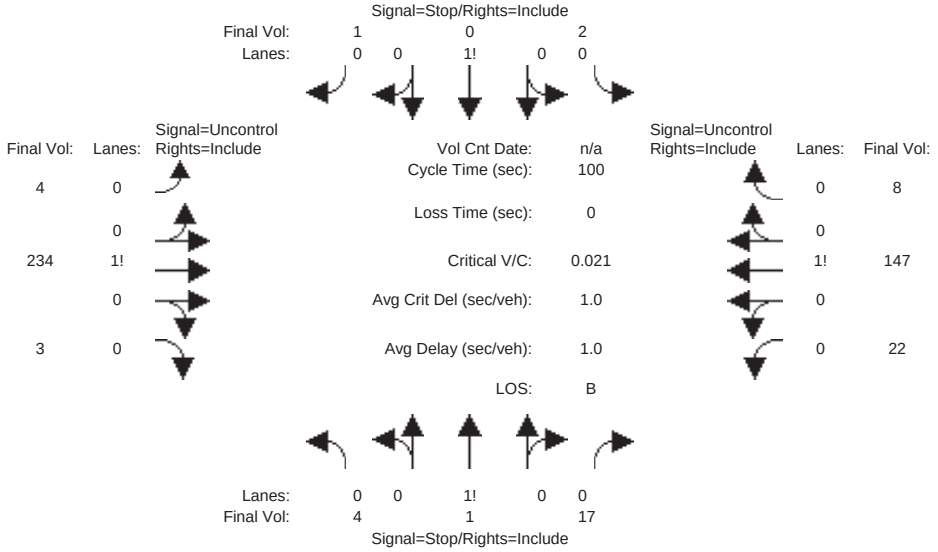
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative AM

Intersection #8: Sherman Street & Benton Street



Street Name:	Sherman Street						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Volume Module:												
Base Vol:	4	1	17	2	0	1	4	234	3	22	147	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	1	17	2	0	1	4	234	3	22	147	8
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1	17	2	0	1	4	234	3	22	147	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	4	1	17	2	0	1	4	234	3	22	147	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	4	1	17	2	0	1	4	234	3	22	147	8
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	439	443	236	448	440	151	155	xxxx	xxxxx	237	xxxx	xxxxx
Potent Cap.:	532	512	808	525	514	901	1438	xxxx	xxxxx	1342	xxxx	xxxxx
Move Cap.:	523	503	808	505	504	901	1438	xxxx	xxxxx	1342	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.02	0.00	0.00	0.00	0.00	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	718	xxxxx	xxxx	592	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.1	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.2	xxxxx	xxxxx	11.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	B	*	*	*	*	*	*	*
ApproachDel:		10.2			11.1		xxxxxx			xxxxxx		
ApproachLOS:		B			B		*			*		

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
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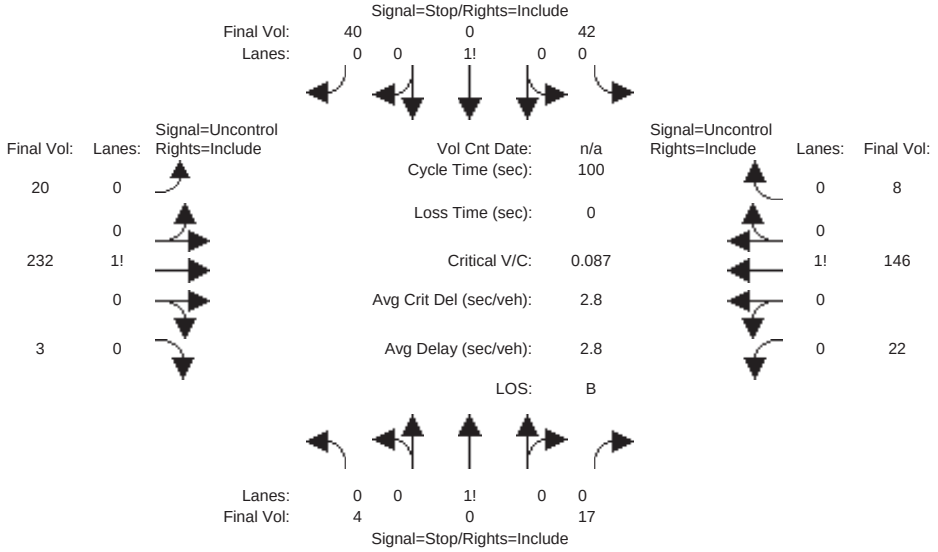
Cumulative AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #8: Sherman Street & Benton Street




```
Street Name:          Sherman Street                    Benton Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       4    0    17     0    0     0     0  234     3    22  147     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4    0    17     0    0     0     0  234     3    22  147     0
Added Vol:      0    0     0    41    0    40    19   -1     0     0   -1     8
PasserByVol:    0    0     0     1    0     0     1   -1     0     0    0     0
Initial Fut:    4    0    17    42    0    40    20  232     3    22  146     8
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     4    0    17    42    0    40    20  232     3    22  146     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    4    0    17    42    0    40    20  232     3    22  146     8
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  488  472   234   476  469   150   154 xxxx xxxxx   235 xxxx xxxxx
Potent Cap.:  494  494   811   503  495   902  1439 xxxx xxxxx  1344 xxxx xxxxx
Move Cap.:    461  479   811   481  480   902  1439 xxxx xxxxx  1344 xxxx xxxxx
Volume/Cap:  0.01 0.00  0.02  0.09 0.00  0.04  0.01 xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  708 xxxxx  xxxx  622 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.1 xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.2 xxxxx xxxxx 11.7 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    B     *     *    *     *     *    *     *
ApproachDel:      10.2             11.7           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
Note: Queue reported is the number of cars per lane.
```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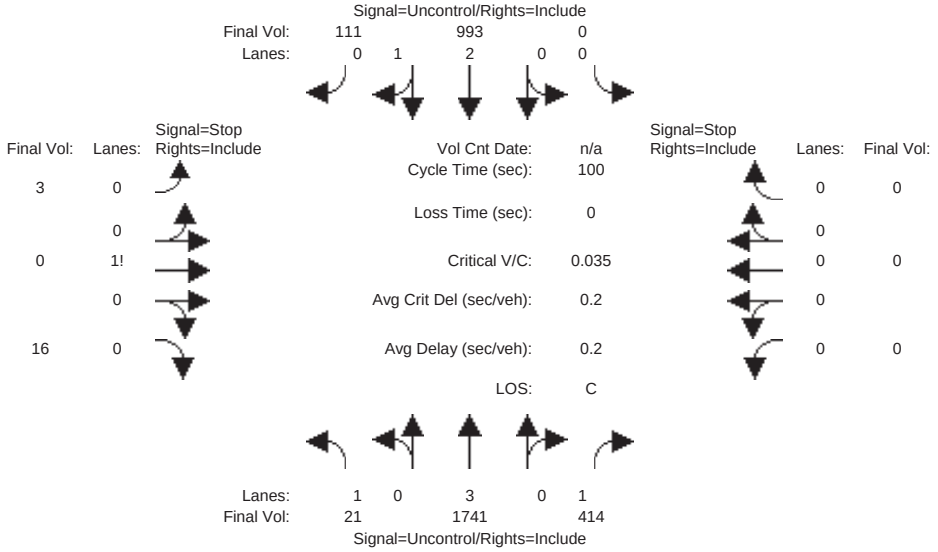
Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21 1741   414     0  993   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21 1741   414     0  993   111     3    0    16     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21 1741   414     0  993   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21 1741   414     0  993   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21 1741   414     0  993   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1104 xxxx xxxxx  xxxx xxxx xxxxx  1671 3246   387  xxxx xxxx xxxxx
Potent Cap.:  640 xxxx xxxxx  xxxx xxxx xxxxx    89   10   618  xxxx xxxx xxxxx
Move Cap.:    640 xxxx xxxxx  xxxx xxxx xxxxx    86    9   618  xxxx xxxx xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 10.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  313 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 17.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             17.2           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```

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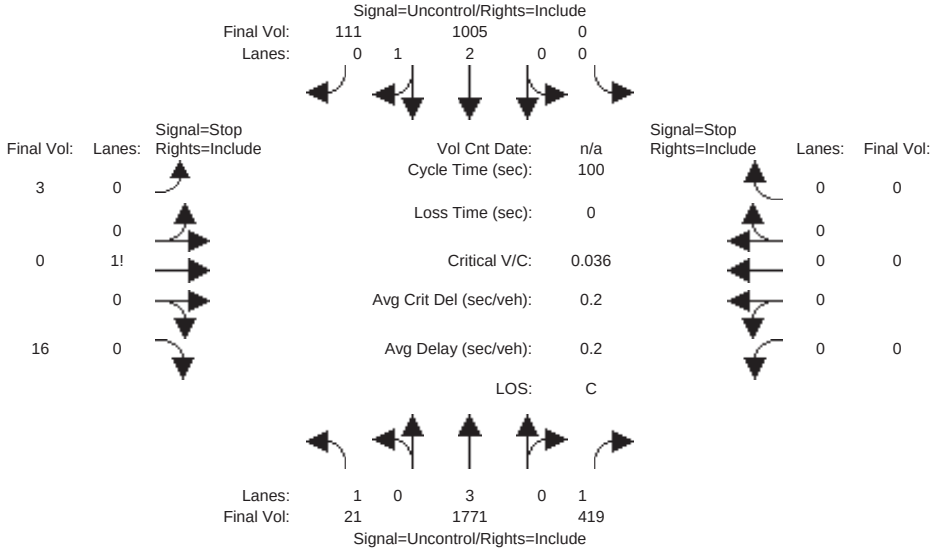
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #9: El Camino Real & Harrison Street




```
Street Name:          El Camino Real                    Harrison Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21 1741   414     0  993   111     3    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21 1741   414     0  993   111     3    0    16     0    0     0
Added Vol:      0   30     5     0   12     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   21 1771   419     0 1005   111     3    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21 1771   419     0 1005   111     3    0    16     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21 1771   419     0 1005   111     3    0    16     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8  6.5   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1116 xxxx xxxxx  xxxx xxxx xxxxx  1693 3293   391  xxxx xxxx xxxxx
Potent Cap.:  633 xxxx xxxxx  xxxx xxxx xxxxx    86    9   614  xxxx xxxx xxxxx
Move Cap.:    633 xxxx xxxxx  xxxx xxxx xxxxx    84    9   614  xxxx xxxx xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 10.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  307 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 17.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             17.5           xxxxxx
ApproachLOS:         *                *                C                *
Note: Queue reported is the number of cars per lane.
```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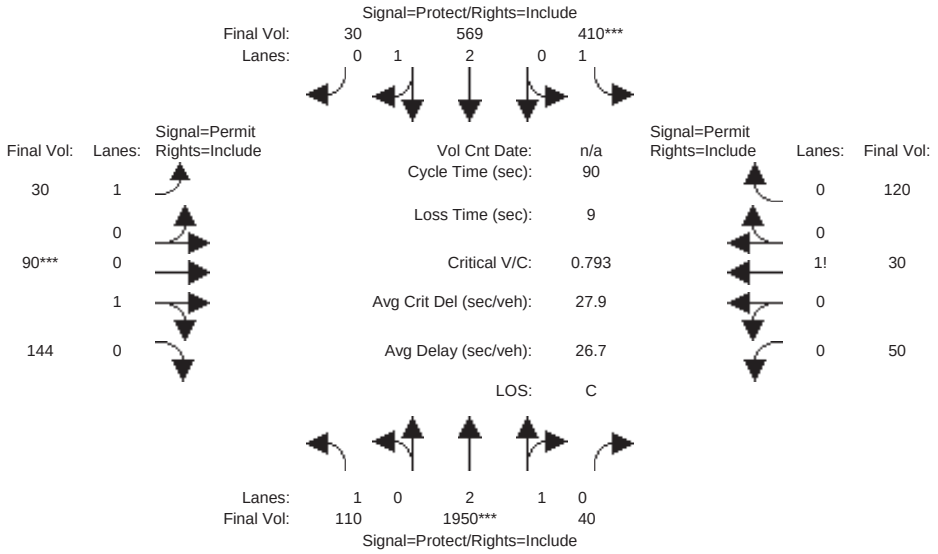
Cumulative AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	110	1950	40	410	569	30	30	90	144	50	30	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	1950	40	410	569	30	30	90	144	50	30	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	110	1950	40	410	569	30	30	90	144	50	30	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	110	1950	40	410	569	30	30	90	144	50	30	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	1950	40	410	569	30	30	90	144	50	30	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	110	1950	40	410	569	30	30	90	144	50	30	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.93	0.07	1.00	2.84	0.16	1.00	0.37	0.63	0.25	0.14	0.61
Final Sat.:	1750	5576	114	1750	5391	284	1750	694	1111	443	266	1063
Capacity Analysis Module:												
Vol/Sat:	0.06	0.35	0.35	0.23	0.11	0.11	0.02	0.13	0.13	0.11	0.11	0.11
Crit Moves:		****		****				****				
Green Time:	27.3	39.7	39.7	26.6	39.0	39.0	14.7	14.7	14.7	14.7	14.7	14.7
Volume/Cap:	0.21	0.79	0.79	0.79	0.24	0.24	0.10	0.79	0.79	0.69	0.69	0.69
Delay/Veh:	23.5	23.4	23.4	37.4	16.2	16.2	32.2	49.8	49.8	42.4	42.4	42.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.5	23.4	23.4	37.4	16.2	16.2	32.2	49.8	49.8	42.4	42.4	42.4
LOS by Move:	C	C	C	D+	B	B	C-	D	D	D	D	D
HCM2kAvgQ:	2	18	18	12	3	3	1	7	7	7	7	7

Note: Queue reported is the number of cars per lane.

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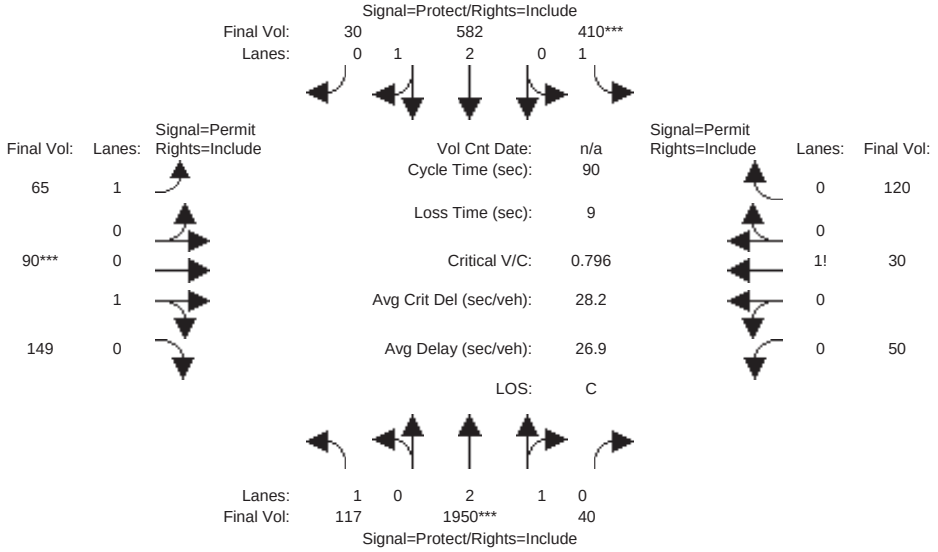
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #10: El Camino Real & Benton Street



Street Name:	El Camino Real						Benton Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	110	1950	40	410	569	30	30	90	144	50	30	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	1950	40	410	569	30	30	90	144	50	30	120
Added Vol:	7	0	0	0	13	0	35	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	117	1950	40	410	582	30	65	90	149	50	30	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	117	1950	40	410	582	30	65	90	149	50	30	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	117	1950	40	410	582	30	65	90	149	50	30	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	117	1950	40	410	582	30	65	90	149	50	30	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.00	2.93	0.07	1.00	2.84	0.16	1.00	0.36	0.64	0.25	0.14	0.61
Final Sat.:	1750	5576	114	1750	5398	278	1750	679	1124	443	266	1063
Capacity Analysis Module:												
Vol/Sat:	0.07	0.35	0.35	0.23	0.11	0.11	0.04	0.13	0.13	0.11	0.11	0.11
Crit Moves:		****		****				****				
Green Time:	27.2	39.5	39.5	26.5	38.8	38.8	15.0	15.0	15.0	15.0	15.0	15.0
Volume/Cap:	0.22	0.80	0.80	0.80	0.25	0.25	0.22	0.80	0.80	0.68	0.68	0.68
Delay/Veh:	23.7	23.6	23.6	37.7	16.4	16.4	32.9	49.8	49.8	41.5	41.5	41.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.7	23.6	23.6	37.7	16.4	16.4	32.9	49.8	49.8	41.5	41.5	41.5
LOS by Move:	C	C	C	D+	B	B	C-	D	D	D	D	D
HCM2kAvgQ:	3	18	18	12	3	3	2	7	7	7	7	7

Note: Queue reported is the number of cars per lane.

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Mission Town Center TIA
DN15-0483
Cumulative AM

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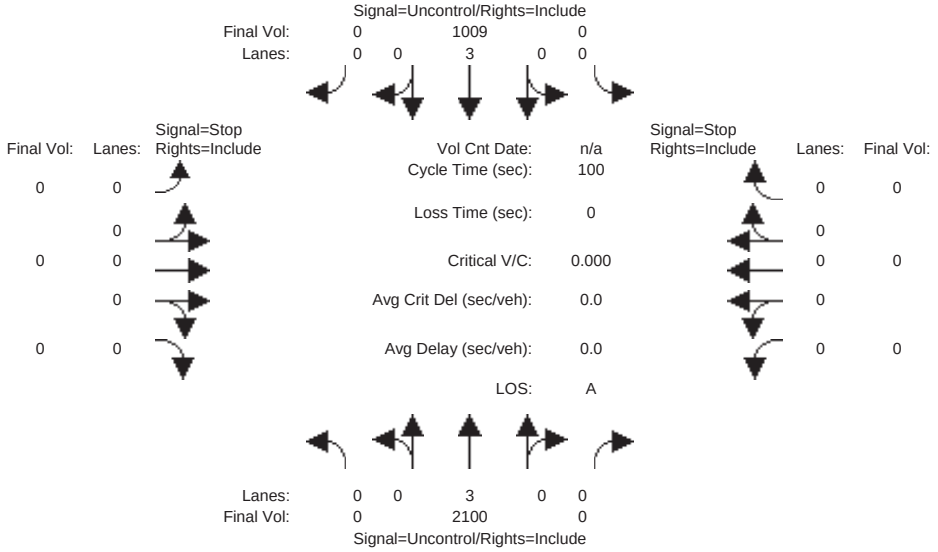
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2100     0     0 1009     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2100     0     0 1009     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0 2100     0     0 1009     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2100     0     0 1009     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 2100     0     0 1009     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         *                *                *                *
Note: Queue reported is the number of cars per lane.
```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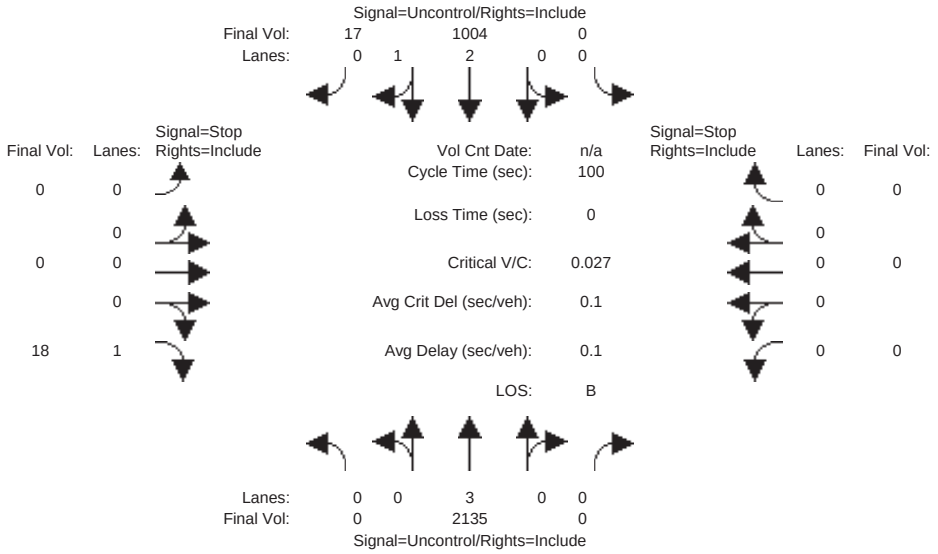
Mission Town Center TIA
DN15-0483
Cumulative AM

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #11: El Camino Real & Driveway




```
Street Name:          El Camino Real                      Driveway 1
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2100     0     0 1009     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2100     0     0 1009     0     0    0     0     0    0     0
Added Vol:      0   35     0     0    0    12     0    0    13     0    0     0
PasserByVol:    0    0     0     0   -5     5     0    0     5     0    0     0
Initial Fut:    0 2135     0     0 1004    17     0    0    18     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2135     0     0 1004    17     0    0    18     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0 2135     0     0 1004    17     0    0    18     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   343  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   659  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   659  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.6 xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     B     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             10.6           xxxxxx
ApproachLOS:         *                *                B                *
Note: Queue reported is the number of cars per lane.
```

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APPENDIX C: APPROVED, NOT OCCUPIED, AND PENDING PROJECTS

TABLE C1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
City of Santa Clara – Projects Under Construction			
1	Summerhill and Charities Housing	90 Winchester Boulevard	• 165 apartment units and 110 small lot single family homes • Street improvements along Winchester between Stevens Creek and Forest Avenue • Former Bay Area Research and Extension Center site
2	Lawson Lane	2200 Lawson Lane	• 516,000 sf of office use
3	Fairfield Development	900 Kiely Boulevard	• 766 housing units, 57 SFD, 68 row houses, 116 townhouses, and 525apartments
4	Augustine Bowers Industrial Campus / Equity Office	2620-2727 Augustine Drive	• 1,969,600 s.f. of office and up to 35,000 s.f. of retail
5	Marriott Townplace Suites	2875 Lakeside Drive	• 107 room extended stay hotel with at-grade podium parking
6	Affordable Senior Housing Project	2525 El Camino Read	• Three story structure with 48 affordable Senior Housing units. • Former Der Wienershnitzel site
7	Menlo Equities Office Park	3333 Scott Boulevard	• 735,000 square foot (5 buildings) office space
8	Mellon Bank /Perry Arrillaga	5403 Stevens Creek	• General Plan Amendment from Low Intensity Office R&D to High Intensity Office R&D • Two six-story office buildings totaling 375,000 s.f. and one parking structure with 1,281 spaces and a 38-space surface parking spaces
9	Patrick Duran	4888 Patrick Henry Drive	• 13,000 s.f. addition to existing industrial/office building
10	Calvary Southern Baptist Church	3137 Forbes Avenue	• Use Permit Amendment to allow Sunday School classrooms and a weekday day care in the existing church facility • New two-story building (14,000 s.f.), parking, landscaping improvements
11	Santa Clara University	1043 Alviso Street	• Four-story parking garage and three-story Building
12	Rezone and Redevelopment of site	3175 El Camino Real	• New four-story 133 unit multi-family apartment building with associated parking, landscaping and site improvements
13	6 Single family home Project (formerly 9 unit townhome condominium project)	3499 The Alameda	• Rezoning to allow development of six single family homes
14	Data Center	2805 and 2807 Mission College Boulevard	• Rezoning to allow free standing data center and office space

TABLE C-1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
15	Silicon Valley Builders	2585 El Camino Real	• Four-story 222 unit multi-family residential development with parking structure with 375 parking spaces
16	Sobrato	4800 Great America Parkway	• New 171,000 s.f. office building and site improvements and two level parking garage
17	Elaine Breeze/Urban Planning Group	2635, 2645, 2611, 2621, 2655 El Camino Real	• Multi- family residential project (183 units)
18	Irvine Co.	3515-3585 Monroe Street	• 825 housing units and 40,000 s.f. of retail
19	New Mixed use	1460 Monroe Avenue	• Four-story mixed use development with 1,800 s.f. of ground floor retail, 18 residential units, and 43 surface parking spaces
20	U-Haul and Self Storage	2121 Laurelwood	• U-Haul and self-storage facility
21	David Tymn for Mozart Dev.	3051 Homestead Road	• Eight detached homes
22	Dennis Chargin	865 Pomeroy Ave	• Addition of 20 one bedroom apartment units to an existing apartment complex with 51 current units
23	Tiemo Mehner	2920 Coronado	• New data center
24	BNP Leasing Corp	5450 Great America Parkway	• Six-story office building
25	James Salata	2680 Scott Blvd.	• 20,000 s.f. office building, with new landscape and parking improvements
26	Oracle	4090 and 4100 Network Circle	• Three-story building and one new single story building with associated site improvements to an existing office campus
27	Byer Properties	2000 El Camino Real	• Shopping center remodel and new Target anchor store
28	Silicon Valley Builders	555 Saratoga Avenue	• Three-story condominium complex with 13 units
29	Santa Clara Gateway	5451 Great America Parkway	• 911,000 s.f. office
City of Santa Clara – Approved Projects			
30	Intel SC-13	2250 Mission College Boulevard	• 100,000 s.f. office
31	Hewlett Packard/Agilent Technologies	5301 Stevens Creek Boulevard	• 728,000 s.f. office
32	3Com/Cognac Great America	5402 Great America Parkway	• 278,000 s.f. office and research and development

TABLE C-1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
33	Mission College Boulevard Office/Retail	2350 Mission College Boulevard	• 300,000 s.f. office and 6,000 s.f. retail with a six-story parking garage
34	Sobrato Office Development	4301, 4401, 4551 Great America Parkway	• 718,000 s.f. office
35	NVIDIA	2600 and 2800 San Tomas Expressway	• 1,200,000 s.f. office and research and development
36	Mission College	Mission College Boulevard/Great America Parkway	• 427,000 s.f.
37	Yahoo!	5010 Old Ironsides Drive	• 3,060,000 s.f. office and research and development campus with 13 six-story buildings, three commons buildings, surface parking and two levels of below grade parking
38	James Redfield	4306 Filmore Street	• One single family home
39	Office building	3000 Bowers Avenue	• 150,000 s.f. office and 17,400 s.f. of amenities
40	Applied Materials	3303 Scott Boulevard	• 78,000 s.f. office
41	Prometheus	45 Buckingham Drive and 66 Saratoga Avenue	• 222 apartments
42	Tiemo Miehner/Coresite	3001 Coronado Drive	• 92,000 s.f. office
City of Santa Clara – Pending Projects			
43	Muslim Community Association	3033 Scott Boulevard	• Adding high school and doubling student enrollment
44	Single family houses	990 Wren Avenue	• Five single family homes
45	JOMA Studio Architects	1701 Lawrence Road	• Nine single family homes
46	Martha Polanco/Dory Marhamat	1075 Pomeroy Avenue	• Five townhouses
47	Charles McKeag	166 Saratoga Avenue	• 33 residential units
48	Applied Materials	3303 Scott Boulevard	• 581,000 s.f. office
49	Silicon Valley Builders	1313 Franklin Street	• 46 residential units and 16,000 s.f. retail
50	Gateway Santa Clara	3700 El Camino Real	• Mixed-use redevelopment of entire site

TABLE C-1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
51	TI and ARC	2930 Corvin Drive	• 20,000 s.f. data center
52	City Place	5155 Stars & Stripes Drive	• 9.2 million s.f. mixed use
City of Sunnyvale Projects – Projects Under Construction			
53	Aloft Hotel	170 S Sunnyvale Avenue	• Reduced number of hotel rooms from 108 to 86
54	Juniper Networks	1081 Innovation Way	• 2.43 million s.f. of office to replace 984,000 s.f. of office
55	Moffett Park	1152 Bordeaux Drive	• 1.78 million s.f. of office to replace 598,000 s.f. of office
56	Office	1221 Crossman Avenue	• 541,214 s.f. of office to replace 159,226 s.f. of office
57	Office	433 N Mathilda Avenue	• 210,000 s.f. of office to replace 96,300 s.f. of office
58	Office	479 N Pastoria Avenue	• 52,394 s.f. of office to replace vacant lot
59	Office	505-599 N Mathilda, etc.	• Replace existing office building with 413,746 s.f. of office
60	Moffett Towers	815 Maude Avenue	• 23,340 s.f. of office to replace 14,540 s.f. of office
61	Town Center	2502 Town Center Lane	• One million s.f. of retail, 275,000 s.f. of office and 292 apartments to replace 719,652 s.f. of retail
62	Residential	660 W El Camino Real	• 103 townhomes and 145 hotel rooms to replace 42,948 s.f. of auto retail
63	Residential	1101 N Fair Oaks Avenue	• 97 residential units to replace 40,680 of industrial space
64	Residential	388-394 E Evelyn Avenue	• 67 apartments to replace 3,900 s.f. of retail
65	Residential	455 Mathilda Avenue	• 105 condos to replace 29,000 s.f. of office
66	Residential	617 Arques Avenue	• 85 townhomes to replace a variety of land uses
67	Residential	620 E Maude Avenue	• 121 affordable housing units to replace 13,920 s.f. of armory
City of Sunnyvale Projects – Approved Projects			
68	Office	645 Almanor Avenue	• 541,000 s.f. of R&D office to replace 159,000 s.f. of office building
69	Ariba Campus / Moffett Towers	815 11th Avenue	• 815,000 s.f. of office building to replace 615,000 s.f. of office building

TABLE C-1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
70	Residential	520-550 E Weddell Drive	• 465 apartments to replace 183,000 s.f. of industrial buildings
71	Onizuka Air Force Station	1080 Innovation Way	• Downsize from 574,000 s.f. of office to 125,000 s.f.
72	Office	549 Baltic Way	• 483,000 s.f. office buildings to replace 285,000 s.f. of office building
73	Office	589 W Java Drive	• 339,000 s.f. of office buildings to replace 171,000 s.f. of office
74	Residential	610 E Weddell Drive	• 205 apartments to replace 62,000 s.f. of industrial office
75	Residential	698 E Taylor Avenue	• 48 townhomes to replace 23,000 s.f. of industrial office
76	Residential	975 Stewart Drive	• 57 apartments to replace 20,000 s.f. of industrial office
City of Sunnyvale Projects – Pending Projects			
77	Rite Aid	1010 Sunnyvale-Saratoga Road	• 14,000 s.f. of retail to replace a vacant lot
78	Hotel	1100 N Mathilda Avenue	• 342 hotel room to replace a 173 hotel room
79	Hotel	590 W El Camino Real	• 83 room hotel to replace 2,000 s.f. of auto repair buildings
80	Hotel	861 E El Camino Real	• 166 room hotel to replace 32,000 square feet of retail
81	Net App	1240 Crossman Avenue	• 525,000 s.f. of office to replace 310,000 s.f. of office
82	Moffett Park	215 Moffett Park Drive	• 249,000 s.f. of office and 5,000 s.f. of restaurants to replace 157,000 s.f. of office
83	Office	280 Santa Ana Court	• 777,000 s.f. of office to replace 258,000 s.f. of industrial office
84	Office	615 N Mathilda Avenue	• 132,000 s.f. of office to replace 110,000 s.f. of office
85	Office	767 N Mathilda Avenue	• 234,000 s.f. of office to replace various retail and restaurants
86	Residential	625 E Taylor Avenue	• 20 townhomes to replace 3,600 s.f. of commercial space
87	Residential	701 E Evelyn Avenue	• 204 townhomes to replace various industrial and warehouse space
88	Residential	871 E Fremont Avenue	• 156 apartments to replace two single family units
89	Residential	915 De Guigne Drive	• 451 condos to replace 262,000 s.f. of industrial space

TABLE C-1: UNDER CONSTRUCTION, APPROVED, AND PENDING LAND USE PROJECTS			
ID#	**Project Title/Project Applicant**	**Location**	**Description**
City of Cupertino – Projects Under Construction			
90	Apple Campus II	11911 Pruneridge Avenue	• 3,240,000 s.f. office buildings to replace 2,700,000 s.f. office buildings
City of San José - Projects Under Construction			
91	Brandon Park Apartments	North 1st Street/River Oaks Parkway	• 1308 apartment units
92	1st/Plumeria Office Development	Area bounded by North First Street, Daggett Drive, Zanker Road, and East Plumeria Drive	• Converting 365,000 s.f. of R&D to 1,634,000 s.f. of office

Source: City of Santa Clara, 2015; City of Sunnyvale, 2015; City of San José, 2015; City of Cupertino, 2015.

APPENDIX D BICYCLE AND PEDESTRIAN QOS CALCULATION SHEETS

StreetScore+

Input instructions:

1	Enter the name of the roadway segment below.
2	All input Fields 1-8 (marked in green) are required. Fields 9 and 10 will activate when the bicycle lane is selected for the mode separation in Field 2.
3	The Segment LTS output is provided below the input fields.
4	Refer to "Streetscore+ Tool Overview" and "About" tabs detailed descriptions of inputs and calculations.

Segment (Two-Way Roadway) LTS

Segment:	Benton Street: Benton Street - Sherman Street -- No Project		
Field	**Category**	**Direction 1**	**Direction 2**
		Input	**Input**
1	Direction	WB	EB
2	Mode separation	Mixed-Flow	Mixed-Flow
3	Is this a residential street?	Yes	
4	Adjacent parking	Yes	Yes
5	Lanes in analysis direction	1	1
6	Is there a median?	None or Striped	
7	Is there a center line?	Yes	
8	What is the prevailing speed? (Use speed limit if prevailing speed not available)	25	25
9	Bike Lane + Parking Width (if bike lane present)		
10	How often do bike lane blockages occur?		
	Segment LTS Output	**1**	**1**

StreetScore+

Input instructions:

1	Enter the name of the roadway segment below.
2	All input Fields 1-8 (marked in green) are required. Fields 9 and 10 will activate when the bicycle lane is selected for the mode separation in Field 2.
3	The Segment LTS output is provided below the input fields.
4	Refer to "Streetscore+ Tool Overview" and "About" tabs detailed descriptions of inputs and calculations.

Segment (Two-Way Roadway) LTS

Segment:	Benton Street: Sherman Street - El Camino Real -- No Project		
Field	**Category**	**Direction 1**	**Direction 2**
		Input	**Input**
1	Direction	WB	EB
2	Mode separation	Mixed-Flow	Mixed-Flow
3	Is this a residential street?	Yes	
4	Adjacent parking	Yes	Yes
5	Lanes in analysis direction	1	1
6	Is there a median?	None or Striped	
7	Is there a center line?	Yes	
8	What is the prevailing speed? (Use speed limit if prevailing speed not available)	25	25
9	Bike Lane + Parking Width (if bike lane present)		
10	How often do bike lane blockages occur?		
	Segment LTS Output	**1**	**1**

StreetScore+

Input instructions:

1	Enter the name of the roadway segment below.
2	All input Fields 1-8 (marked in green) are required. Fields 9 and 10 will activate when the bicycle lane is selected for the mode separation in Field 2.
3	The Segment LTS output is provided below the input fields.
4	Refer to "Streetscore+ Tool Overview" and "About" tabs detailed descriptions of inputs and calculations.

Segment (Two-Way Roadway) LTS

Segment:	Benton Street: Benton Street - Sherman Street -- Plus Project		
Field	**Category**	**Direction 1**	**Direction 2**
		Input	**Input**
1	Direction	WB	EB
2	Mode separation	Bicycle Lane	Bicycle Lane
3	Is this a residential street?	Yes	
4	Adjacent parking	Yes	Yes
5	Lanes in analysis direction	1	1
6	Is there a median?	None or Striped	
7	Is there a center line?	Yes	
8	What is the prevailing speed? (Use speed limit if prevailing speed not available)	25	25
9	Bike Lane + Parking Width (if bike lane present)	15	15
10	How often do bike lane blockages occur?	Rare	Rare
	Segment LTS Output	**1**	**1**

StreetScore+

Input instructions:

1	Enter the name of the roadway segment below.
2	All input Fields 1-8 (marked in green) are required. Fields 9 and 10 will activate when the bicycle lane is selected for the mode separation in Field 2.
3	The Segment LTS output is provided below the input fields.
4	Refer to "Streetscore+ Tool Overview" and "About" tabs detailed descriptions of inputs and calculations.

Segment (Two-Way Roadway) LTS

Segment:	Benton Street: Sherman Street - El Camino Real -- Plus Project		
Field	**Category**	**Direction 1**	**Direction 2**
		Input	**Input**
1	Direction	WB	EB
2	Mode separation	Bicycle Lane	Bicycle Lane
3	Is this a residential street?	Yes	
4	Adjacent parking	Yes	Yes
5	Lanes in analysis direction	1	1
6	Is there a median?	None or Striped	
7	Is there a center line?	Yes	
8	What is the prevailing speed? (Use speed limit if prevailing speed not available)	25	25
9	Bike Lane + Parking Width (if bike lane present)	14.5	14.5
10	How often do bike lane blockages occur?	Rare	Rare
	Segment LTS Output	**2**	**2**

APPENDIX E: ON-SITE QUEUE CALCULATION SHEETS

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	233	3	22	146	8	4	0	17	41	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	253	3	24	159	9	4	0	18	45	0	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	257	0	0	529	511	255	516	509	163
Stage 1	-	-	-	-	-	-	296	296	-	211	211	-
Stage 2	-	-	-	-	-	-	233	215	-	305	298	-
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	1411	-	-	1308	-	-	460	466	784	470	467	882
Stage 1	-	-	-	-	-	-	712	668	-	791	728	-
Stage 2	-	-	-	-	-	-	770	725	-	705	667	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1308	-	-	425	449	784	446	450	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	425	449	-	446	450	-
Stage 1	-	-	-	-	-	-	700	657	-	778	713	-
Stage 2	-	-	-	-	-	-	717	711	-	677	656	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	1	10.5	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	675	1411	-	-	1308	-	-	590
HCM Lane V/C Ratio	0.034	0.015	-	-	0.018	-	-	0.149
HCM Control Delay (s)	10.5	7.6	0	-	7.8	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	51	243	14	27	267	21	40	0	34	30	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	264	15	29	290	23	43	0	37	33	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	313	0	0	279	0	0	759	755	272	761	750	302
Stage 1	-	-	-	-	-	-	383	383	-	360	360	-
Stage 2	-	-	-	-	-	-	376	372	-	401	390	-
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	1247	-	-	1284	-	-	323	338	767	322	340	738
Stage 1	-	-	-	-	-	-	640	612	-	658	626	-
Stage 2	-	-	-	-	-	-	645	619	-	626	608	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1247	-	-	1284	-	-	291	312	767	288	314	738
Mov Cap-2 Maneuver	-	-	-	-	-	-	291	312	-	288	314	-
Stage 1	-	-	-	-	-	-	607	580	-	624	609	-
Stage 2	-	-	-	-	-	-	601	602	-	565	576	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.7	16	15.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	407	1247	-	-	1284	-	-	411
HCM Lane V/C Ratio	0.198	0.044	-	-	0.023	-	-	0.156
HCM Control Delay (s)	16	8	0	-	7.9	0	-	15.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	0.5

APPENDIX 4.9

Water Supply Assessment

RESOLUTION NO. 15-8262

A RESOLUTION OF THE CITY OF SANTA CLARA, CALIFORNIA, APPROVING A WATER SUPPLY ASSESSMENT FOR A PROPOSED MIXED USE DEVELOPMENT AT 575, 611, 625 AND 645 BENTON STREET, 1188 AND 1250 SHERMAN STREET, 602 FREMONT STREET, AND 3360, 3370, 3390 AND 3410 THE ALAMEDA

BE IT RESOLVED BY THE CITY OF SANTA CLARA AS FOLLOWS:

WHEREAS, the City of Santa Clara ("City") approved and adopted an Urban Water Management Plan in 2011;

WHEREAS, California Water Code Section 10910 and Section 15155(h) of the Guidelines to the California Environmental Quality Act ("CEQA") require a water utility to prepare a Water Supply Assessment for development applications for "water-demand projects";

WHEREAS, Section 15155(b) of the CEQA Guidelines and Section 10910(g) of the California Water Code require the governing body of a public water system that will serve a "water demand project" to determine whether to approve a water supply assessment at a regular or special meeting;

WHEREAS, the City is a public water supplier within the City limits and the City Council of the City of Santa Clara is the governing body of the City's public water system;

WHEREAS, the City of Santa Clara requires that landscaping for projects be drought tolerant and recycled water be used for irrigation, cooling towers and other permitted uses when properties are proximate to recycled water resources to reduce the cumulative use of potable water;

WHEREAS, on June 10, 2015, the proponent of a development project ("Applicant") requested a Water Supply Assessment for a mixed use development located at 575, 611, 625 and 645 Benton Street, 1188 and 1250 Sherman Street, 602 Fremont Street, and 3360, 3370, 3390 and 3410 The Alameda ("Project");

WHEREAS, , under Section 15155(a)(1)(G) of the CEQA Guidelines and Section 10912(a)(7) of

the Water Code, a project that includes more than 500 dwelling units requires a Water Supply Assessment. Accordingly, the Applicant requested an Assessment for the Project on June 10, 2015; and,

WHEREAS, City Staff prepared a Water Supply Assessment for the Project on August 19, 2015 ("Project WSA"), a true and correct copy which is attached hereto as Exhibit A.

NOW THEREFORE, BE IT FURTHER RESOLVED BY THE CITY OF SANTA CLARA AS FOLLOWS:

1. Exhibit A. Exhibit A, the Water Supply Assessment for the proposed development located at 575, 611, 625 and 645 Benton Street, 1188 and 1250 Sherman Street, 602 Fremont Street, and 3360, 3370, 3390 and 3410 The Alameda, is attached hereto and incorporated as if fully set forth herein.

2. Approval of Project WSA. The Council has reviewed the Project WSA at a regular public meeting conducted on October 13, 2015. Based upon the data and conclusions set forth therein, and the evidence and testimony presented at the public meeting, the Council hereby finds that there is adequate water to supply the Project without creating a negative impact on the groundwater basin and that the City has an adequate supply to provide water for the project during single or multiple dry years for at least a 20-year projection, and, the Council hereby approves the Project WSA.

3. No Obligation to Act on the Project Application. The Council's approval of the Project WSA is limited to approving the Project WSA; approving the Project WSA does not approve the application for the Project. Nothing in this resolution or the Council's approval of the Project WSA shall be construed as requiring the City or its Council to consider, act on, approve, conditionally approve, deny, or take any other action on the application to develop the Project.

4. Direction to Staff. Staff is hereby directed to include the Project WSA, the 2010 City of Santa Clara Urban Water Management Plan, and any other applicable Urban Water Management Plan related documents in the appendix of the Environmental Impact Report for the Project.

5. Constitutionality, severability. If any section, subsection, sentence, clause, phrase, or word of this resolution is for any reason held by a court of competent jurisdiction to be unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining portions of the resolution. The City of Santa Clara, California, hereby declares that it would have passed this resolution and each section, subsection, sentence, clause, phrase, and word thereof, irrespective of the fact that any one or more section(s), subsection(s), sentence(s), clause(s), phrase(s), or word(s) be declared invalid.

6. Effective date. This resolution shall become effective immediately.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE COPY OF A RESOLUTION PASSED AND ADOPTED BY THE CITY OF SANTA CLARA, AT A REGULAR MEETING THEREOF HELD ON THE 13TH DAY OF OCTOBER, 2015, BY THE FOLLOWING VOTE:

AYES:	COUNCILORS:	Caserta, Davis, Gillmor, Kolstad, and O'Neill and Mayor Matthews
NOES:	COUNCILORS:	None
ABSENT:	COUNCILORS:	Marsalli
ABSTAINED:	COUNCILORS:	None

ATTEST:

ROD DIRIDON, JR.
CITY CLERK
CITY OF SANTA CLARA

Attachments incorporated by reference:
1. Exhibit A, Mission Town Center Project Water Supply Assessment

I:\Water\MEMOS\AGENDA\2015\WSA_Mission Town Center\Resolution_Mission Town Center.doc

Exhibit A

CITY OF SANTA CLARA
WATER AND SEWER UTILITIES

MISSION TOWN CENTER

DEVELOPMENT APPLICATION

WATER SUPPLY ASSESSMENT FOR COMPLIANCE WITH CALIFORNIA WATER CODE SECTION 10910

Approved by City Council
Resolution # TBD

1500 WARBURTON AVE
SANTA CLARA, CA 95050

MISSION TOWN CENTER

DEVELOPMENT APPLICATION

WATER SUPPLY ASSESSMENT FOR COMPLIANCE WITH CALIFORNIA WATER CODE SECTION 10910

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MISSION TOWN CENTER

WATER SUPPLY ASSESSMENT FOR COMPLIANCE WITH CALIFORNIA WATER CODE SECTION 10910

INTRODUCTION

The Mission Town Center project ("Mission Town Center" or the "Project") is located on approximately 36 acres located at 602 Fremont Street; 575, 611, 625, and 645 Benton Street; 1188 and 1250 Sherman Street; and 3360, 3370, 3390, and 3410 the Alameda in the City of Santa Clara ("City"). The Project would involve the demolition of the existing buildings and on-site features at the Project site and the construction of a new mixed-use development. The project land uses will be a combination of 27,000 gross square feet (gsf) of retail space, 4,000 gsf of office space, 6,000 gsf of amenity space, 50,000 gsf of new landscape, and 385 multifamily residential units.

On June 10, 2015 the Applicant submitted a request for a Water Supply Assessment ("WSA" or "Assessment") in accordance with the California Water Code and the California Environmental Quality Act in conjunction with the review of the proposed Project. Per the request of the developer, this WSA was postponed until after the completion of the Santa Clara Square Apartments WSA was completed.

The City of Santa Clara's City Council approved and adopted an Urban Water Management Plan in 2011 ("UWMP" or "2010 UWMP"). The 2010 UWMP did not specifically include or address this project since it was proposed and evaluated after the adoption of the 2010 UWMP. However, the UWMP included projected increases in water demand due to densification and intensification of both residential and non-residential land uses. The projected increase in water demand for this Project of 58.4 acre ft/yr is within the growth projections of the 2010 UWMP.

This Assessment relies on the data contained in and used to develop the UWMP. Unless noted, all figures in this Assessment are in acre-feet and are for total water demand or supply, i.e. both potable and recycled water.

The findings of this Assessment will be submitted to the City Council for approval and included in the environmental review process. The City's approval, denial, conditional approval or any act on this Assessment does not guarantee that the Project will be approved and does not obligate the City to approve, deny, conditionally approve, take any action, or make any decision on the Project application.

WATER SUPPLY

The City of Santa Clara has four sources of water. These sources include two treated water sources, groundwater, and recycled water. Contracts for the two treated water sources, the Santa Clara Valley Water District ("SCVWD" or "District") and the San Francisco Public Utilities Commission ("SFPUC"), are contained in Appendices A and B respectively. The City purchases recycled water from South Bay Water Recycling ("SBWR"). The contract for recycled water is contained in Appendix C. The City also owns and operates 27 groundwater wells located within the City's boundaries.

Recycled water use within the City is limited by the availability of acceptable uses and proximity to the recycled water distribution system. The use of treated surface water from SCVWD and SFPUC is limited by the respective contracts.

The City has projected meeting anticipated future water demands using the City's four existing water supplies and water conservation. The City's analysis of future water demand and available supply, which will be discussed later in this Assessment, indicates that additional water supplies are not necessary to meet current projected demands. Tables 1a and 1b below show the anticipated volume of water that will be used from each source to meet the expected demands projected in the UWMP. The calculation of the future water demands for this Project will be discussed in detail later in this Assessment.

Table 1a – With SFPUC
Water Supply Projections by Water Source (acre-ft/yr)[1,2,3]

Source	2010	2015	2020	2025	2030	2035
Groundwater	13,980	23,048	23,048	23,048	23,048	23,048
SFPUC	2,454	5,040	5,040	5,040	5,040	5,040
SCVWD	4,372	4,570	5,236	5,236	5,236	5,236
Recycled Water	2,409	4,000	4,300	4,500	4,500	4,500
Conservation	0	694	795	874	930	930
Total	23,215	37,352	38,419	38,698	38,754	38,754

The current contract with SFPUC indicates that if certain conditions are met, the City may be required to reduce or eliminate its take from SFPUC. Table 1b incorporates all of the assumptions listed above and the additional assumption that the SFPUC supply will be unavailable for 2018 and beyond. In a worst case scenario, the City of Santa Clara could lose its anticipated 4.5 MGD (5,040 acre-ft/yr) supply from SFPUC, reducing the total water supply projections by 5,040 acre-ft/yr from 2018 through 2035.

Table 1b – Without SFPUC
Water Supply Projections by Water Source (acre-ft/yr)[3]

Source	2010	2015	2020	2025	2030	2035
Groundwater	13,980	23,048	23,048	23,048	23,048	23,048
SFPUC	2,454	5,040	0	0	0	0
SCVWD	4,372	4,570	5,236	5,236	5,236	5,236
Recycled Water	2,409	4,000	4,300	4,500	4,500	4,500
Conservation	0	694	795	874	930	930
Total	23,215	37,352	33,379	33,658	33,714	33,714

If the City was required to eliminate the usage of water from SFPUC, the City would consider maintaining its existing 2010 UWMP total water supply projections by increasing groundwater utilization, increasing imported SCVWD surface water supply, or a combination of the two supplies.[4]

The City of Santa Clara's 2002 Water Master Plan examined possible mitigation measures to be taken in the event that the supply from SFPUC was lost either temporarily or long term. These mitigations included the increased use of groundwater and treated water from the District. As a result of the analysis

[1] Water Supply Agreement between The City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County, July 2009.

[2] Page 89 of Master agreement provides "The allocation of that total amount (9 MGD) between San Jose and Santa Clara shall be as set forth in their individual Water Sales Contracts" Santa Clara's portion of the 9 mgd is half.

[3] City of Santa Clara Urban Water Management Plan, page 24 (amended to show an increase in SCVWD treated water starting 2017).

[4] City of Santa Clara 2002 Water Master Plan.

in the 2002 Master Plan two new wells (wells 32 and 34) were installed in the area north of Highway 101 in a previously untapped area of the basin. In the last 10 years, from 2004-2013, the City of Santa Clara has pumped between 13,930 acre-ft and 15,943 acre-ft of groundwater annually. These volumes are lower than the amount that has historically been pumped. The historic high for groundwater utilization occurred in FY1986/87 when 23,048 acre-ft was extracted. The historic high for groundwater production also occurred prior to the installation of wells 32 and 34, in a previously untapped portion of the City. Each of these wells has a production rating of 1,000 gpm or 1,613 acre-ft/year. Therefore, the use of 23,048 acre-ft/yr as a supply for groundwater is conservative based on the availability of the two new wells.

Increased use of recycled water could also be used to mitigate a portion of the loss of other supplies. From 2011 - 2012, the City expanded its recycled water distribution system by 30 percent and increased the system from 26 miles to 34 miles. In 2014, recycled water accounted for 16% of total water sales.

PROJECTED POTABLE WATER SUPPLY

The Santa Clara potable water system is separated into four interconnected zones in order to provide optimum pressures throughout the City. The four pressure zones and the location of the Project are shown in Figure 1.

Figure 1

Pressure Zones

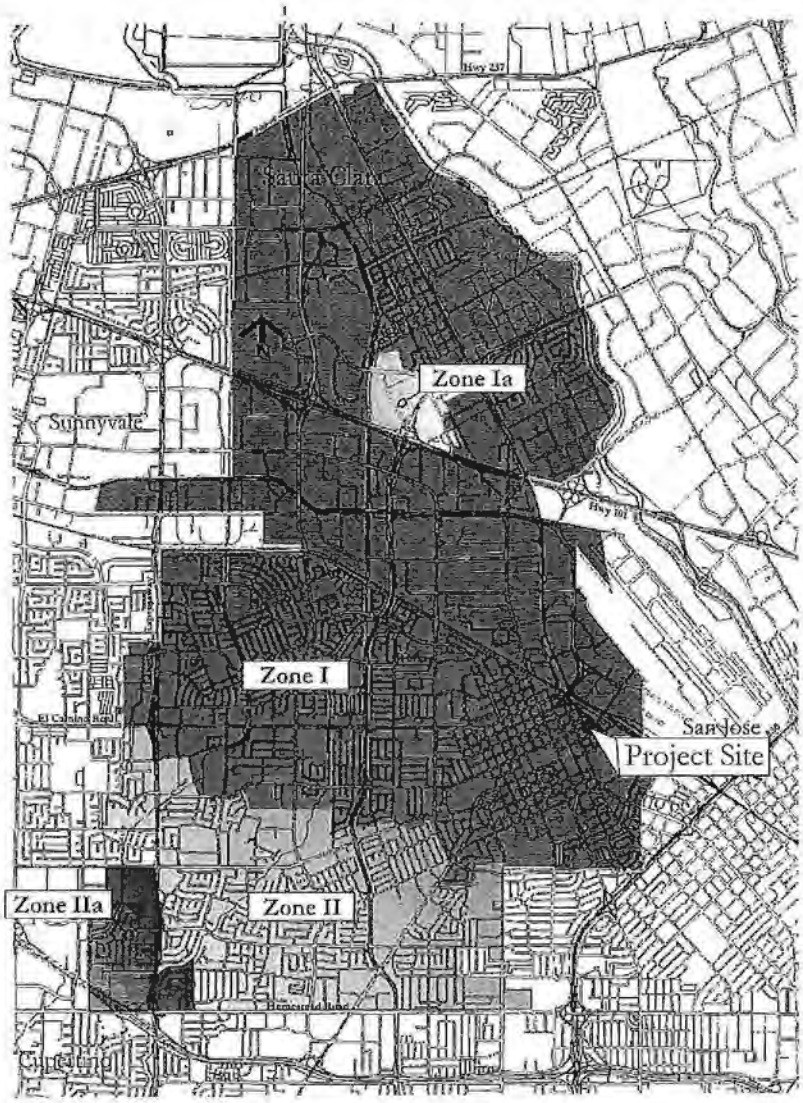
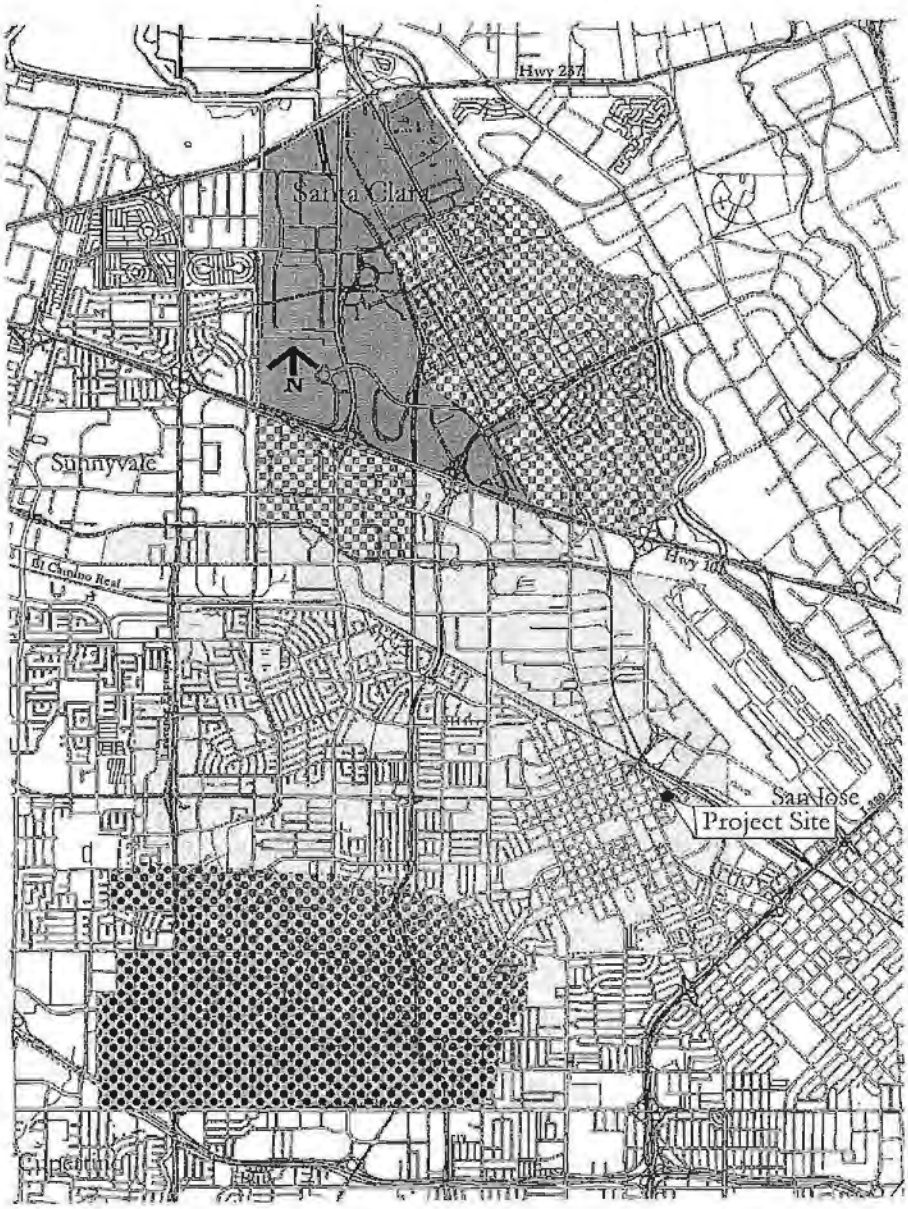


Figure 2 shows the water source by area. As shown in Figure 2, water purchased from SFPUC is used to supply water north of Highway 101. Treated surface water purchased from the SCVWD is used in conjunction with groundwater to supply water to the southern portion of the City. The Project is in an area of Zone I that is mainly served by the City's well water supply.

Figure 2

Source of Water by Area



SFPUC Hetch-Hetchy

Blend of SFPUC Hetch Hetchy and Well Water

City of Santa Clara Well Water

A blend of Well Water and SCVWD treated surface water

GROUNDWATER

PROJECTED GROUNDWATER SUPPLY

The City of Santa Clara is supplied by groundwater from the Santa Clara Valley Groundwater Basin. The Santa Clara Valley Groundwater Basin extends from the Coyote Narrows at Metcalf Road in San Jose to Santa Clara County's northern boundary. The basin is bounded on the west and east by the Santa Cruz and Diablo Ranges, respectively. The mountain ranges converge at Coyote Narrows to form a sub basin. The sub basin is 22 miles long and 15 miles wide, at its widest point, and has a 225 mile surface area. District staff estimates that the operational storage capacity of the sub basin is 350,000 acre feet with an estimated maximum annual withdrawal of 200,000 acre feet.[5]

The Santa Clara Valley Groundwater Basin is not adjudicated. The allowable withdrawal or safe yield of groundwater by the City of Santa Clara is dependent on a number of factors, including: withdrawals by other water agencies; the quantity of water recharged to the basin; and the carryover storage (water available for use but not used in prior years) from each previous year. The SCVWD estimates the amount of carryover storage in April of each year and reviews and modifies the basin's groundwater management strategy to avoid subsidence while allowing for groundwater use as needed to meet demand.[6] The most recent evaluation by the California Department of Water Resources indicates that the Santa Clara Valley Groundwater Basin and the Santa Clara Sub-basin are not in overdraft.[7,8]

The City currently operates 27 wells for extracting potable groundwater from the basin. The City's wells are strategically distributed around the City. The exact location of the wells is not included in this document for security reasons. This distribution of wells adds to the reliability of the water system and minimizes the possibility of localized subsidence due to localized over-drafting. The 2010 UWMP contained a detailed analysis of the historic pumping rates and the depth to water at each well. Minor seasonal fluctuations in the depth to water were noted in the analysis but there is no evidence of declining water table or over-drafting.

The City has well capacity that is not currently being used.[9] The water utility analyzes the capacity of the wells by dividing the actual groundwater production by the theoretical groundwater production if all wells were run at their rated capacity. This calculation yields a "utilization factor" which approximates the percentage of time the wells are run or the percentage of the total groundwater production capacity that is utilized. The utilization factor for the City's wells is currently 22% with several wells being used at less than 10% of their rated capacity. The District has not determined a resource limit to the City's use of groundwater; rather it has represented its ability to obtain sufficieot quantities of water supply for the overall water requirements as stated in the City's 2010 UWMP. The amount of groundwater pumped over the period from 1985 to 2014 is shown in Figure 3 below.

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[5] City of Santa Clara 2010 Urban Water Management Plan, page 28

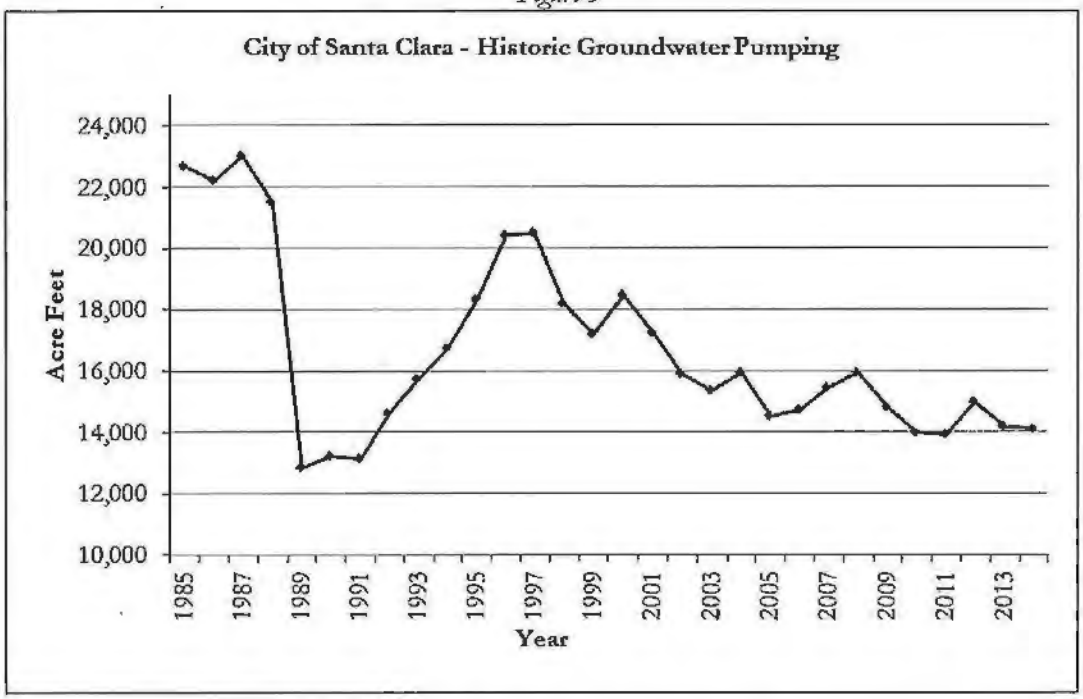
[6] Santa Clara Valley Water District, 2010 Urban Water Management Plan

[7] Department of Water Resources, California's Groundwater Update 2003, DWR Bulletin 118 www.groundwater.water.ca.gov/bulletin118/update2003.

[8] 3515 Monroe Street WSA approved by City Council Resolution #13-8090 on December 3, 2013, Appendix E

[9] City of Santa Clara 2010 Urban Water Management Plan, Appendix G

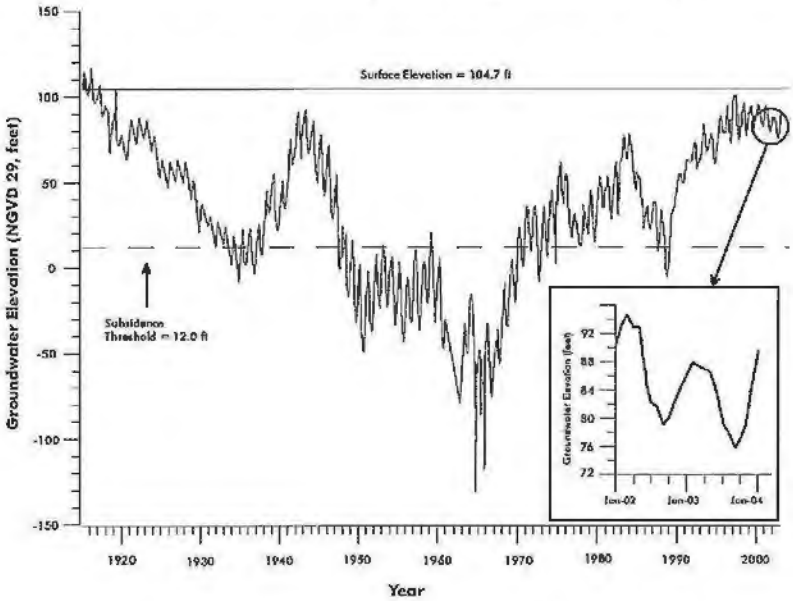
Figure 3



The most recent information from DWR indicates that neither the Santa Clara Valley Basin, nor the Santa Clara Sub Basin, is currently listed as over drafted.[10] As shown in Figure 4 below, even when the City was at the historic peak for groundwater production FY1986/87, the basin was not approaching overdraft.

Figure 4

Hydrograph for Santa Clara Valley Sub Basin Index Well (07S01E07R013)[11]



[10] Department of Water Resources, California's Groundwater Update 2003, DWR Bulletin 118 www.groundwater.water.ca.gov/bulletin118/update2003/

[11] Santa Clara Valley Water District, Groundwater Conditions 2002/2003, January 2005

The 2010 UWMP projects that the City's groundwater use will increase from approximately 13,980 acre feet per year in 2010 to 23,048 acre-feet per year in 2015 and remain at that level in subsequent years (see Table 1a/b). This conservative projection is unlikely to come to fruition as 2014 groundwater use totaled 14,096 acre-feet, 8,952 acre-feet below projected 2015 ground water use. At the time that the 2010 UWMP was being prepared, groundwater use projections for the Santa Clara Valley Groundwater Basin had not been finalized for water planning purposes by other water providers in the region. This led the City to use each water provider's 2005 groundwater use projections. In 2005, agencies only projected groundwater use through 2030. At that point, in the absence of retailer projections for 2035, a rough projection was made using the average five-year incremental increase in cumulative groundwater demand. As a result, the 2010 UWMP cumulative groundwater demand for all groundwater producers in the basin, using conservative future extraction assumptions, indicate that by 2035, groundwater use could be approximately 166,000 acre-feet per year compared with an estimated withdrawal capacity of approximately 200,000 acre-feet per year.[12]

Groundwater use projections were subsequently finalized in the 2010 UWMPs adopted by other basin users. Table 2 compares the 2010 UWMP estimates with the projected groundwater use identified by each water service provider for 2035.

Table 2
Projected Santa Clara Valley Groundwater Basin Use
2035 (acre-feet per year)

Retailer	City(s) Served by Retailer	Projected Ground Water Use in Santa Clara 2010 UWMP (Table 34)	Projected Ground Water Use in other jurisdictions' 2010 UWMPs
		2035	2035
City of Santa Clara	City of Santa Clara	23,048	23,048
San Jose Water Company	Campbell, Cupertino, San Jose, Saratoga, Los Gatos, Monte Sereno	78,522	61,940
San Jose Municipal Water System	San Jose	25,085	15,888
Great Oaks Water Company	San Jose	32,314	9,302
California Water Service Company (Los Altos District)	Cupertino, Los Altos, Los Altos Hills, Mountain View, Sunnyvale	4,447	3,492
City of Mountain View	Mountain View	45	285
City of Sunnyvale	Sunnyvale	2,940	1,000
TOTAL		**166,400**	**114,955**

Sources:
San Jose Water Company 2010 UWMP, page 19 Table 16;
San Jose Municipal Water System 2010 UWMP, page 4-7, Table 4-4;
Great Oaks Water Company 2010 UWMP, page 19 Table 19A;
California Water Service Company (Los Altos Suburban District) 2010 UWMP, page 43, Table 4.1-1;
City of Mountain View 2010 UWMP page 5-22, Table 5-6;
City of Sunnyvale 2010 UWMP, page 4-5, Table 4-4.

Table 2 shows that the actual groundwater use projections are substantially lower than estimated for the water service providers considered in the 2010 UWMP. By 2035, the 2010 UWMPs of all Santa Clara Valley Groundwater Basin extractors indicate that Santa Clara Valley Ground Water Basin use, including the City's use of 23,048 acre-feet per year, will be approximately 114,955 acre-feet per year, or more than

[12] 2010 UWMP, page 54, Table 34.

50,000 acre-feet per year lower than estimated in the City of Santa Clara 2010 UWMP. The projected cumulative 2035 demand level would also be substantially below the basin's estimated 200,000 acre-feet per year safe yield. Although the current projected water supplies already cover the projected growth in the 2010 UWMP, the remaining available safe yield groundwater supplies coupled with the City's lower than projected current groundwater demands provide room for growth above and beyond 2035 projections. The groundwater demand projections finalized after the City adopted the 2010 UWMP provide further evidence that the City's projected groundwater use would not individually or cumulatively generate adverse effects to local or regional groundwater supplies and aquifer conditions over time.[13]

PROJECTED RECYCLED WATER SUPPLY

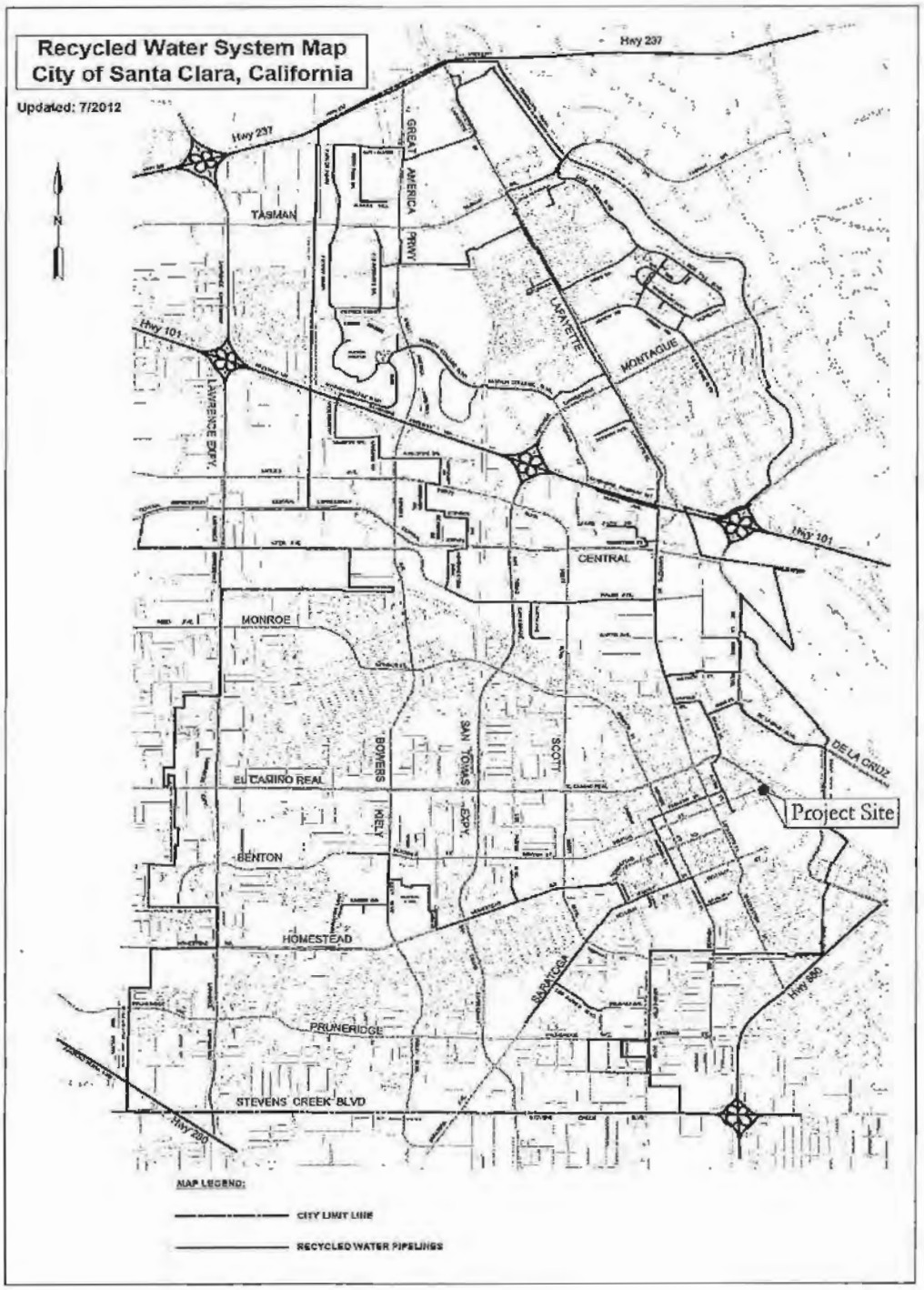
Recycled water is not currently available at the proposed site. Therefore, at this time recycled water will not be used for the Project or this water supply assessment.

The recycled water available in the City is provided by South Bay Water Recycling (SBWR) and meets current regulations of the California State Water Resources Control Board, Division of Drinking Water (DDW) for unrestricted use. This designation allows for the use of recycled water for irrigation and industrial use within specific guidelines. As noted in the 2010 UWMP there is ample capacity within the recycled water system. The San Jose/Santa Clara Water Pollution Control Plant currently produces in excess of 100 million gallons per day of water that meets recycled water standards, however system-wide recycled water sales are approximately 14 million gallons per day. The recycled water distribution system is shown in Figure 5 below.

The recycled water system has operated since 1989 with minimal interruptions in service. SBWR strives to reduce the number of instances, duration, and magnitude of any service interruptions. The use of recycled water at any site is contingent upon the completion of the necessary arrangements in accordance with SBWR, City of Santa Clara and DDW rules and regulations regarding the use of recycled water. In addition, payment must be made of applicable fees, rates and charges. These fees/rates and charges may include but are not limited to charges for major facilities described above and delivery charges for the recycled water used.

[13] 3515 Monroe Street WSA approved by City Council Resolution #13-8090 on December 3, 2013, Appendix E

Figure 5


Recycled Water System Map
City of Santa Clara, California
Updated: 7/2012
Hwy 237
Hwy 237
TASMAN
GREAT AMERICA PRWY
LAFAYETTE
MONTAGUE
Hwy 101
LAWRENCE EXPY
Hwy 101
CENTRAL
MONROE
BOWERS
SAN TOMAS
SCOTT
DE LA CRUZ
EL CAMINO REAL
KIELY
LEXY
Project Site
BENTON
HOMESTEAD
SARATOGA
Hwy 280
PRUNERIDGE
STEVENS CREEK BLVD
Hwy 280
MAP LEGEND:
CITY LIMIT LINE
RECYCLED WATER PIPELINES

The 2010 UWMP projected increases in water demand using an "End Use" model. Two main steps are involved in developing an End Use model: (1) establishing base year water demand at the end-use level (such as toilets, showers) and calibrating the model to initial conditions and (2) forecasting future water demand based on future demands of existing water service accounts and future growth in the number of water service accounts. The calculations assumed that the density of residential housing would increase over the study period and that redevelopment and changes would result in water demand increases in other sectors.

After establishing the base year, the water demand at the end-use is calculated by breaking down total historical water use for each type of water service account (single family, multifamily, commercial, irrigation, etc.) to specific end uses (such as toilets, faucets, showers, industrial processes and irrigation).[14]

The basic methodology of the model is to break down water usage into an average consumption per account type. Projections are made regarding potential reductions in average consumption based on water conservation programs, and natural replacement of less water efficient processes with more efficient processes. These projections were used to adjust the future average consumption per account figures. Projections of the future number of accounts for each user type of the future number of accounts are also calculated, typically based on other technical studies such as Association of Bay Area Governments ("ABAG") Projections or Census data. The projected number of accounts is based on the projected number of housing units for residential or the projected number of jobs in the case of the industrial and commercial categories. Job projections were taken from the ABAG publication, Silicon Valley Projections. Once both the number of accounts and the average consumption per account are calculated, the number of accounts for each future year was multiplied by the average consumption per account for that year to arrive at a total water demand for each user type. The 2010 UWMP projected increases for each user category in five-year increments. The projected increases for each category are contained in Table 3 below.

Table 3
Projected changes in water demand from the 2010 UWMP (acre-feet)

Year	SFD	MFD	Commercial	Industrial	Institutional	Municipal	System Loss	Total
2010-2014	3,097	1,242	(638)	2,218	282	251	1	6,453
2015-2019	481	151	359	369	48	36	50	1,494
2020-2024	360	96	395	390	37	29	45	1,352
2025-2029	381	122	434	415	37	28	49	1,466
2030-2035	481	218	91	452	41	31	48	1,332

The City has recognized that the end use model used to derive the demand projections in both the 2010 UWMP and the 2005 UWMP generates conservative estimates of future water demand. The 2005 UWMP, for example, overestimated the City's actual water use in 2010—the first five-year projection analyzed in the plan—by more than 7,770 acre-feet. The 2005 UWMP also projected that City water use in 2005 would increase by approximately 2,200 acre-feet in 2010. In 2010 the City's actual water use declined by approximately 3,200 acre-feet from 2005.[15]

The 2010 UWMP projections assume that compared to 2010, City water demand will grow by more than 8,000 acre-feet in 2015, a relatively large 35% increase. As shown in Table 4, however, the City's

[14] For purposes of this Assessment, office space is a subset of a commercial end-use.

[15] 3515-3585 Monroe Street WSA approved by City Council Resolution # 11-7836 on March 15, 2011, pages 15-16, Tables 7 and 8.

actual water demand since 2010 has not reflected the growth in water consumption assumed in the 2010 UWMP. If future water deliveries follow the same growth rate as in the actual water deliveries for 2010-2012, then by 2015 overall water deliveries will be significantly less than the levels projected in the 2010 UWMP.

Table 4
Actual City Water Deliveries and System Losses
Compared with Projected Water Deliveries, (acre-feet per year)

	2010 (actual)	2011	2012	2013	2014
Actual Water Deliveries	20,806	20,687	21,193	21,600	19,800
Projected Water Deliveries, 2010 UWMP	20,806	22,097	23,387	24,677	25,968
Difference		(1,410)	(2,194)	(3,077)	(6,168)

Source: 3700 El Camino Real WSA approved by City Council Resolution # 13-8031 on April 23, 2013, Table 7.
Note: Includes water deliveries and system losses reported by the City and excludes recycled water use.

As discussed above, the 2005 UWMP projections overestimated the City's 2010 water use by more than 7,770 acre-feet per year (actual 2010 use of 23,213 acre-feet per year versus projected use of 30,986 acre-feet per year). As shown in Table 5 and Figure 6, however, the end use model used to prepare the 2010 UWMP estimates that City demand will rapidly increase after 2010 and eventually approach the levels projected for 2030 in the 2005 UWMP.

Table 5
Projected Water Demand, 2010-2030
2005 UWMP and 2010 UWMP

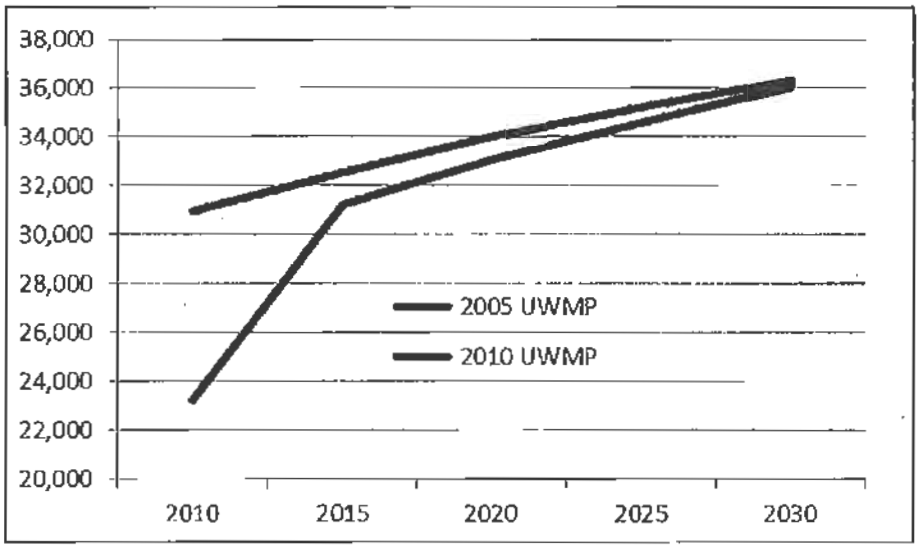
	2010	2015	2020	2025	2030
2005 UWMP	30,986	32,559	34,004	35,254	36,337
2010 UWMP	23,213	31,259	33,053	34,605	36,071
Change	(7,773)	(1,300)	(951)	(649)	(266)

Sources: see Table 1; 3515-3585 Monroe Street WSA approved by City Council Resolution # 11-7836 on March 15, 2011, page 15, Table 7.

Table 5 and Figure 6 show that following a large assumed demand increase of more than 8,000 acre-feet per year by 2015, the end use model produces demand estimates in the 2010 UWMP that approximate the demand levels and trends projected the 2005 UWMP. By 2030, the last projection year in the 2005 UWMP, the difference between the projected demand levels in each plan is only 266 acre-feet per year.[16]

[16] 3515 Monroe Street WSA approved by City Council Resolution #13-8090 on December 3, 2013, Appendix E

Figure 6
Projected Water Demand Trendlines
2005 UWMP and 2010 UWMP (acre-feet per year)



Sources: see Table 5.

The 2010 UWMP assumption that the City's demand will eventually approximate the 2005 UWMP projection levels appears to be conservative because the 2005 projections are known to have significantly overstated actual City demand in 2010. As shown in Table 4, actual water demand after the 2010 UWMP was adopted has also been significantly below the rate of growth projected for the 2010-2015 period. Reflecting these results, WSAs prepared and approved by the City since the 2010 UWMP was adopted have concluded that "overall system demand is significantly lower than … projected by the 2010 UWMP" and that "overall, the [City's] water demands are less than projected by the End Use model."[17] Empirical data since 2005 provides substantial evidence that the end use model used to prepare the 2010 UWMP generates conservative projections that are significantly higher than actual City water use over time.[18]

PROJECTED WATER DEMAND FOR THE PROPOSED PROJECT

The total water demand for this Project is calculated to be 60.2 acre ft/yr. This represents an increase in water demand of 58.4 acre ft/yr over the historic water demand at the site when the historic use of 1.7 acre ft/yr is subtracted from the Project's water demand. The projected increase of 58.4 acre ft/yr is within the growth projections in the 2010 UWMP. The calculations for the Project's water demand was determined using project square footage found in Appendix D.

ESTIMATED HISTORIC WATER USAGE FOR THE MISSION TOWN CENTER PROJECT

The historic water usage of 1.7 acre ft/yr for the former land use at the original Project site was taken into account in the 2010 UWMP, therefore this assessment will only address the City's ability to meet the increased water demand noted earlier. Based on the calculated water demand for the proposed Project

[17] *See, e.g.*, (a) the 3700 El Camino Real WSA approved by City Council Resolution # 13-8031 on April 23, 2013, Page 14; (b) the 3000 Bowers Avenue WSA approved by City Council Resolution # 12-7963 on August 28, 2012, page 13; and (c) the 2200 Lawson Lane WSA approved by City Council Resolution #12-7964 on August 28, 2012, page 13.

[18] 3515 Monroe Street WSA approved by City Council Resolution #13-8090 on December 3, 2013, Appendix E

minus the historic usage at the site, the net increase in the water demand for this Project is calculated to be 58.4 acre ft/yr, which is within the growth projections in the 2010 UWMP.

ESTIMATED WATER DEMAND FOR PROPOSED DEVELOPMENT

Water demand for the proposed Project was calculated based on the average daily demand for the 27,000 gross square feet (gsf) of retail space, 4,000 gsf of office space, 6,000 gsf of amenity space, 50,000 gsf of new landscape, and 385 multifamily residential units. The method and data used to arrive at the estimated water demand for the Project are found in Appendix D of this Assessment.

WATER DEMAND TO BE MET BY RECYCLED WATER

Recycled water is not currently available at the proposed site. Therefore, at this time recycled water will not be used for the Project or this water supply assessment.

SUMMARY OF EXISTING AND ESTIMATED WATER DEMANDS

The complete analysis of the estimated water demands is contained in Appendix D of this Assessment. A summary of the existing and estimated water demands for the Project are found in Table 6 below.

Table 6
Existing and Estimated Water Demand Per Year for Project Site

	Status	Gal/yr	Acre-ft/yr
Office Space	Proposed	204,400	0.6
Retail Space	Proposed	784,980	2.3
Amenity	Proposed	240,900	0.7
Residential	Proposed	17,003,525	52.2
Landscape Irrigation	Proposed	1,405,250	4.3
Historical Usage for Project Site	Existing	569,400	1.7
Total Demand (increase per year)		19,603,055	58.4

PROJECTED WATER DEMAND FOR OTHER PROPOSED PROJECTS

The projected water demand for other development projects that were not specifically considered in the development of the 2010 UWMP were analyzed in conjunction with this Assessment. The complete listing of projects and their associated water demands are contained in Appendix E. Tables 7 and 8 show a summary of the projected water demand changes by user category. If the timeframe for a project to be built spans several years, the earliest possible date was used to calculate the changes in Tables 7 and 8. The use categories of single-family dwelling ("SFD"), multi-family dwelling ("MFD"), commercial, industrial, institutional, and municipal match the use categories used in the development of the 2010 UWMP. The values in Tables 7 and 8 below summarize the projected changes in water demand for each user category and the planning period in which the change is expected to occur. If a proposed project resulted in a change of use, such as a commercial building being converted to single-family residential housing, the existing water demand was subtracted from the corresponding category and the new water demand was added to the category for the new use. Therefore, in the example cited earlier, the historic water demand for the commercial building would be subtracted from the commercial category and the new demand for the proposed single-family dwellings would be added to the SFD column.

Table 7

Changes in water demand for proposed projects excluding Mission Town Center (Acre-ft/yr)

Year	SFD	MFD	Commercial	Industrial	Institutional	Municipal	Total
2010 - 2014	0.0	0.0	752.5*	0.0	0.0	0.0	752.5
2015 - 2019	158.0	430.7	518.1	0.0	0.0	-309.5	797.3
2020 - 2024	0.0	0.0	800.2	0.0	0.0	0.0	775.6-800.2*
2025 - 2029	0.0	0.0	670.3	0.0	0.0	0.0	670.3
2030 - 2034	0.0	0.0	217.4	0.0	0.0	0.0	217.4-224.6*

* Range of values due to 2 possible development schemes for City Place project (Resolution #15-8250)

Table 8 below contains the calculated changes in water demand from all the proposed projects listed in Appendix E, including the projected water demand from the Mission Town Center project. The analysis performed was identical to the analysis for Table 7 above. For Table 8, this project's historical demand of 1.7 acre ft/yr is broken down to 1.0 acre ft/yr of single family demand and 0.7 acre ft/yr of commercial demand. Because this project does not include any single family dwelling development, this results in a 1.0 acre ft/yr reduction in single family demand for 2015-2019. Although the increase in multiple-family and commercial demands exceeds the amounts in Table 3, the City is still within the water demand projections for all category uses in each five year period.

Table 8

Changes in water demand for proposed projects including Mission Town Center (Acre-ft/yr)

Year	SFD	MFD	Commercial	Industrial	Institutional	Municipal	Total
2010 - 2014	0.0	0.0	752.5*	0.0	0.0	0.0	752.5*
2015 - 2019	157.0	482.9	525.4	0.0	0.0	-309.5	855.8
2020 - 2024	0.0	0.0	800.2	0.0	0.0	0.0	775.6-800.2**
2025 - 2029	0.0	0.0	670.3	0.0	0.0	0.0	670.3
2030 - 2034	0.0	0.0	217.4	0.0	0.0	0.0	217.4-224.6**

* Updated water demand to reflect the replacement of the original 3333 Scott Blvd. Water Supply Assessment's water demand of 384.4 acre-ft/yr. (Resolution #12-7933). This updated water demand takes into account the historical usage of 9.5 acre-ft/year.
** Range of values due to 2 possible development schemes for City Place project (Resolution #15-8250)

Water demands for some user categories are higher than was projected by the End Use Model, however, these are offset by other categories of users that have water demands that were lower than projected. The current overall system demand is significantly lower than was projected by the 2010 UWMP. Table 9 shows the projected demands from the 2010 UWMP. Table 10 shows the actual potable water demand for calendar years 2005 through 2014. The recycled water demand for calendar year 2013 was 3,126 acre ft. The 2010 UWMP demonstrated that adequate water supplies exist to meet the demands noted in Table 9 during a normal water year. Overall, the water demands are less than projected by the End Use Model. Therefore, the increase in water demand from the proposed development falls within the total projected water demand increases described in the 2010 UWMP.

Table 9

2010 UWMP Demand Projections by Category

Year	SFD	MFD	Commercial	Industrial	Institutional	Municipal	System Loss	Total
2015	8,603	5,868	4,879	5,150	950	723	1,086	27,259
2020	9,084	6,019	5,238	5,519	998	759	1,136	28,753
2025	9,444	6,115	5,633	5,909	1,035	788	1,181	30,105
2030	9,825	6,237	6,067	6,324	1,072	816	1,230	31,571
2035	10,306	6,455	6,158	6,776	1,113	847	1,278	32,933

Table 10
Actual Potable Water Sales (Acre Ft-yr)

Year	SFD	MFD	Commercial	Industrial	Institutional	Municipal	System Loss	Total
2005	6,346	5,013	6,963	4,972	903	1,207	996	26,400
2006	6,312	5,044	6,924	5,111	902	1,200	1,222	26,715
2007	6,535	5,288	7,310	5,022	1,025	1,396	707	27,283
2008	6,425	5,166	7,012	4,720	955	1,267	718	26,263
2009	5,914	4,771	5,668	3,246	686	536	888	21,709
2010	5,506	4,626	5,517	2,932	668	472	1,085	20,806
2011	5,516	4,658	5,622	2,603	617	482	1,188	20,687
2012	5,843	4,754	5,896	2,460	671	522	1,047	21,193
2013	5,976	4,836	5,886	2,408	709	473	1,387	21,675
2014	5,195	4,483	5,742	2,134	671	491	1,805	19,800

COMPARISON OF WATER DEMAND AND WATER SUPPLY

SINGLE DRY YEAR

The 2010 UWMP projects that during a single dry year, the City projects no reduction in supplies from groundwater. Per a SCVWD document dated March 16, 2011[19], treated surface water is not expected to be reduced in a single dry year event until 2030, when it could be reduced anywhere from 0-20%. However, in 2014 the SCVWD did call for a 20% reduction in treated surface water in the third year of a multi-year drought. For planning purposes, all projections assume a worst case scenario in which the 2017 increase in SCVWD treated water will not be available along with a 20% reduction in the remaining SCVWD treated water. SFPUC has indicated that during a single critical dry year, SFPUC will reduce their total water supply by 10% from 184 mgd to 152.6 mgd in a single dry year. The City of Santa Clara will receive 1.17% of the 152.6 mgd.[20] Recycled water use and water conservation are projected to remain unchanged or potentially increase due to public awareness, during a critical dry year. The resulting analysis of available supplies is shown in Tables 11a and 11b below. During a single critical dry year, there is no projected shortfall in total available water supplies if the City receives Hetch Hetchy water until 2035. If the City does not receive Hetch Hetchy water, after contract negotiations with SFPUC in 2018, there is a projected water supply shortfall after 2030. However, future water supply projects are expected to provide between 5,000-6,000 acre-feet per year.[21] This additional supply will help to cover any expected shortage until 2030 in a single dry year drought if the City loses the current SFPUC contracted Hetch Hetchy water.

Table 11a
Projected Supply versus Demand Comparison – Single Dry Year (Acre-ft/yr)

Year	2015	2020	2025	2030	2035
Supply Totals	34,313	34,714	34,993	34,135	34,135
Demand Totals	31,259	33,053	34,605	36,071	37,433
Difference as % of Supply	8.9%	4.8%	1.1%	-5.7%	-9.7%
Difference as % of Demand	9.8%	5.0%	1.1%	-5.4%	-8.8%

Table 11b

[19] City of Santa Clara 2010 Urban Water Management Plan, Appendix H

[20] City of Santa Clara 2010 Urban Water Management Plan, Appendix I

[21] City of Santa Clam 2010 Urban Water Management Plan, page 46

Projected Supply versus Demand Comparison – Single Dry Year Without SFPUC Supply (Acre-ft/yr)

Year	2015	2020	2025	2030	2035
Supply Totals	34,313	32,713	32,992	29,392	29,392
Demand Totals	31,259	33,053	34,605	36,071	37,433
Difference as % of Supply	8.9%	-1.0%	-4.9%	-22.7%	-27.4%
Difference as % of Demand	9.8%	-1.0%	-4.7%	-18.5%	-21.5%

MULTIPLE DRY YEAR

During a multiple dry year event, the City will shift potable water demands between its sources in cooperation with neighboring water retailers and wholesalers to reduce pressure on regional sources in decline. Per a SCVWD document dated March 16, 2011[22], treated surface water was not expected to be reduced in a multiple dry year event until 2025, when it could be reduced anywhere from 0-20%. However, in 2014 the SCVWD did call for a 20% reduction in treated surface water in the third year of a multi-year drought. For planning purposes, all projections assume a worst case scenario in which the 2017 increase in SCVWD treated water will not be available along with a 20% reduction in the remaining SCVWD treated water. SFPUC has indicated that during multiple critical dry years the City can expect a maximum reduction of SFPUC water supplies of 43% of normal.[23] SFPUC has indicated that in the second and third year of a drought, they will reduce their water supply by 20% from 184 mgd to 132.5 mgd. For SFPUC supplies, Table 12a assumes a worst-case scenario based on a replication of the 1987-1992 multiple dry year event. The City of Santa Clara will still receive 1.17% of 132.5 mgd.[24] Table 11b assumes that SFPUC water is unavailable after 2018.

Recycled water use is projected to remain unchanged during a multiple dry year event, however recent drought conditions have shown a significant increase in recycled water connection requests. The City also assumes no change in water conservation when projecting demands for multiple dry year events for conservative projecting purposes. The resulting analysis of all available supplies is shown in Table 12a and 12b below. During a multiple critical dry year event, there is a projected shortfall in available water supplies independent of whether the City receives or does not receive Hetch Hetchy water after contract negotiations with SFPUC in 2018. However, future water supply projects are expected to provide between 5,000-6,000 acre-feet per year.[25] This additional supply will help to cover any expected shortage until 2030 in the third year of a multi-year drought if the City loses the current SFPUC contracted Hetch Hetchy water.

Table 12a
Supply and Demand Comparison – Multiple Dry-Year Events (assumes SFPUC supply exists beyond 2018)

		2015	2020	2025	2030	2035
Multiple-dry year *first* year supply	Supply totals	37,352	37,753	38,032	35,088	35,088
	Demand totals	31,259	33,053	34,605	36,071	37,433
	Difference	6,093	4,700	3,427	(983)	(2,345)
	Difference as % of Supply	16.3%	12.4%	9.0%	-2.8%	-6.7%
	Difference as % of Demand	19.5%	14.2%	9.9%	-2.7%	-6.3%
Multiple-dry year *second* year supply	Supply totals	37,352	37,753	38,032	35,088	35,088
	Demand totals	32,726	34,734	36,371	37,949	37,949
	Difference	4,626	3,019	1,661	(2,861)	(2,861)

[22] City of Santa Clara 2010 Urban Water Management Plan, Appendix H

[23] City of Santa Clara 2010 Urban Water Management Plan, Appendix I

[24] City of Santa Clara 2010 Urban Water Management Plan, Appendix L

[25] City of Santa Clara 2010 Urban Water Management Plan, page 46

	Difference as % of Supply	12.4%	8.0%	4.4%	-8.2%	-8.2%
	Difference as % of Demand	14.1%	8.7%	4.6%	-7.5%	-7.5%
Multiple-dry year *third* year supply	Supply totals	37,352	37,753	38,032	35,088	35,088
	Demand totals	33,163	35,064	36,674	38,210	38,210
	Difference	4,189	2,689	1,358	(3,122)	(3,122)
	Difference as % of Supply	11.2%	7.1%	3.6%	-8.9%	-8.9%
	Difference as % of Demand	12.6%	7.7%	3.7%	-8.2%	-8.2%

Table 12b

Supply and Demand Comparison – Multiple Dry-Year Events(assumes SFPUC supply does not exist beyond 2018)

		2015	2020	2025	2030	2035
Multiple-dry year *first* year supply	Supply totals	37,352	32,713	32,992	33,048	33,048
	Demand totals	31,259	33,053	34,605	36,071	37,433
	Difference	6,093	(340)	(1,613)	(3,023)	(4,385)
	Difference as % of Supply	16.3%	-1.0%	-4.9%	-9.1%	-13.3%
	Difference as % of Demand	19.5%	-1.0%	-4.7%	-8.4%	-11.7%
Multiple-dry year *second* year supply	Supply totals	37,352	32,713	32,992	33,048	33,048
	Demand totals	32,726	34,734	36,371	37,949	37,949
	Difference	4,626	(2,021)	(3,379)	(4,901)	(4,901)
	Difference as % of Supply	12.4%	-6.2%	-10.2%	-14.8%	-14.8%
	Difference as % of Demand	14.1%	-5.8%	-9.3%	-12.9%	-12.9%
Multiple-dry year *third* year supply	Supply totals	37,352	32,713	32,992	33,048	33,048
	Demand totals	33,163	35,064	36,674	38,210	38,210
	Difference	4,189	(2,351)	(3,682)	(5,162)	(5,162)
	Difference as % of Supply	11.2%	-7.2%	-11.2%	-15.6%	-15.6%
	Difference as % of Demand	12.6%	-6.7%	-10.0%	-13.5%	-13.5%

Even in this worst case scenario, the projected shortfall in available water supply is minimal and well within the margin of error related to the projections and is therefore negligible. The tables above assume no increase in conservation or recycled water use, and also include conservatively overstated future water demands from the 2005 UWMP end use model. The City's actual water use has remained below the levels indicated in the 2010 UWMP using the same methodology.

The projections also assume that conservation savings assumed for normal years will not change during drier hydrological periods. The 2010 UWMP explains the City's legal authority to implement additional voluntary and mandatory conservation measures (e.g., drought curtailment of outdoor irrigation activities) that would significantly reduce water use during a single dry year, multiple dry years or in response to other supply shortfalls. The 2010 UWMP notes, for example, that the projections "…yield a conservative estimate since during a critical multiple dry year event, mandatory conservation measures and increased recycled water usage would be expected to reduce potable water demand"[26]. The 2010 UWMP identifies specific, mandatory water use prohibitions and enforcement mechanisms that the City will implement to reduce water demand as necessary to address water supply limitations in the future.

[26] City of Santa Clara 2010 Urban Water Management Plan, page 84

Table 13

Water Saving Procedures to be Undertaken by the City During Dry Year and Major Supply Interruptions

Plan	Plan 1	Plan 2	Plan 3	Plan 4
Drought Stage	Advisory	Voluntary	Mandatory	Emergency Curtailment
Reduction	Up to 10%	10% to 20%	21 to 49%	50% or greater
1. Water Use Reduction Target				
a) Single family	NA	80% -90% of base year	50% -80% of base year	50% of base year
b) Master metered multi- family	NA	80% -90%of base year	50% -80% of base year	50% of base year
c) Non-residential	NA	80% -90%of base year	50% -80% of base year	50% of base year
2. Water Use Restrictions				
a) Water waste by irrigation	Prohibited	Prohibited	Prohibited	Prohibited
b) Cleaning sidewalks, hard surfaces, etc.	Prohibited	Prohibited	Prohibited	Prohibited
c) Washing vehicle w/o shut off valve on hose	Prohibited	Prohibited	Prohibited	Prohibited
d) Decorative fountains, operating maintaining	No restriction	Prohibited	Prohibited	Prohibited
e) Water for construction purposes	No restriction	Restricted (1)	Restricted (1)	Restricted (1)
f) Water waste due to effective plumbing / leaks	Prohibited	Prohibited	Prohibited	Prohibited
g) Landscape irrigation	No restriction	Prohibited from 9AM to 6PM	Prohibited from 9AM to 6PM	Prohibited
h) Restaurant water service unless patron requests	No restriction	Prohibited	Prohibited	Prohibited
i) New swimming pool or pond construction	No restriction	Restricted	Restricted	Prohibited
j) Filling or refilling swimming pools	No restriction	Restricted	Restricted	Prohibited
k) Hydrant flushing, except for health and safety	No restriction	Prohibited	Prohibited	Prohibited
l) New irrigation connections for new planting	No restriction	Restricted (2)	Restricted (2)	Prohibited (2)
m) Irrigation of golf courses except greens and tees	No restriction	No restriction	Restricted (1)	Restricted (1)
3. Enforcement				
a) First violation	Warning	Warning	Warning, Citation, up to $500 fine	Warning, Citation, up to $500 fine
b) Second violation	Warning	Warning	Warning, Citation, $100 to $1,000 fine	Warning, Citation, $100 to $1,000 fine
c) Subsequent violations	Warning, citation, $100 to $1,000 fine, flow restrictor	Warning, citation, $100 to $1,000 fine, flow restrictor	Warning, citation, $100 to $1,000 fine, flow restrictor, termination of service	Warning, citation, $100 to $1,000 fine, flow restrictor, termination of service
d) Restrictor removal charge	$50	$50	$50	$50
e) Second restrictor removal charge	$100	$100	$100	Remains for duration
(1) Recycled water only can be used; (2) New landscaping supplied by recycled water allowed without restriction.				

Source: 2010 UWMP, page 72, Table 37.

Table 13 shows that the City can feasibly implement and enforce mandatory water use reduction measures that would reduce water demand by more than 50% from normal levels. The largest potential shortfall projected in the 2010 UWMP is approximately 21.5% of demand in a single dry year, without SFPUC supplies, in 2035 (see Table 11b). As shown in Table 13, the City anticipates that demand could be reduced by 20%, the approximate magnitude of the maximum projected shortfall in the 2010 UWMP, by implementing the advisory and voluntary measures included in water use management plans 1-2. If necessary, Table 10 also shows that the City has the capacity to mandate additional demand reductions of 21%-49% under plan 3, and greater than 50% by implementing the measures included in water use management plan 4. These reduction levels would substantially exceed the maximum projected shortfalls in the 2010 UWMP. The 2010 UWMP projections, however, conservatively assume that none of the

demand management measures identified in Table 13 would be implemented during potential shortfall periods. As a result, the projections conservatively overstate the level of City water demand that would be expected to occur during dry years, multiple dry years or other periods of reduced water supply when these measures would be in effect.

The 2010 UWMP identifies several additional conservation programs that the City is implementing or expects to implement in the future. Although the 2010 UWMP reflects conservation savings from some of these measures (see Table 1a, 1b), the projections do not fully account for additional demand reductions, especially during drier periods. The conservation measures identified in the 2010 UWMP include the following:

(a) General Plan policies that focus on producing a reliable, safe potable water supply, promote water conservation, expand recycled water use, and facilitate water supply coordination with the SCVWD[27];

(b) City water supply management measures that increase reliability and reduce potential vulnerability to physical impacts, such as locating wells over a geographically distributed area and maintaining standby power supplies to operate water system facilities during emergencies[28];

(c) The adoption of City ordinances prohibiting wasteful water use[29];

(d) Authority to implement and enforce an outdoor watering schedule that would reduce the frequency and volume of external water use during drier periods[30];

(e) Tracking water consumption for City accounts in a manner that allows for email or other expedited communication regarding water use reduction requirements if necessary to address shortfalls[31];

(f) Providing technical assistance (e.g., water audits) to help reduce water use by high consumption accounts[32];

(g) Providing low-water use landscaping assistance for single family water consumers and for larger landscapes[33];

(h) Offering rebates with the SCVWD for high efficiency clothes washers[34];

(i) Commercial and industrial water conservation technical assistance, including audits, pre-rinse retrofits for food service businesses, and water efficiency rebates[35];

(j) Conservation and recycled water use incentive pricing[36];

(k) A high efficiency toilet retrofit rebate program administered by the SCVWD[37]; and

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[27] City of Santa Clara 2010 Urban Water Management Plan, pages 64-65 Table 36
[28] City of Santa Clara 2010 Urban Water Management Plan, pages 65-70
[29] City of Santa Clara 2010 Urban Water Management Plan, pages 65-71
[30] City of Santa Clara 2010 Urban Water Management Plan, page 71
[31] City of Santa Clara 2010 Urban Water Management Plan, page 78
[32] City of Santa Clara 2010 Urban Water Management Plan, page 87
[33] City of Santa Clara 2010 Urban Water Management Plan, pages 88, 90-91
[34] City of Santa Clara 2010 Urban Water Management Plan, pages 91-92
[35] City of Santa Clara 2010 Urban Water Management Plan, pages 92-94
[36] City of Santa Clara 2010 Urban Water Management Plan, page 94-96
[37] City of Santa Clara 2010 Urban Water Management Plan, pages 97-98

(l) Adoption of a landscaping water conservation ordinance in January, 2011 to reduce water use associated with external irrigation[38].

The 2010 UWMP demand projections do not consider the effects of the City's demand management authority and conservation programs beyond normal year conservation estimates. As a result, the projections overstate the City's demand in general and particularly during drier years when the City would act to reduce demand in response to potential supply shortfalls.[39]

CONCLUSION

The proposed construction of 27,000 gross square feet (gsf) of retail space, 4,000 gsf of office space, 6,000 gsf of amenity space, 50,000 gsf of new landscape, and 385 multifamily residential units located at 602 Fremont Street, 575, 611, 625, and 645 Benton Street, 1188 and 1250 Sherman Street is projected to require 60.2 acre ft/yr of total water use. This represents an increase in total water demand within the City by 58.4 acre ft/yr from historical use on the Project site. The analysis shows that a 58.4 acre ft/yr water demand increase from this Project is consistent with the growth projections in the 2010 UWMP.

This Assessment analyzed the impacts of changes in contractual limitations on water supply, development projects, and other additional factors that have occurred since the original 2010 UWMP was developed. Therefore, based on the analysis contained in this Assessment, the City of Santa Clara Water Utility has determined that there are sufficient water supplies to provide service to the proposed Mission Town Center project.

[38] City of Santa Clara 2010 Urban Water Management Plan, Appendix M

[39] 3515 Monroe Street WSA approved by City Council Resolution #13-8090 on December 3, 2013, Appendix E

APPENDIX A

SCVWD Contract

APPENDIX A

CONTRACT BETWEEN SANTA CLARA VALLEY WATER DISTRICT AND CITY OF SANTA CLARA FOR A SUPPLY OF TREATED WATER

THIS CONTRACT is made and entered into on January 27, 1981, between the SANTA CLARA VALLEY WATER DISTRICT, hereinafter referred to as "District", and CITY OF SANTA CLARA, hereinafter referred to as "Contractor" and supersedes previous water service contracts between District and Contractor.

RECITALS:

A. District has executed contracts with the State of California Department of Water Resources and the United States Bureau of Reclamation, whereby District is and will be entitled to receive imported water and District intends to continue construction of a system within the boundaries of District to distribute water so received.

B. Included within said system are facilities to treat and filter such water; and Contractor is desirous of obtaining a supply of treated water from District.

AGREEMENT: For and in consideration of the mutual promises and covenants herein contained, the parties hereto agree as follows:

ARTICLE A. INTRODUCTORY PROVISIONS

1. Definitions - When used in this contract, the following terms shall have the meanings hereinafter set forth:

a) "Fiscal Year" shall mean each 12-month period during the term hereof commencing July 1 of one year and terminating June 30 of the next succeeding year, both dates inclusive.

b) "Each Contractor", or "Other Contractor", shall mean any entity, public or private, contracting with District for a supply of treated water.

c) The "Act" shall mean the Santa Clara Valley Water District Act, as amended.

d) "Board" shall mean the Board of Directors of the Santa Clara Valley Water District.

2. Term of Contract

a) This contract shall become effective on the date first above written and shall remain in effect for a period of 70 years or until all loans and all bonds, the proceeds of sale of which have been used for the construction of water treatment and distribution facilities have been retired, whichever period shall be longer, provided, however, that in no event shall the term of this contract be deemed to extend beyond the period authorized by law.

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b) The term of this contract may be extended for an additional term of years upon such terms and conditions as may be set forth in a written agreement of the parties hereto executed at least eighteen (18) months prior to expiration of the terms specified in the preceding Subsection 2a. If no such agreement shall be so executed, this contract shall terminate as specified in said Subsection 2a unless at least one year prior to said termination date Contractor shall notify District in writing that Contractor desires to extend the term hereof; in such event, said term shall be extended for an addtional period of five years upon the covenants, agreements and conditions herein contained.

3. Successors and Assigns - Subject to the provisions of the succeeding Section 4 hereof, this contract and all the terms, covenants, agreements and conditions herein contained shall inure to the benefit of and be binding upon the successors and assigns of the parties hereto.

4. Assignment - No assignment or transfer by Contractor of this contract or any part hereof, or of any rights hereunder or interest herein of Contractor, shall be valid unless approved by District, which approval District agrees shall not be unreasonably withheld. The foregoing provisions of this Section 4 to the contrary notwithstanding, no consent shall be required on an assignment to a Public Agency with the power of eminent domain; provided, such Public Agency expressly assumes the obligations of this contract and provided, further, that if said Public Agency assumes only a portion of the obligations of this contract, Contractor shall remain obligated for the remainder, or in the event Contractor shall sell, transfer, or convey any part or parts or its water system to any entity, public or private, Contractor may assign to the purchaser thereof a portion of Contractor's rights, privileges and obligations hereunder and, in the event of any such assignment Contractor shall be relieved of such portion of such obligations of Contractor so assigned if, following such sale, transfer or conveyance, District shall commence to furnish treated water to such entity, or District under a contract with such entity existing prior to such sale, transfer or conveyance increases the amount of treated water delivered to such entity in order to meet in part the increased water requirements of such entity resulting from such sale, transfer or conveyance.

5. Adjustment of Schedule Purchases upon Other Water Service to Projected Service Area - Where Contractor has prepared and submitted a proposed water delivery schedule to District for an ensuing three-year period in accordance with Article B hereof in reasonable anticipation of and reliance upon projected water service by Contractor to its existing or future customers who receive or would receive service within a service area which shall be defined and may be amended from time to time by Contractor and attached hereto, as Exhibit A, and the schedule has been approved and made binding upon Contractor in accordance with Article B hereof, and where, in lieu of Contractor, any agency, public or private shall thereafter provide treated water service to any such customers and the existence of such circumstance and the necessity of Contractor to reduce its delivery schedule being shown to District and acknowledged by District to be facts (such acknowledgment to be in no case unreasonably withheld), then Contractor's said delivery schedule shall at its option be amended promptly in such manner as to reduce Contractor's scheduled water purchases from District hereunder by an amount fairly commensurate with such reduction of Contractor's anticipated or projected water service.

ARTICLE B. WATER SERVICE PROVISIONS

1. Water Delivery Schedules

a) On October 15, 1980, and every three years thereafter, Contractor shall submit in writing a proposed delivery schedule for the ensuing three-year period beginning July 1 of the following year. The proposed delivery schedule shall be submitted on a form provided by the District and shall indicate the amounts of treated water desired by Contractor during each year of the ensuing three-year period. Except as provided in Subsection c of this section, Contractor agrees that in submitting a proposed water delivery schedule it will not request an amount of water for each year which shall be less in total than 95 percent of the amount for the fiscal year containing the maximum amount in the then current three-year schedule unless Contractor shall have assigned or agreed to assign a portion of its rights, privileges, and obligations hereunder pursuant to the provisions of Article A, Section 4, hereof and i) District has consented to such assignment, or ii) Contractor otherwise shall have been relieved of a portion of its obligations hereunder pursuant to the provisions of said Article A, Section 4; that following occurrence of either event specified in the preceding clauses i) and ii), the foregoing provisions of this Subsection a) shall apply only to the unassigned portion of the Contractor's rights and obligations hereunder.

b) Upon receipt of such delivery schedule, District shall review same, and after consultation with Contractor and Other Contractors receiving treated water from District, shall approve such schedule or make such reductions therein as are consistent with District's ability to deliver water to Contractor and Other Contractors; provided, however, that subject to availability of funds, financing policies, construction schedules, and operating schedules, District will make every reasonable effort to approve each proposed delivery schedule submitted by Contractor and Other Contractors. Except as provided in Subsection c of this section, District agrees that it will approve a delivery schedule for said ensuing schedule period which will not be less in total amount for each fiscal year of said schedule period than 95 percent of the maximum fiscal year set forth in the then current schedule period.

c) Notwithstanding the provisions of Subsections a and b of this section, either Contractor or District may request that the minimum amount of water for each fiscal year in the ensuing three-year schedule period be reduced to a lesser minimum amount than prescribed in Subsections a and b. Upon written agreement by both Contractor and District, based on a showing of extraordinary circumstances, the delivery schedule may be approved at such lesser amount.

d) The approved delivery schedule shall be transmitted to Contractor prior to December 31 of the year in which the proposed delivery schedule is submitted. The approved delivery schedule for fiscal years 1976-77 through 1980-81 is set forth in Exhibit B, attached hereto and by this reference made a part hereof.

e) For operating and planning purposes, Contractor shall, on forms provided by District, annually supply District with Contractor's anticipated monthly delivery schedules for the ensuing year and such information reasonably needed by District to determine projected annual deliveries for the next ensuing five years. Contractor's anticipated monthly delivery schedules shall not constitute a committment by Contractor to receive the amounts of water set forth therein but shall establish the monthly schedule amounts of treated water to be delivered to Contractor for certain purposes under Article C hereof.

2. Amounts of Water - Rates of Flow

(a) District agrees to deliver to Contractor during each fiscal year or fractional fiscal year of this Contract, as the case may be, the amounts of treated water set forth on the approved delivery schedule for each year or fractional fiscal year, as the case may be.

(b) District agrees to deliver to Contractor on demand in any month during the term of this contract at least 15 percent of the total amount of treated water which District has theretofore agreed to deliver to Contractor during the applicable fiscal year as shown on the approved delivery schedule.

(c) District further agrees to provide facilities capable of delivering and will deliver the amounts of water prescribed by Subsections a and b of this section on demand of Contractor at rates of flow up to an instantaneous maximum flow rate equivalent to 205 percent of the then current annual volume shown on the approved delivery schedule expressed as an equivalent uniform flow rate over the full year for an aggregate of 72 hours in any month and for such additional hours in any month as District has the capability to deliver at said rate, provided that District, at such times during the remainder of such month when District does not have the capability to deliver at said rate, may reduce such rate to an instantaneous maximum flow rate not to exceed 180 percent of said annual volume expressed as an equivalent uniform flow rate over the full year.

d) Notwithstanding the foregoing, during the period July 1, 1979 to June 30, 1990, District may limit the maximum flow rate for each Contractor to 180 percent of the then current annual volume of that Contractor shown on the approved water delivery schedule expressed as an equivalent uniform rate over the full year. District will give Contractor reasonable prior notice of any such proposed limit of maximum flow rate.

3. Delivery Structures

a) Water delivered to Contractor pursuant to this contract shall be provided from District facilities through delivery structures to be located at such locations as may be mutually agreed upon. Such delivery structures shall be designed and constructed or caused to be constructed by District. Design and bid costs shall be subject to favorable review and approval by the Contractor prior to award of

construction contract for the delivery structure. District shall pay for the cost of the land, automated controls and reporting systems, nozzle turnout and shutoff valve portion of each of said structures, and Contractor shall pay the total cost of acquiring and installing the measuring devices, the vault or housing and the flow regulating devices, if any, of each of said structures as said devices and facilities are shown on Exhibit C attached hereto and by this reference made a part hereof. Upon thirty (30) days' written notice by District, Contractor shall deposit with District prior to such acquisition and installation an amount of money estimated by District to be sufficient to cover such cost to be borne by Contractor. In the event such estimate proves to be low, Contractor shall pay to District upon written demand therefor the difference between District's estimate and the actual cost to be borne by Contractor. In the event such estimate proves to be high, District shall refund to Contractor promptly the difference between the actual cost to be so borne by Contractor and the amount of said deposit.

b) Title to all delivery structures and to all appurtenances up to and including the control valve shall be in District and Contractor shall have no obligations or responsibilities with respect thereto and shall be under no obligation to operate, maintain, repair, replace or relocate the same.

4. Measurement of Water Deliveried - District shall measure all water delivered to Contractor and shall keep and maintain accurate and complete records thereof. For such purpose, District shall install, operate and maintain at all delivery structures such measuring devices and equipment as are satisfactory and acceptable to both parties.

5. Curtailment of Delivery During Maintenance Periods - District will make all reasonable effort to provide continuous service to Contractor but may temporarily discontinue or reduce the delivery of water to Contractor for the purpose of necessary investigation, inspection, maintenance, repair or replacement of any of the facilities necessary for the delivery of treated water to Contractor. District shall notify Contractor as far in advance as possible of any discontinuance or reduction and the estimated duration of such discontinuance or reduction. Recognizing that Contractor will rely on District for uninterrupted deliveries of water particularly during the high water consumption months each year, District agrees to use its best efforts throughout the term of this contract to make any such discontinuance or reduction in the delivery of water only during the period of November through March in any fiscal year. In the event of any discontinuance of or reduction in delivery of water, Contractor may elect to receive the amount of water which otherwise would have been delivered to it during such period under the approved water delivery schedule for that fiscal year at other times during such year, consistent with District's delivery ability considering the then current delivery schedules of all Other Contractors.

6. Suspension of Service Upon Default - In the event of any default by Contractor in the payment of any money required to be paid to District hereunder, District may, upon not less than three months' written notice to Contractor, suspend deliveries of water under this contract for so long as such default shall continue, provided, however, that during such period Contractor shall remain obligated to make all payments required under this contract and provided, further, that such delinquent amount shall accrue interest at the rate of one-half of one percent per month commencing on the

due date of such delinquent amount and continuing until both the principal amount of such charges and the interest thereon are paid in full. Such suspension of delivery taken pursuant to this Section 6 shall not deprive District of or limit any remedy provided by this contract or by law for the recovery of money due or which may become due under this contract. In the event of any disagreement between Contractor and District as to the amount of any bill rendered to Contractor by District, water service shall not be discontinued if the disputed amount thereof is placed on deposit with District. Such deposit shall not preclude review and adjustment of any water bill as set forth in Article C, Section 8, hereof.

7. Water Quality - District agrees that all water to be delivered by it to Contractor pursuant to the terms of this contract will be pure, palatable, wholesome, potable and healthful and that all such water will be of such quality that the same may be used for domestic purposes at the points of delivery thereof to Contractor without further treatment. District understands that Contractor is a public utility furnishing water to its customers for domestic purposes and that water to be delivered by it to Contractor hereunder will be delivered by Contractor to said customers. District agrees that its system shall be constructed and operated during the term hereof in accordance with a permit or permits, including temporary permits, to be issued by the State Department of Health Services, copies of which will be furnished to Contractor upon receipt by District. District agrees that the treated water to be delivered to Contractor pursuant to this contract shall conform to the quality requirements set forth in the then current primary and secondary standards for domestic water quality and monitoring regulations adopted by the California State Department of Health. Should the need arise, District and Contractor will cooperate fully in adjusting their respective processes to the extent reasonably practicable, and provided such adjustments do not affect other Contractors, to aid the Contractor in conforming to such law within the Contractor's distribution system.

ARTICLE C. PAYMENT PROVISIONS

1. The payments to be made by Contractor and Each Contractor for delivery of treated water shall be a price per acre-foot based upon the pricing policy adopted by the Board, dated January 18, 1971, as from time to time amended, which is set forth in Exhibit D, attached hereto and by this reference made a part hereof, and shall be the total of the basic water charges and treated water surcharge as determined by the District Board for each period for which a rate schedule is effective.

2. In determining the above charges, the basic water charge shall be equal to District's groundwater charge for water other than agricultural water (said words "agricultural water" being defined in the Act) in Zone W-2, which shall be determined annually by the Board in accordance with the legal provisions and requirements of the Act; provided, however, that during each rate period the District will consider all anticipated costs for each such rate period and will endeavor to establish during the first year of such rate period a groundwater charge that is intended to remain constant for the full rate period.

3. District shall charge for the delivery of treated water in accordance with the rate schedule for water service as such rate schedule is established by the Board. The Board of Directors shall review said rate schedule every three years to determine whether the schedule is in accordance with the most recent and anticipated costs and revenues of District. Accordingly, the Board shall, on or about the second Tuesday in March 1981, but not later than April 15, 1981, establish a rate schedule for the rate period commencing July 1, 1981 through June 30, 1984, and shall follow said procedure

for each ensuing three-year period. Each such rate schedule shall be prospective in operation, but shall provide for the recovery of expenditures to be recovered by the basic water charge and the treated water surcharge during the period said rates are in effect and any shortages of revenue for said expenditures that may have been experienced during the preceding rate periods. It is agreed that the rates to be so established shall not be unreasonable or arbitrary, shall be based upon reasonable estimates of costs and water deliveries and shall be the same for Contractor and Other Contractors and all other persons, public or private, purchasing treated water from District, regardless of the point of delivery of such water by District; District agrees to use its best efforts throughout the term of this contract to collect from Other Contractors, and such other persons in accordance with such rate schedules, the appropriate sums of money without deduction or offset according to the respective amounts of treated water delivered by the District.

4. Contractor shall pay District the rate or rates set forth on the rate schedules during the period said rate schedules are effective for all water delivered to the Contractor; provided, however, that Contractor shall pay District at least a minimum charge each year applicable to water scheduled to be delivered in such year, which minimum charge shall be based upon an amount of treated water equal to 90 percent of the total amount of treated water to be delivered to Contractor during that fiscal year as shown on the approved delivery schedule; provided, however, that if Contractor during any other year of the current rate schedule period has purchased water in excess of 90 percent of the water scheduled to be delivered to Contractor during such other year, such delivery in excess of 90 percent for such other year may be used as a credit against years in such rate schedule period in which Contractor received less than 90 percent of the treated water as shown on the approved delivery schedule, and if Contractor has paid, purusant to such annual minimum charge, for water not delivered to it, Contractor shall have the right to receive such undelivered water without additional payment during the remainder of the then current rate schedule period at times when District has the delivery capability provided further, however, that:

a) If in any day of any year during the term hereof, District, for any reason, including reduced deliveries pursuant to the provisions of Article D hereof, shall be unable to deliver treated water to Contractor in an amount equal to 1/30 of the then current monthly scheduled amount as set forth in Article B, Section 1(e) as expressed as a uniform daily volume, the then minimum charge for that year shall be based upon an amount of water as calculated above in Section 4 reduced by an amount equal to the reduction required by District for each day a reduced delivery is required.

b) If in any day of any year during the term hereof District shall offer to deliver to Contractor water which shall fail to meet the quality requirements set forth in Article B, Section 7, hereof, then Contractor shall have the right to refuse to accept or reduce deliveries of water from District until such time as such water shall meet said quality requirements. In such event Contractor shall immediately notify District, and confirm in writing within 5 days of the beginning of any such period. In any such year the then minimum charge shall be reduced by an amount equal to the volume of water reduced by the Contractor up to an amount equal to 1/30 of the then current monthly scheduled amount as set forth in Article B, Section 1(e), as expressed as a uniform daily volume for each day that water service is so refused or reduced by the Contractor. If Contractor at

any time, or from time to time during the term hereof, should have the right to refuse to accept water from District by reason of the foregoing provisions of this Subsection 4b, but should nevertheless fail to exercise such right, such failure shall in no event be deemed to waive or limit exercise of such right by Contractor. Except as set forth by the foregoing provisions of this Section 4, Contractor shall not be obligated to pay for any water not accepted by it. Nothing contained in this Section 4 shall in any way be deemed to limit Contractor's obligation to pay for all water accepted by it from District in accordance with the appropriate rate set forth from time to time in District's then applicable rate schedule.

c) If in any year during the term hereof, the Board of Directors of District shall by Resolution place in effect a water reduction program in excess of 10 percent of normal usage, the monthly scheduled amounts or portions thereof, as set forth in Article B, Section 1e, for that portion of the year when such water reduction program is in effect shall be reduced by the same percentage as required by the water reduction program less 10 percent. The Contractor shall be notified in writing of such water reduction program.

5. Surplus - If District shall determine, in accordance with sound accounting practice, that the aggregate of the revenues received by it in any fiscal year, or any rate period, during the term hereof a) from the sale of treated water to Contractor and Other Contractors, b) from the sale of raw water, and c) through collection of the groundwater charges referred to in Article E hereof, has exceeded District's costs and expenses during such year, or rate period, District shall retain such excess and reserve the same for purchases of raw water, construction, maintenance or operation of existing or additional facilities for the importation, conservation, treatment or wholesale distribution of water, reduce its scheduled price of treated water or, subject to the provisions of the Act, reduce said groundwater charges. It is understood that the object in computing rates under this contract is to cover the costs related to the importation, conservation, treatment or wholesale distribution of water.

6. Non-Contract Water - The term "non-contract water" refers to treated water found by District to be available for delivery to the treated water contractors in addition to the scheduled amounts. Non-contract water may be available only at such times and such prices as determined by the District. District will notify Contractor in writing thereof. Deliveries of non-contract water to Contractor will only be made after Contractor has purchased 100 percent of the monthly scheduled amount as set forth in Article B, Section 1(e). Further, at the end of each fiscal year an adjustment in billing will be made and Contractor will be required to have paid for 100 percent of the approved delivery scheduled amount, less any other adjustments before the purchase of non-contract water is allowed. During any period in which non-contract water is not available and Contractor takes water in excess of its scheduled amount, such water will not be reclassified and will be charged for at the full contract price. Water taken in excess of scheduled amounts during periods when non-contract water is not available may be credited as a part of Contractor's minimum annual charge.

7. Billings - Billings shall be made monthly as follows: On or about the first of each month District will send to Contractor a bill calculated in accordance with the provisions of Article C hereof for all treated water accepted by Contractor from District during the preceding month. The final bill for each fiscal year shall include any sums due for the minimum charge required by Article C, Section 4, hereof. District shall make

every effort to make required meter readings on the last day of each calendar month, but District shall be entitled to make such readings three days prior to the close of any calendar month or within five days after the beginning of any calendar month.

8. Time and Method of Payment - Payments shall be made by Contractor to District within twenty (20) days after billing by District. In the event that Contractor in good faith contests the accuracy of any bill submitted to it pursuant to this contract, it shall give District notice thereof at least five (5) days prior to the day upon which payment of the stated amount is due. To the extent that District finds Contractor's contentions regarding the statement to be correct, it shall revise the statement accordingly and Contractor shall make payment of the amounts on or before the due date. To the extent that District does not find Contractor's contentions to be correct or where time is not available for a review of such contentions prior to the due date, Contractor shall pay the billed amount on or before the due date and may make the contested part of such payment under protest and seek to recover the amount in question from District.

ARTICLE D. AVAILABILITY OF WATER

1. In any year in which there may occur a water shortage by reason of drought or other temporary cause in the supply of water available for delivery to all users, District shall, before reducing other deliveries of water, reduce, or if necessary cease, to the extent permitted by the operation of District's facilities consistent with its obligations to receive water pursuant to the State and/or Federal Contract, all deliveries of untreated water for recharge of groundwaters.

2. If, despite such reduction or cessation of such deliveries of untreated water for groundwater recharge pursuant to the provisions of the preceding Section 1, a further reduction in deliveries shall become necessary if the treated water requirements set forth on the approved delivery schedule of Contractor and Other Contractors are to be met, District shall, before reducing deliveries to Contractor and Other Contractors, reduce the total amount of agricultural water (as defined in the Act) released to others for surface delivery during such fiscal year by an amount equal to the following: namely, the average of the releases of such surface-delivered agricultural water during the preceding three fiscal years multiplied by the percentage by which District's total receipt of water from State and Federal sources for agricultural use (as such use is defined in the State and Federal Contracts) is reduced in such year pursuant to provisions of said contracts.

3. If any reduction in deliveries of treated water shall become necessary following reductions in untreated water pursuant to the provisions of the preceding Sections 1 and 2, District shall reduce deliveries of treated water to Contractor and Other Contractors in an amount which bears the same proportion to the total amount of such reduction that the amount included in such treated water user's approved delivery schedule bears to the total of the amount included in the approved delivery schedule of Contractor and Other Contractors for that fiscal year, all as determined by District; provided that District may apportion on some other basis if such is required to meet minimum demands for domestic supply, fire protection, or sanitation during the year. District agrees to notify Contractor in writing promptly in the event any such reduction in deliveries to Contractor and Other Contractors shall be decided upon and concurrently of the amount of such reduction and of any changes in Contractor's approved delivery schedule.

4. District shall not be liable for failure to deliver water to Contractor hereunder in the amounts hereinabove provided if such failure shall be caused by drought or any other reason beyond the reasonable control of District.

5. District shall give Contractor written notice as far in advance as possible of any reduction in deliveries of treated water which may be necessary because of a shortage in water supply.

ARTICLE E. GROUNDWATER CHARGE

District agrees that in establishing or modifying the boundaries of any zone pursuant to the provisions of the Act, it will not act in an unreasonable, arbitrary, capricious or discriminatory manner. District further agrees that it will use its best efforts throughout the term of this contract to collect, without deduction or offset, from all persons operating groundwater-producing facilities (as said words are defined in Section 26.1 of the Act) the groundwater charges at the rates per acre-foot of water then applicable in the zone of the District in which each such facility is located.

ARTICLE F. REMEDIES

By reason of the specialized nature of the water service to be rendered, and for the further reason that the extent of any damage caused to either party by the other by reason of any breach of this contract may be extremely difficult to determine, it is agreed by the parties hereto that an action for damages is an inadequate remedy for any breach, and that specific performance, without precluding any other remedy available in equity or at law, will be necessary to furnish either party hereto with an adequate remedy for the breach hereof.

ARTICLE G. GENERAL PROVISIONS

1. Amendments - This Contract may be amended at any time by mutual agreement of the parties, except insofar as any proposed amendments are in any way contrary to applicable law. District agrees that in the event of legally enforceable action by a cognizant governmental body, either a) producing a prospective change in the volume of use of water by Contractor's customers, as by the imposition of an order suspending new services, or b) requiring reuse of wastewater or forbidding or limiting the discharge of wastewater into San Francisco Bay, District will make such amendments to Exhibit B of this contract as the circumstances may reasonably and equitability require.

2. Challenge of Laws - Nothing herein contained shall be construed as stopping or otherwise preventing Contractor or District from contesting by litigation or other lawful means the validity, constitutionality, construction, or application of any law of this State, any ordinance of District, or any rule, regulation or practice of District or Contractor.

3. Waiver of Rights - Any waiver at any time by either party hereto of its rights with respect to a default or any other matter arising in connection with this contract shall not be deemed to be a waiver with respect to any other default or matter. None of the covenants or agreements herein contained can be waived except by the written consent of the waiving party.

4. Notices - All notices or other writings in this contract provided to be given or made or sent, or which may be given or made or sent, by either party hereto to the other, shall be deemed to have been fully given or made or sent when made in writing and deposited in the United States mail, registered, or certified, postage prepaid, and addressed as follows:

To District:	Santa Clara Valley Water District 5750 Almaden Expressway San Jose, California 95118
To Contractor:	City of Santa Clara Water Department 1500 Warburton Avenue Santa Clara, California 95050

The address to which any notice or other writing may be given or made or sent to either party may be changed upon written notice given by such party as above provided.

5. Separability - If any one or more of the covenants or agreements set forth in this contract on the part of District or Contractor, or either of them, to be performed should be contrary to any provision of law or contrary to the policy of law to such extent as to be unenforceable in any court of competent jurisdiction, then such covenant or covenants, agreement or agreements, shall be null and void and shall be deemed separable from the remaining covenants and agreements and shall in nowise affect the validity of this contract.

6. Paragraph Headings - Paragraph headings in this contract are for convenience only and are not to be construed as a part of this contract or in any way limiting or amplifying the provisions hereof.

7. Other Contracts - District agrees that each contract for the supply of treated water hereafter entered into by District with any Other Contractor shall contain provisions substantially similar to those herein set forth and shall not contain any provisions of a material nature more favorable to the Other Contractor than the provisions herein applicable to the Contractor.

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IN WITNESS WHEREOF, District has caused this contract to be executed by the Chairman of its Board of Directors and caused its Official Seal to be hereunto affixed and Contractor has caused these presents to be executed on
19 , by its duly authorized officer.

ATTEST: SUSAN A. EKSTRAND

SANTA CLARA VALLEY WATER DISTRICT

~~Clerk of the Board of Directors~~
CLERK PRO TEM OF THE BOARD OF DIRECTORS

By
Chairman of the Board of Directors
"District"

Approved as to form:

General Counsel, Santa Clara
Valley Water District

CITY OF SANTA CLARA

By
William A. Gissler, Mayor

By
D. R. Von Raesfeld,
Its City Manager
"Contractor"

ATTEST:

A. S. Bellick, City Clerk

Approved as to form:

Attorney for Contractor
Michael R. Downey
Assistant City Attorney

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APPENDIX B

SFPUC Contract

DUPLICATE CITY CLERK FILE COPY
City of Santa Clara

APPENDIX B

WATER SUPPLY AGREEMENT

between

THE CITY AND COUNTY OF SAN FRANCISCO

and

WHOLESALE CUSTOMERS
in
ALAMEDA COUNTY, SAN MATEO COUNTY AND
SANTA CLARA COUNTY

JULY 2009

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WHOLESALE WATER SUPPLY AGREEMENT

Introductory Statement

Both San Francisco, as the Regional Water System owner and operator, and its Wholesale Customers share a commitment to the Regional Water System providing a reliable supply of high quality water at a fair price, and achieving these goals in an environmentally sustainable manner.

Article 1. Parties, Effective Date, and Defined Terms

1.01 Definitions

The capitalized terms used in this Agreement shall have the meanings set forth in Attachment A.

1.02 Parties

The parties to this Agreement are the City and County of San Francisco and such of the following entities (all of which purchase water from San Francisco) as have executed this Agreement:

Alameda County Water District
California Water Service Company
City of Brisbane
City of Burlingame
City of Daly City
City of East Palo Alto
City of Hayward
City of Menlo Park
City of Millbrae
City of Milpitas
City of Mountain View
City of Palo Alto
City of Redwood City

City of San Bruno
City of San José
City of Santa Clara
City of Sunnyvale
Coastside County Water District
Estero Municipal Improvement District
Guadalupe Valley Municipal Improvement District
Mid-Peninsula Water District
North Coast County Water District
Purissima Hills Water District
Skyline County Water District
Stanford University
Town of Hillsborough
Westborough Water District

The entities listed above which have executed this Agreement shall be collectively referred to as the "Wholesale Customers."

1.03 **Effective Date**

A. Except as provided in subsection C, this Agreement shall become effective only when it has been approved by San Francisco and by each of the entities listed in Section 1.02 and when San Francisco and each of those entities (except for the City of Hayward) have entered into an Individual Water Sales Contract as provided in Section 9.01.

B. If San Francisco and all of the entities listed in Section 1.02 approve this Agreement and (except for the City of Hayward) an Individual Water Sales Contract on or before July 1, 2009, the effective date shall be July 1, 2009. If San Francisco and all of the entities listed in Section 1.02 approve this Agreement and (except for the City of Hayward) an Individual Water Sales Contract after July 1, 2009 but on or before September 1, 2009, the effective date shall be the date on which the last entity listed in Section 1.02 approves this Agreement and, if required, an Individual Water Sales Contract.

C. If by September 1, 2009 this Agreement has been approved by fewer than all of the entities listed in Section 1.02 or fewer than all of such entities (other than the City of Hayward) have entered into an Individual Water Sales Contract, but it has been approved by entities representing at least 75% in number and 75% of the water purchased from SFPUC by

all listed agencies during FY 2007-08 (i.e., 173.39 MGD), then San Francisco shall have the option to waive the requirement in subsection A that all listed agencies have approved this Agreement and an Individual Water Sales Contract as a condition precedent to this Agreement and any Individual Water Sales Contract becoming effective. San Francisco shall have 60 days from September 1, 2009 (i.e., until October 31, 2009) within which to decide whether or not to waive the condition. If San Francisco decides to waive the condition, those listed agencies that have approved this Agreement and Individual Water Sales Contract before October 31, 2009 will be bound thereby and this Agreement and Individual Water Sales Contracts will become effective as to them, as of the date of San Francisco's waiver. For purposes of determining whether listed agencies that have approved this Agreement represent at least 75% of the water purchased during FY 2007-08, the quantity of water attributable to each listed entity shall be as set forth on Attachment B.

D. The provisions of Article 9 that apply to fewer than all Wholesale Customers (i.e., Sections 9.02 - 9.07) shall not become effective unless San Francisco and the entity to which the section applies have each approved (1) this Agreement, and (2) the underlying Individual Water Sales Contract, unless otherwise provided in Article 9. This provision does not affect the continued enforceability of provisions in those sections that derive from independently enforceable judgments, orders or agreements.

Article 2. Term; Amendments During Term

2.01 Term

The term ("Term") of this Agreement shall be twenty five (25) years. The Term shall begin on July 1, 2009, regardless of whether the Effective Date is before or after that date, and shall end on June 30, 2034. Except as provided in Article 9, the term of all Individual Water Sales Contracts shall also begin on July 1, 2009 and end on June 30, 2034.

2.02 Extension and Renewal of Term

A. In December 2031, the SFPUC may provide written notice to the Wholesale Customers that it is willing to extend the Term of this Agreement. Between January 1, 2032 and June 30, 2032, any Wholesale Customer may accept the SFPUC's offer to extend the Term by providing a written notice of extension to the SFPUC. If such notices of extension are received from Wholesale Customers representing at least two-thirds in number as of June 30, 2032 and seventy five percent (75%) of the quantity of water delivered by the SFPUC to all Wholesale Customers during fiscal year 2030-31, the Term shall be extended for another five (5) years ("First Extension Term"), through June 30, 2039. No party to this Agreement which does not wish to remain a party during the Extension Term shall be compelled to do so by the actions of other parties under this section.

B. In December 2036, the SFPUC may provide written notice to the Wholesale Customers that it is willing to extend the Term of this Agreement. Between January 1, 2037 and June 30, 2037, any Wholesale Customer may accept the SFPUC's offer to extend the Term by providing a written notice of extension to the SFPUC. If such notices of extension are received from Wholesale Customers representing at least two-thirds in number as of June 30, 2037 and seventy five percent (75%) of the quantity of water delivered by the SFPUC to all Wholesale Customers during fiscal year 2035-36, the Term shall be extended for another five (5) years ("Second Extension Term"), through June 30, 2044. No party to this Agreement which does not wish to remain a party during the Extension Term shall be compelled to do so by the actions of other parties under this section.

C. After the expiration of the Term, and, if applicable, the Extension Terms, this Agreement may be renewed by mutual consent of the parties, subject to any modifications thereof which may be determined at that time. If fewer than all of the parties desire to renew this Agreement beyond its Term, with or without modifications, the SFPUC and the Wholesale

Customers who wish to extend the Agreement shall be free to do so, provided that no party to this Agreement which does not wish to become a party to such a renewed Agreement shall be compelled to do so by the actions of other parties under this section.

2.03 Amendments

A. Amendments to Agreement; General

1. This Agreement may be amended with the written consent of all parties.

2. This Agreement may also be amended with the written consent of San Francisco and of Wholesale Customers representing at least two-thirds in number (i.e., 18 as of July 1, 2009) and seventy five percent (75%) of the quantity of water delivered by San Francisco to all Wholesale Customers during the fiscal year immediately preceding the amendment.

3. No amendment which adversely affects a Fundamental Right of a Wholesale Customer may be made without the written consent of that customer. Amendments to Article 5 which merely affect the allocation of costs between City Retail customers on the one hand and Wholesale Customers collectively on the other, and amendments to Articles 6 and 7 which merely alter budgetary, accounting and auditing procedures do not affect Fundamental Rights and may be made with the consent of parties meeting the requirements of Section 2.03.A.2.

4. When an amendment has been approved by San Francisco and the number of Wholesale Customers required in Section 2.03.A.2, San Francisco shall notify each of the Wholesale Customers in writing of the amendment's adoption. Notwithstanding any provision of law or this Agreement, any Wholesale Customer that claims that the amendment violates its Fundamental Rights under Section 2.03.A.3, shall have 30 days from the date San Francisco delivers the notice of its adoption in which to challenge the amendment's validity through a judicial action. If no such action is filed within 30 days, the amendment shall be finally and conclusively deemed to have been adopted in compliance with this section.

B. Amendments to Article 9

1. Notwithstanding the provisions of Sections 2.03.A.2 and 2.03.A.3, any provision of Article 9 which applies only to an individual Wholesale Customer may be amended with the written concurrence of San Francisco and the Wholesale Customer to which it applies;

provided that the amendment will not, directly or indirectly, adversely affect the Fundamental Rights of the other Wholesale Customers.

2. Before making any such amendment effective, San Francisco shall give notice, with a copy of the text of the proposed amendment, to all other Wholesale Customers. The Wholesale Customers shall have 30 days in which to object to the amendment on the ground that it is not permissible under this subsection. If no such objection is received by San Francisco, the proposed amendment shall become effective. If one or more Wholesale Customers object to the amendment, San Francisco, the individual Wholesale Customer with which San Francisco intends to effect the amendment, and the Wholesale Customer(s) which lodged the objection shall meet to discuss the matter.

3. If the dispute cannot be resolved and San Francisco and the Wholesale Customer involved elect to proceed with the amendment, either San Francisco or the Wholesale Customer shall give written notice of such election to each Wholesale Customer that has objected. Any Wholesale Customer that has objected to such amendment shall have 30 days from receipt of this notice within which to commence an action challenging the validity of such amendment, and such amendment shall be deemed effective as of the end of this 30-day period unless restrained by order of court.

C. **Amendments to Attachments**. The following attachments may be amended with the written concurrence of San Francisco and BAWSCA on behalf of the Wholesale Customers:

Attachment	Name
G	January 2006 Water Quality Notification and Communications Plan
J	Water Use Measurement and Tabulation
L-1	Identification of WSIP Projects as Regional/Retail
N-1	Balancing Account/Rate Setting Calculation Table
N-2	Wholesale Revenue Requirement Schedules
N-3	Schedule of Projected Water Sales, Wholesale Revenue Requirement and Wholesale Rates
P	Management Representation Letter

Amendments to these attachments shall be approved on behalf of San Francisco by the Commission and on behalf of BAWSCA by its Board of Directors, unless the Commission by resolution delegates such authority to the General Manager of the SFPUC or the Board of Directors by resolution delegates such authority to the General Manager/CEO of BAWSCA.

D. **Amendments to Individual Water Sales Contracts**. Individual Water Sales Contracts described in Section 9.01 may be amended with the written concurrence of San Francisco and the Wholesale Customer which is a party to that Individual Water Sales Contract; provided that the amendment is not inconsistent with this Agreement or in derogation of the Fundamental Rights of other Wholesale Customers under this Agreement.

Article 3. Water Supply

3.01 Supply Assurance

A. San Francisco agrees to deliver water to the Wholesale Customers up to the amount of the Supply Assurance. The Supply Assurance is for the benefit of the entities listed in Section 1.02, irrespective of whether or not they have executed this Agreement. Water delivered by San Francisco to Retail Customers shall not be included in the Supply Assurance. Until December 31, 2018, the foregoing commitment is subject to Article 4.

B. Both the Supply Assurance and the Individual Supply Guarantees identified in Section 3.02 are expressed in terms of daily deliveries on an annual average basis and do not themselves constitute a guarantee by San Francisco to meet peak daily or hourly demands of the Wholesale Customers, irrespective of what those peak demands may be. The parties acknowledge, however, that the Regional Water System has been designed and constructed to meet peak daily and hourly demands and that its capacity to do so has not yet been reached. San Francisco agrees to operate the Regional Water System to meet peak requirements of the Wholesale Customers to the extent possible without adversely affecting its ability to meet peak demands of Retail Customers. This Agreement shall not preclude San Francisco from undertaking to meet specific peak demand requirements of individual Wholesale Customers in their Individual Water Sales Contracts.

C. The Supply Assurance is perpetual and shall survive the expiration or earlier termination of this Agreement. Similarly, the Individual Supply Guarantees identified in Section 3.02 and/or the Individual Water Sales Contracts are perpetual and shall survive the expiration or earlier termination of this Agreement or the Individual Water Sales Contracts.

D. Notwithstanding the Supply Assurance established by this section, the Individual Supply Guarantees identified in Section 3.02 and the Individual Water Sales Contracts, the amount of water made available by San Francisco to the Wholesale Customers is subject to reduction, to the extent and for the period made necessary by reason of water shortage, Drought, Emergencies, or by malfunctioning or rehabilitation of facilities in the Regional Water System. Any such reduction will be implemented in accordance with Section 3.11. The amount of water made available to the Wholesale Customers may not be reduced, however, merely because the water recycling and groundwater projects which the WSIP envisions to be constructed within San Francisco, or the conservation programs intended to reduce water use

by Retail Customers that are included in the WSIP, do not generate the yield or savings (10 MGD combined) anticipated by San Francisco.

3.02 <u>Allocation of Supply Assurance</u>

A. Pursuant to Section 7.02 of the 1984 Agreement, a portion of the Supply Assurance has been allocated among 24 of the 27 Wholesale Customers. These Individual Supply Guarantees are also expressed in terms of annual average metered deliveries of millions of gallons per day and are listed in Attachment C.

B. Three Wholesale Customers do not have Individual Supply Guarantees. The cities of San Jose and Santa Clara do not have an Individual Supply Guarantees because San Francisco has provided water to them on a temporary and interruptible basis as described in Sections 4.05 and 9.06. The City of Hayward does not have an Individual Supply Guarantee because of the terms of the 1962 contract between it and San Francisco, as further described in Section 9.03.

C. If the total amount of water delivered by San Francisco to Hayward and to the Wholesale Customers that are listed on Attachment C exceeds 184 MGD over a period of three consecutive fiscal years (i.e., July 1 through June 30), then the Individual Supply Guarantees of those Wholesale Customers listed on Attachment C shall be reduced pro rata so that their combined entitlement and the sustained use by Hayward does not exceed 184 MGD. The procedure for calculating the pro rata reduction in Individual Supply Guarantees is set out in Attachment D.

1. The provisions of this subsection C are not in derogation of the reservation of claims to water in excess of the Supply Assurance which are contained in Section 8.07. Nor do they constitute an acknowledgement by Wholesale Customers other than Hayward that San Francisco is obligated or entitled to reduce their Individual Supply Guarantees in the circumstances described herein. The provisions of this subsection C shall, however, be operative unless and until a court determines that its provisions violate rights of the Wholesale Customers derived independently of this Agreement.

2. The foregoing paragraph is not intended to and shall not constitute a contractual commitment on the part of San Francisco to furnish more water than the Supply Assurance to the Wholesale Customers or a concession by San Francisco that the provisions of this subsection violate any rights of the Wholesale Customers.

D. Notwithstanding the reservation of claims contained in Sections 3.02.C and 8.07, it shall be the responsibility of each Wholesale Customer to limit its purchases of water from San Francisco so as to remain within its Individual Supply Guarantee. San Francisco shall not be liable to any Wholesale Customer or be obligated to supply more water to any Wholesale Customer individually or to the Wholesale Customers collectively than the amount to which it or they are otherwise entitled under this Agreement due to the use by any Wholesale Customer of more water than the amount to which it is entitled under this Agreement.

E. San Francisco shall install such new connections between the Regional Water System and the distribution system of any Wholesale Customer that are necessary to deliver the quantities of water to which the Wholesale Customer is entitled under this Agreement. San Francisco shall have the right to determine the location of such connections, in light of the need to maintain the structural integrity of the Regional Water System and, where applicable, the need to limit peaking directly off of Regional Water System pipelines by a Wholesale Customer's individual retail customers, the need to ensure that a Wholesale Customer's individual retail customers have access to alternative sources of water in the event of a reduction in San Francisco's ability to provide them with water, and other factors which may affect the desirability or undesirability of a particular location. San Francisco's decisions regarding the location of new connections and the location, size and type of any new meters shall not be reviewable by a court except for an abuse of discretion or failure to provide a Wholesale Customer with connections and meters adequate to deliver the quantity of water to which it is entitled under this Agreement.

3.03 **Wholesale Customer Service Areas**

A. Each of the Individual Water Sales Contracts described in Section 9.01 will contain, as an exhibit, a map of the Wholesale Customer's service area. A Wholesale Customer may not deliver water furnished to it by San Francisco outside the boundary of its service area without the prior written consent of San Francisco, except for deliveries to another Wholesale Customer on an emergency and temporary basis pursuant to Section 3.07.B.

B. If a Wholesale Customer wishes to expand its service area, it shall request San Francisco's consent to the expansion and provide information reasonably requested by San Francisco about the amount of water projected to be purchased from San Francisco to meet demand within the area proposed to be added to the service area.

C. San Francisco may refuse a Wholesale Customer's request to expand its service area on any reasonable basis. If San Francisco denies a request by a Wholesale Customer to expand its service area, or fails to act on the request for six months after it has been submitted, the Wholesale Customer may challenge San Francisco's denial or delay in court. Such a challenge may be based on the Wholesale Customers' claim, reserved in Section 8.07, that San Francisco is obligated under federal or state law to furnish water, included within its Individual Supply Guarantee, to it for delivery outside its then-existing service area and that it is entitled to enlarge its service area to supply water to such customers. San Francisco reserves the right to contest any such claim on any applicable ground. This subsection does not apply to San Jose and Santa Clara, whose maximum service areas are fixed pursuant to Section 9.06.

D. This section will not prevent San Francisco and any Wholesale Customer, other than San Jose and Santa Clara, from agreeing in an Individual Water Sales Contract or an amendment thereto that:

- the Wholesale Customer may expand its service area without subsequent San Francisco approval to a definitive size but no larger, or
- the Wholesale Customer will not expand its service area beyond its present limits without San Francisco approval

and waiving the provisions of this section with respect to any additional expansion.

E. If two or more Wholesale Customers agree to adjust the boundaries of their respective service areas so that one assumes an obligation to serve customers in an area that was previously within the service area of another Wholesale Customer, they may also correspondingly adjust their respective Individual Supply Guarantees. Such adjustments are not subject to the requirements of Section 3.04 and shall require only the consent of San Francisco and the Wholesale Customers involved, so long as the Supply Assurance and the Individual Supply Guarantees of other Wholesale Customers are not affected. Service area boundary adjustments that would result in the expansion of any California Water Service Company service areas are subject to the requirements of Section 9.02.D. Any adjustment of service area boundaries that would result in the supply of water in violation of this Agreement or the Act shall be void.

F. San Francisco acknowledges that it has heretofore consented in writing to deliveries of water by individual Wholesale Customers outside their service area boundaries and

agrees that nothing in this Agreement is intended to affect such prior authorizations, which remain in full force and effect according to their terms. Such authorizations shall be identified in the Individual Water Sales Contracts.

3.04 Permanent Transfers of Individual Supply Guarantees

A. A Wholesale Customer that has an Individual Supply Guarantee may transfer a portion of it to one or more other Wholesale Customers, as provided in this section.

B. Transfers of a portion of an Individual Supply Guarantee must be permanent. The minimum quantity that may be transferred is 1/10th of a MGD.

C. Transfers of portions of Individual Supply Guarantees are subject to approval by the SFPUC. SFPUC review is limited to determining (1) whether a proposed transfer complies with the Act, and (2) whether the affected facilities in the Regional Water System have sufficient capacity to accommodate delivery of the increased amount of water to the proposed transferee.

D. The participants in a proposed transfer shall provide notice to the SFPUC specifying the amount of the Individual Supply Guarantee proposed to be transferred, the proposed effective date of the transfer, which shall not be less than 60 days after the notice is submitted to the SFPUC, and the Individual Supply Guarantees of both participants resulting from the transfer. The SFPUC may require additional information reasonably necessary to evaluate the operational impacts of the transfer. The SFPUC will not unreasonably withhold or delay its approval; if the SFPUC does not act on the notice within 60 days, the transfer will be deemed to have been approved.

E. Within 30 days after the transfer has become effective, both the transferor and the transferee will provide notice to the SFPUC and BAWSCA. By September 30 of each year during the Term, the SFPUC and BAWSCA will prepare an updated Attachment C to reflect transfers occurring during the immediately preceding fiscal year.

F. Amounts transferred will remain subject to pro rata reduction under the circumstances described in Section 3.02.C and according to the formula set forth in Attachment D.

3.05 Restrictions on Resale

Each Wholesale Customer agrees that it will not sell any water purchased from San Francisco to a private party for resale by such private party to others in violation of the Act.

Each Wholesale Customer also agrees that it will not sell water purchased from San Francisco to another Wholesale Customer without prior written approval of the SFPUC, except on a temporary and emergency basis as permitted in Section 3.07.B.2. The SFPUC agrees that it will not unreasonably withhold its consent to a request by a Wholesale Customer to deliver water to another Wholesale Customer for resale.

3.06 Conservation; Use of Local Sources; Water Management Charge

A. In order to support the continuation and expansion of water conservation programs, water recycling, and development of alternative supplies within the Wholesale Customers' service areas, the SFPUC will, if requested by BAWSCA, include the Water Management Charge in water bills sent to Wholesale Customers. The SFPUC will deliver all Water Management Charge revenue to BAWSCA monthly and shall deliver an annual accounting of Water Management Charge revenue to BAWSCA within 90 days after the end of each fiscal year. The SFPUC's obligations to collect and deliver Water Management Charge revenue to BAWSCA under this subsection are conditioned on BAWSCA's delivery to the SFPUC of an annual report describing the projects and programs on which Water Management Charge funds received from the SFPUC during the previous fiscal year were expended and an estimate of the amount of water savings attributable to conservation programs and of the yield of alternative supplies developed. This report will be due within 180 days after the end of each fiscal year during which Water Management Charge funds were received.

B. The SFPUC will work together with BAWSCA to explore ways to support water conservation programs, recycling projects, and conjunctive use alternatives outside the Wholesale Service Area, in particular projects and programs that have the potential to increase both flows in the lower Tuolumne River (downstream of New Don Pedro Reservoir) and water deliveries to the Regional Water System.

C. Each Wholesale Customer shall take all actions within its legal authority related to water conservation that are necessary to insure that the SFPUC (a) remains eligible for (i) state and federal grants and (ii) access to the Drought Water Bank operated by the California Department of Water Resources, as well as other Drought-related water purchase or transfer programs, and (b) complies with future legal requirements imposed on the Regional Water System by the federal government, the State, or any other third party as conditions for receiving funding or water supply.

D. San Francisco and each Wholesale Customer agree that they will diligently apply their best efforts to use both surface water and groundwater sources located within their respective service areas and available recycled water to the maximum feasible extent, taking into account the environmental impacts, the public health effects and the effects on supply reliability of such use, as well as the cost of developing such sources.

3.07 **Restrictions on Purchases of Water from Others; Minimum Annual Purchases**

A. Each Wholesale Customer (except for Alameda County Water District and the cities of Milpitas, Mountain View and Sunnyvale) agrees that it will not contract for, purchase or receive, with or without compensation, directly or indirectly, from any person, corporation, governmental agency or other entity, any water for delivery or use within its service area without the prior written consent of San Francisco.

B. The prohibition in subsection A does not apply to:

1. recycled water;

2. water necessary on an emergency and temporary basis, provided that the Wholesale Customer promptly gives San Francisco notice of the nature of the emergency, the amount of water that has been or is to be purchased, and the expected duration of the emergency; or

3. water in excess of a Wholesale Customer's Individual Supply Guarantee.

C. Alameda County Water District and the cities of Milpitas, Mountain View and Sunnyvale may purchase water from sources other than San Francisco, provided that San Francisco shall require that each purchase a minimum annual quantity of water from San Francisco. These minimum quantities are set out in Attachment E and shall also be included in the Individual Water Sales Contracts between San Francisco and each of these four Wholesale Customers. The minimum purchase requirement in these Individual Water Sales Contracts will be waived during a Drought or other period of water shortage if the water San Francisco makes available to these Wholesale Customers is less than its minimum purchase quantity.

3.08 **Water Quality**

A. San Francisco shall deliver treated water to Wholesale Customers (except Coastside County Water District, which receives untreated water from Crystal Springs and Pilarcitos Reservoirs) that complies with primary maximum contaminant level and treatment

technique standards at the regulatory entry points designated in the San Francisco Regional Water System Domestic Water Supply Permit (currently Permit No. 02-04-04P3810001) issued by the California Department of Public Health (CDPH).

B. San Francisco will provide notice to the Wholesale Customers in accordance with the Water Quality Notification and Communications Plan (current version dated January 2006), attached hereto as Attachment G. San Francisco will regularly update its plan in consultation with the Wholesale Customers and the CDPH. The next update will be completed one year after the Effective Date and include expanded coverage of secondary maximum contaminant level exceedances and water quality communication triggers. The plan will note that the Wholesale Customers will receive the same notification no later than the San Francisco water system (currently Permit No. 02-04-01P3810011) except for distribution-related issues.

C. San Francisco and the Wholesale Customers will establish a Water Quality Committee. The Water Quality Committee will meet at least quarterly to collaboratively address water quality issues, such as Water Quality Notification and Communications Plan updates, regulatory issues, and water quality planning studies/ applied research. San Francisco and each Wholesale Customer will designate a representative to serve on the committee. There will be a Chair and Vice Chair position for the Water Quality Committee. The Chair and Vice Chair positions will be held by San Francisco and the Wholesale Customers and rotate between them on an annual basis.

3.09 Completion of WSIP

San Francisco will complete construction of the physical facilities in the WSIP by December 31, 2015. The SFPUC agrees to provide for full public review and comment by local and state interests of any proposed changes that delay previously adopted project completion dates or that delete projects. The SFPUC shall meet and consult with BAWSCA before proposing to the Commission any changes in the scope of WSIP projects which reduce their capacity or ability to achieve adopted levels of service goals. The SFPUC retains discretion to determine whether to approve the physical facilities in the WSIP until after it completes the CEQA process as set forth in Section 4.07.

3.10 Regional Water System Repair, Maintenance and Operation

A. San Francisco will keep the Regional Water System in good working order and repair consistent with prudent utility practice.

B. San Francisco will submit reports to its Retail and Wholesale Customers on the "State of the Regional Water System," including reports on completed and planned maintenance, repair or replacement projects or programs, by September of every even-numbered year, with reports to start in September 2010.

C. San Francisco will cooperate with any audit of the SFPUC's asset management practices that may be initiated and financed by BAWSCA or the Wholesale Customers. BAWSCA may contract with third parties to conduct the audits. San Francisco will consider the findings and recommendations of such audits and will provide a written response indicating agreement with the recommendations, or disagreement with particular recommendations and the reasons why, within 90 calendar days after receipt.

D. San Francisco will continue to operate its reservoirs in a manner that assigns higher priority to the delivery of water to the Bay Area and the environment than to the generation of electric power. The SFPUC, as the Regional Water System operator, is solely responsible for making day-to-day operational decisions.

3.11 **Shortages**

A. **Localized Water Reductions.** Notwithstanding San Francisco's obligations to deliver the Supply Assurance to the Wholesale Customers collectively and the Individual Supply Guarantees to Wholesale Customers individually, San Francisco may reduce the amount of water available or interrupt water deliveries to specific geographical areas within the Regional Water System service area to the extent that such reductions are necessary due to Emergencies, or in order to install, repair, rehabilitate, replace, investigate or inspect equipment in, or perform other maintenance work on, the Regional Water System. Such reductions or interruptions may be imposed by San Francisco without corresponding reductions or interruptions in the amount of water available to SFPUC water users outside the specific geographical area where reductions or interruptions are necessary, if the system's ability to supply water outside the specific geographical area has not been impaired. In the event of such a reduction or interruption, San Francisco will restore the supply of water to the specific geographical area as soon as is possible. Except in cases of Emergencies (during which oral notice shall be sufficient), San Francisco will give the affected Wholesale Customer(s) reasonable written notice of such localized reductions or interruptions, the reasons therefor, and the probable duration thereof.

B. **System-Wide Shortages and SFPUC Response to Regional Emergencies.** Following a major system emergency event, the SFPUC will work closely with its Wholesale Customers to monitor customer demand, including the demand source. In the event that any individual Wholesale Service Area or Retail Service Area customer's uncontrolled distribution system leaks could result in major water waste and endanger the supply provided by the Regional Water System as a whole, flow through some customer connections may need to be temporarily reduced or terminated. SFPUC will work closely with customers to assess the nature of the demand (e.g. fire-fighting versus leakage), so that public health and safety protection can be given top priority.

1. All emergencies that require use of non-potable source water will require use of chlorine, or other suitable disinfectant, if feasible.

2. San Francisco will use its best efforts to meet the seismic reliability and delivery reliability level of service goals adopted by the Commission in conjunction with the WSIP. San Francisco will distribute water on an equitable basis throughout the Regional Water System service area following a regional Emergency, subject to physical limitations caused by damage to the Regional Water System.

3. San Francisco's response to Emergencies will be guided by the then-current version of the ERRP. The SFPUC shall periodically review, and the Commission may amend, the ERRP to ensure that it remains an up-to-date and effective management tool.

4. The SFPUC will give the Wholesale Customers notice of any proposal to amend the ERRP in a manner that would affect them. The notice will be delivered at least thirty days in advance of the date on which the proposal is to be considered by the Commission and will be accompanied by the text of the proposed amendment.

C. **Shortages Caused by Drought; Acquisition of Dry Year Supplies.** Notwithstanding San Francisco's obligations to deliver the Supply Assurance to the Wholesale Customers collectively and the Individual Supply Guarantees to Wholesale Customers individually, San Francisco may reduce the amount of water available to the Wholesale Customers in response to Drought.

1. The Tier 1 Shortage Plan (Attachment H) will continue to be used to allocate water from the Regional Water System between Retail and Wholesale Customers during system-wide shortages of 20% or less.

2. San Francisco and the Wholesale Customers may negotiate in good faith revisions to the Tier 1 Shortage Plan to adjust for and accommodate anticipated changes due to demand hardening in the SFPUC's Wholesale and Retail Service Areas. Until agreement is reached, the current Tier 1 Shortage Plan will remain in effect.

3. The SFPUC will honor allocations of water among the Wholesale Customers ("Tier 2 Allocations") provided by BAWSCA or if unanimously agreed to by all Wholesale Customers. If BAWSCA or all Wholesale Customers do not provide the SFPUC with Tier 2 Allocations, then the SFPUC may make a final allocation decision after first meeting and discussing allocations with BAWSCA and the Wholesale Customers. For Regional Water System shortages in excess of 20%, San Francisco shall (a) follow the Tier 1 Shortage Plan allocations up to the 20% reduction, (b) meet and discuss how to implement incremental reductions above 20% with the Wholesale Customers, and (c) make a final determination of allocations above the 20% reduction. After the SFPUC has made the final allocation decision, the Wholesale Customers shall be free to challenge the allocation on any applicable legal or equitable basis.

4. San Francisco will use its best efforts to identify potential sources of dry year water supplies and establish the contractual and other means to access and deliver those supplies in sufficient quantity to meet a goal of not more than 20 percent system-wide shortage in any year of the design drought.

5. San Francisco will cooperate with BAWSCA to improve water supply reliability. As an example of such cooperation, San Francisco may invite a representative of BAWSCA to attend and participate in meetings with third parties for development of dry year water supplies. If San Francisco does not invite a BAWSCA representative to attend a specific scheduled meeting, it will promptly (within 30 days of any such meeting) provide BAWSCA with a written or oral report on the meeting, including any decisions reached at it, as well as information about planned subsequent meetings. Progress in securing dry year water supplies will be reported to the SFPUC and the BAWSCA board of directors during the first quarter of each calendar year.

3.12 Wheeling of Water from Outside SFPUC System

Subject to the Wheeling Statute, the SFPUC will not deny use of Regional Water System unused capacity for wheeling when such capacity is available for wheeling purposes during

periods when the SFPUC has declared a water shortage emergency under Water Code Section 350 if the following conditions are met:

A. The transferor pays reasonable charges incurred by the SFPUC as a result of the wheeling, including capital, operation, maintenance, administrative and replacement costs (as such are defined in the Wheeling Statute).

B. Wheeled water that is stored in the Regional Water System spills first.

C. Wheeled water will not unreasonably: (1) impact fish and wildlife resources in Regional Water System reservoirs; (2) diminish the quality of water delivered for consumptive uses; or (3) increase the risk of exotic species impairing Regional Water System operations. The transferor may at its own expense provide for treatment to mitigate these effects.

D. Priority will be given to wheeling by Wholesale Customers or BAWSCA over arrangements for third-party public entities.

3.13 Limits on New Customers

A. New Wholesale Customers Prior to December 31, 2018. Until December 31, 2018, San Francisco will not enter into contracts to supply water to any entity other than a Wholesale Customer (whether permanent or temporary, firm or interruptible) unless:

1. It completes any necessary environmental review under CEQA of the proposed new wholesale water service obligations as provided in Section 4.07;

2. It concurrently completes any necessary environmental review under CEQA as provided in Section 4.07 and commits to make both San Jose and Santa Clara permanent customers with Individual Supply Guarantees equal to at least 9 MGD; and

3. This Agreement is amended to incorporate any commitments to proposed new wholesale customers and to San Jose and Santa Clara, and to address the effects, if any, of the new customer(s) on water supply reliability, water quality and cost to existing customers of the Regional Water System.

B. New Wholesale Customers After December 31, 2018. As of January 1, 2019, San Francisco will not enter into contracts to supply water to any entity other than a Wholesale Customer (whether permanent or temporary, firm or interruptible) unless:

1. It completes any necessary environmental review under CEQA of the proposed new wholesale water service obligations as provided in Section 4.07;

2. It concurrently completes any necessary environmental review under CEQA as provided in Section 4.07 and commits to make both San Jose and Santa Clara permanent customers with Individual Supply Guarantees equal to at least 9 MGD;

3. Doing so increases the reliability of the Regional Water System; and

4. This Agreement is concurrently amended (a) to reflect that increased reliability by means of an increased commitment by San Francisco to deliver water during Droughts and (b) to address the effects, if any, of the new customer(s) on water supply, water quality and cost to existing customers of the Regional Water System.

C. **New Retail Customers.** San Francisco may enter into new retail water service obligations outside of the City and County of San Francisco:

1. Only in Alameda, San Mateo, Santa Clara, San Joaquin and Tuolumne Counties;

2. That are within or immediately adjacent to areas in which it currently serves other Retail Customers; and

3. Until the aggregate additional demand represented by the new retail customers reaches 0.5 MGD.

The limitations on serving new Retail Customers described in this subsection do not apply to historical obligations to supply water that may be contained in prior agreements between the SFPUC or its predecessor the Spring Valley Water Company, and individual users or property owners located adjacent to Regional Water System transmission pipelines.

D. **Water Exchanges and Cost Sharing Agreements with Other Water Suppliers.** Subject to completion of necessary environmental review under CEQA, San Francisco may at any time enter into water exchanges or cost sharing agreements with other water suppliers to enhance dry year or normal year water deliveries, provided that San Francisco cannot incur new water service obligations to such other water suppliers unless the requirements for taking on new wholesale customers in subsections A and B above are met.

3.14 **Measurement of Water**

A. The parties recognize that continuous and accurate measurement of water deliveries to and from the Regional Water System and maintenance of complete and accurate records of those measurements is necessary (1) for the costs of the Regional Water System to be allocated in accordance with this Agreement, (2) for implementation of other provisions of this Agreement, and (3) for effective operation and maintenance of a water system serving a large urbanized region.

B. It is the responsibility of the SFPUC to obtain and record these measurements. To do so, the SFPUC shall install, maintain and operate measuring and recording equipment at the following locations: (1) inputs to the Regional Water System from all water sources ("System Input Meters"), (2) internal flow meters to support operation of the Regional Water System ("In-Line Meters"), (3) deliveries to the City at the San Francisco-San Mateo County line ("County-Line Meters") and to three reservoirs in San Francisco ("In-City Terminal Reservoir Meters"), (4) deliveries to SFPUC Retail Customers located outside the boundaries of the City, and (5) deliveries to the Wholesale Customers, as described and illustrated in Attachment J.

C. The SFPUC shall inspect, test, service, and calibrate the measuring and recording equipment installed at the locations described in subsection B and will repair or replace them when necessary, in order to ensure that their accuracy is consistent with specifications provided in Attachment J.

D. The SFPUC shall continue to contract with a qualified independent metering consultant to perform periodic inspection, testing, servicing and calibration of the County-Line Meters, the In-City Terminal Reservoir Meters, and the System Input and In-Line Meters described in Attachment J, as well as the portion of the SFPUC's Supervisory Control and Data Acquisition (SCADA) system that utilizes the flow signals produced by that measuring and recording equipment. The method, schedule and frequency for calibration and maintenance of the County-Line Meters and the In-City Terminal Reservoir Meters are specified in Attachment J. The SFPUC shall provide copies of the metering consultant's reports to BAWSCA.

E. System Input Meters measure water deliveries into the Regional Water System from sources such as Hetch Hetchy and the SFPUC's water treatment plants. System Input Meters also measure deliveries from the Regional Water System to outside sources or from

such sources to the Regional Water System through interties with the Santa Clara Valley Water District and the East Bay Municipal Utility District. In-Line Meters measure internal system flows and are located on the Bay Division Pipelines and other main transmission pipelines. These meters are collectively referred to as the "System Input and In-line Meters." Similar to the County-Line Meters, the System Input and In-Line Meters have secondary metering equipment, such as differential pressure transmitters and flow recorders. The System Input and In-Line Meters, and all associated secondary metering equipment, shall be calibrated and maintained according to the method, schedule, and frequency specified in the Procedures Manual described in subsection G, below.

F. The locations of the smaller and more numerous meters described in subsection B (4) and (5) are not illustrated in Attachment J; however, they are also critical in the determination of cost allocations, and accordingly require continued maintenance and calibration. It is the responsibility of the SFPUC to maintain the accuracy of these meters and their secondary metering equipment.

G. The SFPUC will prepare a Procedures Manual which will describe in detail the procedures for periodic inspection, testing, servicing and calibration of the measuring and recording equipment described in subsection B. Once the Procedures Manual is completed, the SFPUC and BAWSCA may agree that it should supersede some or all of the requirements in Attachment J regarding the County-Line and the In-City Terminal Reservoir Meters. Unless and until such an agreement is reached and documented, however, the requirements in Attachment J, Section D will continue in force as minimum standards for meter maintenance and calibration of the County-Line and In-City Terminal Reservoir Meters (subject to modification under the circumstances described in Attachment J, Section A.4).

H. If BAWSCA and the SFPUC are unable to agree on the water use calculations required by Attachment J for a particular year, the Wholesale Customers may file a demand for arbitration challenging the SFPUC's determination of the Wholesale Revenue Requirement for that year on the basis of its reliance on disputed water use calculations. Such a challenge must be brought in the manner and within the time specified in Section 8.01.

3.15 <u>New Sources of Water Supply to Maintain Supply Assurance</u>

A. <u>Urgent Reductions of Existing Surface Water Supplies.</u> Sudden and unanticipated events may require San Francisco to act promptly to protect the health, safety and

economic well-being of its Retail and Wholesale Customers. Such sudden events include, but are not limited to drought, earthquakes, terrorist acts, catastrophic failures of facilities owned and operated by San Francisco, and other natural or man-made events. If such events diminish San Francisco's ability to maintain the Supply Assurance, San Francisco may increase the Wholesale Revenue Requirement to pay for planning, evaluation and implementation of replacement sources of supply when such needs arise and without the prior approval of the Wholesale Customers. San Francisco will keep the Wholesale Customers informed of actions being taken under this subsection, progress made, and contingency actions the Wholesale Customers may need to consider taking. To the extent appropriate and applicable, San Francisco will act in accordance with Section 3.11 and the ERRP. Nothing in this subsection limits San Francisco's obligations under Section 3.11 to pursue additional sources of supply to augment supplies available during drought.

B. Non-Urgent Reductions of Existing Surface Water Supplies. Climate change, regulatory actions and other events may impact San Francisco's ability to maintain the Supply Assurance from its existing surface water supplies, but on timescales long enough to permit San Francisco to collaborate with its Wholesale Customers on how best to address possible impacts to water supply. If such events diminish San Francisco's ability to maintain the Supply Assurance, San Francisco may increase the Wholesale Revenue Requirement to pay for planning, evaluation and implementation of replacement sources of supply when such needs arise and without the prior approval of the Wholesale Customers. San Francisco will keep the Wholesale Customers informed of actions being taken under this subsection, progress made, and contingency actions the Wholesale Customers may need to consider taking. San Francisco will solicit input and recommendations from BAWSCA and the Wholesale Customers, and take those recommendations into consideration. Prior to Commission approval of plans or taking other actions that would impact the Wholesale Revenue Requirement, San Francisco will hold a public hearing to receive written and oral comments. Nothing in this subsection modifies San Francisco's obligation to maintain the ability to provide the Supply Assurance under this Agreement.

3.16 New Sources of Water Supply to Increase Supply Assurance

A. Surface Water Supplies From Existing Watersheds After 2018. The Commission action in SFPUC Resolution Number 08-0200, adopted October 30, 2008 requires certain decisions by San Francisco regarding whether to supply more than 265 MGD from its

watersheds following 2018. Such decisions are to be made by December 31, 2018, subject to the exercise of San Francisco's retained CEQA discretion in Section 4.07. San Francisco's future decisions may include an offer to increase the Supply Assurance at the request of some or all of its Wholesale Customers. Costs associated with providing additional water from its existing water supplies in San Mateo, Santa Clara, Alameda, Tuolumne, and Stanislaus Counties shall be allocated to Wholesale and Retail Customers as described in Article 5.

B. **New Water Supplies.** If San Francisco seeks to develop additional water supplies from new sources to increase the Supply Assurance available to Wholesale Customers, studies and resulting water supply projects will be conducted jointly with BAWSCA under separate agreement(s) specifying the purpose of the projects, the anticipated regional benefits and how costs of studies and implementation will be allocated and charged. Nothing in this Agreement shall serve as precedent for the allocation of such new supply capital costs between Retail and Wholesale Customers or associated operational expenses, which shall only occur following approval of both parties and amendment of this Agreement, if necessary, under Section 2.03.

3.17 Westside Basin Conjunctive Use Program

Subject to completion of necessary CEQA review as provided in Section 4.07, the SFPUC may enter into an agreement with the cities of Daly City and San Bruno and the California Water Service Company, South San Francisco Service Area ("Participating Pumpers") governing the operation of the South Westside Basin Conjunctive Use Program ("Program"), a WSIP Project. The Program would produce Regional benefits for all customers of the Regional Water System by making use of available groundwater storage capacity in the Southern portion of the Westside Basin through the supply of additional surface water ("In Lieu Water") to the Participating Pumpers from the Regional Water System, in exchange for a corresponding reduction in groundwater pumping at existing wells owned by the Participating Pumpers. The new groundwater supply that would accrue to storage as a result of delivery of In Lieu Water would then be recovered from the SFPUC basin storage account during water shortages using new SFPUC Regional Program wells operated by the Participating Pumpers and the SFPUC. Program annual operations and maintenance expenses and water supplies are expected to be allocated as follows:

A. All In Lieu Water delivered to the Participating Pumpers shall be (1) temporary and interruptible in nature and (2) at the sole discretion of the SFPUC based on the total volume of water available to the Regional Water System.

B. All In Lieu Water delivered to the Participating Pumpers shall be considered a delivery of water to storage and shall not be construed to affect or increase the Individual Supply Guarantees of these wholesale customers or to otherwise entitle them to any claim of water in excess of their Individual Supply Guarantees or their Interim Supply Allocations. Furthermore, Environmental Enhancement Surcharges authorized under Section 4.04 will not be applied by the SFPUC to any quantity of In Lieu Water that is delivered to the Participating Pumpers, but will instead be based solely on Participating Pumper water deliveries in excess of their respective Interim Supply Allocations.

C. Any operation and maintenance expenses incurred by the Participating Pumpers and the SFPUC that are related to the operation of Regional Program wells and related assets shall be included as Regional pumping expenses under Section 5.05.B and included as part of the Wholesale Revenue Requirement. For rate setting purposes, estimated Regional Program operation and maintenance expenses shall be used as set forth in Section 6.01. Operation and maintenance expenses associated with the Participating Pumpers' existing wells that do not provide Regional benefits shall not be included in the Wholesale Revenue Requirement. On a case-by-case basis, the SFPUC may include Participating Pumper existing well operation and maintenance expenses in the Wholesale Revenue Requirement provided that such expenses (1) are solely attributable to Regional Program operations and (2) are not caused by the Participating Pumper's failure to operate and maintain its existing wells in a reasonable and prudent manner consistent with water utility industry standards.

D. The SFPUC will audit operation and maintenance expenses submitted by the Participating Pumpers for reimbursement to confirm that such costs were incurred as a result of operating Regional Program wells and related assets. Costs associated with the use of Program facilities for Direct Retail or Direct Wholesale purposes, or that do not otherwise provide Regional benefits, shall not be included in the Wholesale Revenue Requirement. The SFPUC is responsible for resolving disputes with the Participating Pumpers concerning expense allocations. Program expense documentation, including documentation of negotiation and settlement of disputed costs, will be available for review during the Compliance Audit described

in Section 7.04. The Wholesale Customers may dispute the SFPUC's resolution of expense allocations through the arbitration provisions in Section 8.01 of this Agreement.

E. The SFPUC may direct the Participating Pumpers to recover water from the SFPUC basin storage account for any type of shortage referenced in Section 3.11. Water recovered from the SFPUC basin storage account using Regional Program wells may be used for (1) the benefit of all Regional Water System customers; (2) Retail Customers; or (3) one or more of the Participating Pumpers. The Wholesale Revenue Requirement shall only include operation and maintenance expenses incurred due to the operation of Program wells for Regional benefits.

F. All water recovered from the SFPUC basin storage account by the Participating Pumpers and by the SFPUC for delivery to Retail Customers during Shortages caused by Drought shall be used to free up a comparable volume of surface water from the Regional Water System for allocation in accordance with the Tier 1 Shortage Plan.

G. If the Program is terminated for any reason, including breach of the Program agreement by the Participating Pumpers or SFPUC, or due to regulatory action or legal action, then

1. Any water remaining SFPUC Regional storage account shall be used for the benefit of all customers of the Regional Water System;

2. Outstanding eligible operation and maintenance expenses, including costs incurred during recovery of remaining stored water, will be allocated as provided in this section; and

3. The Wholesale Customers will be credited with their share of proceeds from disposition of Program facilities or reimbursed their share of such capital costs for any Program facilities which are retained by the SFPUC for Direct Retail benefit and not used for the benefit of the Wholesale Customers, on the basis of (a) original cost less depreciation and outstanding related indebtedness or (b) original cost less accumulated depreciation for revenue funded Regional Program facilities.

Article 4. Implementation of Interim Supply Limitation.

4.01 Interim Supply Limitation Imposed by SFPUC

In adopting the WSIP in Res. No. 08-0200, the Commission included full implementation of all proposed WSIP capital improvement projects to achieve level of service goals relating to public health, seismic safety, and delivery reliability, but decided to adopt a water supply element that includes the Interim Supply Limitation. This article describes how the parties will implement the Interim Supply Limitation imposed by the SFPUC between the Effective Date and December 31, 2018.

4.02 Retail and Wholesale Customer Allocations Under Interim Supply Limitation

The Interim Supply Limitation is allocated as follows between Retail and Wholesale Customers:

Retail Customers' allocation:	81 MGD
Wholesale Customers' allocation:	184 MGD

The Wholesale Customers' collective allocation of 184 MGD under the Interim Supply Limitation includes the demand of the cities of San Jose and Santa Clara, whose demand is not included in the Supply Assurance, as provided in Section 3.02.B. By December 31st, 2010, the Commission will establish each Wholesale Customer's Interim Supply Allocation at a public meeting.

4.03 Transfers of Interim Supply Allocations

A. Any Wholesale Customer, including Hayward, may transfer a portion of its Interim Supply Allocation to one or more other Wholesale Customers, as provided in this section. All Wholesale Customers are also eligible transferees, including California Water Service Company up to its Individual Supply Guarantee.

B. Transfers of a portion of an Interim Supply Allocation must be prospective. The duration of a transfer cannot be less than the balance of the fiscal year. The minimum quantity that may be transferred is 1/10th of a MGD.

C. Transfers of portions of Interim Supply Allocations are subject to approval by the SFPUC. SFPUC review is limited to determining (1) whether a proposed transfer complies with

the Act, and (2) whether the affected facilities in the Regional Water System have sufficient capacity to accommodate delivery of the increased amount of water to the proposed transferee.

D. The participants in a proposed transfer shall provide notice to the SFPUC specifying the amount of the Interim Supply Allocation proposed to be transferred and the proposed effective date of the transfer, which shall not be less than 60 days after the notice is submitted to the SFPUC. The SFPUC may require additional information reasonably necessary to evaluate the operational impacts of the transfer. The SFPUC will not unreasonably withhold or delay its approval; if the SFPUC does not act on the notice within 60 days, the transfer will be deemed to have been approved.

E. Within 30 days after the transfer has become effective, both the transferor and the transferee will provide written notice to the SFPUC and BAWSCA.

F. Transfers of Interim Supply Allocations shall continue in effect until the earlier of (1) delivery of written notice to the SFPUC by the transfer participants that the transfer has been rescinded or (2) December 31, 2018.

4.04 Environmental Enhancement Surcharge

A. **Establishment of Environmental Enhancement Surcharge.** Beginning with wholesale water rates for fiscal year 2011-2012, and continuing for the duration of the Interim Supply Limitation, the Commission will establish the Environmental Enhancement Surcharge concurrently with the budget-coordinated rate process set forth in Article 6 of this Agreement. The monetary amount of the Environmental Enhancement Surcharge per volume of water, such as dollars per acre-foot, will be equivalent for Retail Customer use in excess of 81 MGD and Wholesale Customer use in excess of 184 MGD. The Environmental Enhancement Surcharge will be simple to calculate so that Wholesale Customers can estimate potential surcharges for budgeting purposes and establish retail rates within their service areas.

B. **Application of Environmental Enhancement Surcharge.** Beginning in fiscal year 2011-12, the Environmental Enhancement Surcharge will be levied only if and when combined Retail Customer and Wholesale Customer purchases exceed the Interim Supply Limitation of 265 MGD and if the fund described in subsection D below has been established by the San Francisco Board of Supervisors. In that event, the Environmental Enhancement Surcharge will apply to Retail Customers for use in excess of 81 MGD and to individual

Wholesale Customers for use in excess of their Interim Supply Allocations established by the Commission pursuant to Section 4.02.

1. Environmental Enhancement Surcharges related to the Retail Customers' use in excess of their 81 MGD Retail Customer Allocation will be paid by the SFPUC, and no portion of such surcharges may be allocated to Wholesale Customers. The method of recovering the Environmental Enhancement Surcharges imposed upon Retail Customers shall be within the sole discretion of the SFPUC.

2. Environmental Enhancement Surcharges related to the individual Wholesale Customers' use in excess of their respective Interim Supply Allocations will be paid to the SFPUC by individual Wholesale Customers.

C. **Collection of Environmental Enhancement Surcharge**. Notwithstanding the budget-coordinated rate setting process contemplated in Article 6 of this Agreement, the Environmental Enhancement Surcharge for any given year will be determined retrospectively based on actual annual usage during the fiscal year in excess of the Interim Supply Allocation and paid in equal monthly installments over the remainder of the immediately following fiscal year.

D. **Establishment of Fund for Environmental Enhancement Surcharge Proceeds**. Environmental Enhancement Surcharges paid by the SFPUC and by Wholesale Customers will be placed into a restricted reserve fund. The SFPUC will request the San Francisco Board of Supervisors to establish this fund by ordinance and, if adopted, the fund will be subject to the following restrictions:

1. Interest earnings will stay in the reserve fund.

2. The reserve fund shall (a) be subject to automatic appropriation; (b) require unexpended and unencumbered fund balances to be carried forward from year to year; and (c) not be transferred to the San Francisco General Fund.

3. The reserve fund may be used only for specific environmental restoration and enhancement measures for the Sierra and local watersheds, such as those included in the Watershed Environmental Improvement Program.

4. Environmental Enhancement Surcharge proceeds shall be expended in an expeditious manner. Any Environmental Enhancement Surcharge proceeds that remain in

the reserve fund as of December 31, 2018 shall be used to complete projects previously approved under subsection E. Upon completion of the identified projects, the balance of any unexpended sums in the reserve fund shall be distributed to BAWSCA and the SFPUC in proportion to the total amount of surcharges assessed to the Wholesale and Retail Customers, respectively.

E. **Use of Environmental Enhancement Surcharge Proceeds**. Specific uses of Environmental Enhancement Surcharges will be decided by the SFPUC and BAWSCA General Managers following input from environmental stakeholders and other interested members of the public. If parties are unable to agree, then they will jointly select a third person to participate in making the decision.

4.05 San Jose/ Santa Clara Interim Supply Allocation and Process for Reduction/ Termination.

San Francisco will supply a combined annual average of 9 MGD to the cities of San Jose and Santa Clara through 2018. Water supplied by San Francisco may only be used in the existing defined service areas in the northern portions of San Jose and Santa Clara shown on Attachment Q. San Francisco may reduce the quantity of water specified in this section when it establishes the Interim Supply Allocations for Wholesale Customers in Section 4.02. The establishment of Interim Supply Allocations for San Jose and Santa Clara shall not be considered a reduction of supply within the meaning of this section, provided that the Interim Supply Allocations assigned to San Jose and Santa Clara do not effect a reduction greater than the aggregate average reduction in Individual Supply Guarantees for Wholesale Customers that have such guarantees. The application of Interim Supply Allocations to San Jose and Santa Clara is subject to the following provisions:

A. In December 2010 and in each December thereafter through 2017, the SFPUC shall prepare and the Commission shall consider, at a regularly scheduled public meeting, a Water Supply Development Report detailing progress made toward meeting the Interim Supply Limitation by June 30, 2018.

B. The annual Water Supply Development Report shall be based on water purchase projections and work plans for achieving the Interim Supply Limitation in the Retail and Wholesale Service Areas. The projections and work plans will be prepared by the SFPUC for

the Retail Customers and by BAWSCA for the Wholesale Customers, respectively, and submitted to the Commission in June of each year beginning in 2010.

C. If the Commission finds that the projections in the Water Supply Development Report show that the Interim Supply Limitation will not be met by June 30, 2018, as a result of Wholesale Customers' projected use exceeding 184 MGD, the Commission may issue a conditional five-year notice of interruption or reduction in supply of water to San Jose and Santa Clara.

D. Upon issuance of the conditional notice of interruption or reduction, the SFPUC will prepare a new analysis of water supply that will be utilized by the San Francisco Planning Department in its preparation of any necessary documentation under CEQA pursuant to Section 4.07 on the impacts of interrupting or reducing service to San Jose and Santa Clara.

E. Such notice of interruption or reduction will be rescinded if the Commission finds, based upon a subsequent annual Water Supply Development Report, that sufficient progress has been made toward meeting the Interim Supply Limitation or projections show that the Interim Supply Limitation will be met by June 30, 2018.

F. In no case shall any interruption or reduction of service to San Jose or Santa Clara pursuant to this section become effective less than two years from the completion of the CEQA process (not including resolution of any appeals or litigation) or five years from the notice, whichever is longer. If the five-year notice is issued after 2013, such interruption or reduction would occur after 2018.

G. If deliveries to San Jose and Santa Clara are interrupted, existing turnout facilities to San Jose and Santa Clara will remain in place for possible use during emergencies.

H. San Francisco and the cities of San Jose and Santa Clara will cooperate with BAWSCA and the Santa Clara Valley Water District in the identification and implementation of additional water sources and conservation measures for the cities' service areas that are relevant to the water supply and the possible offer of permanent status for the two cities by the SFPUC.

4.06 <u>San Francisco Decisions in 2018 Regarding Future Water Supply</u>

A. By December 31, 2018, San Francisco will have completed any necessary CEQA review pursuant to Section 4.07 that is relevant to making San Jose and Santa Clara

permanent customers of the Regional Water System and will decide whether or not to make San Jose and Santa Clara permanent customers of the Regional Water System. San Francisco will make San Jose and Santa Clara permanent customers only if, and to the extent that, San Francisco determines that Regional Water System long term water supplies are available. In the event that San Francisco decides to afford permanent status to San Jose and Santa Clara, this Agreement will be amended pursuant to Section 2.03.

B. By December 31, 2018, San Francisco will have completed any necessary CEQA review pursuant to Section 4.07 and will decide how much water if any, in excess of the Supply Assurance it will supply to Wholesale Customers from the Regional Water System to meet their projected future water demands until the year 2030, and whether to offer a corresponding increase in the Supply Assurance as a result of its determination.

4.07 Retained Discretion of SFPUC and Wholesale Customers

A. This Agreement contemplates discretionary actions that the SFPUC and the Wholesale Customers may choose to take in the future that could result in physical changes to the environment ("Discretionary Actions"). The Discretionary Actions include decisions to:

1. Develop additional or alternate water resources by the SFPUC or one or more Wholesale Customers;

2. Implement the physical facilities comprising the WSIP by December 31, 2015;

3. Approve wheeling proposals by Wholesale Customers;

4. Approve new wholesale customers and water exchange or cost sharing agreements with other water suppliers;

5. Provide additional water to San Jose and/or Santa Clara;

6. Offer permanent status to San Jose and/or Santa Clara;

7. Reduce or terminate supply to San Jose and/or Santa Clara;

8. Provide additional water to Wholesale Customers in excess of the Supply Assurance to meet their projected future water demands; and

9. Offer a corresponding volumetric increase in the Supply Assurance.

The Discretionary Actions may require the SFPUC or Wholesale Customers to prepare environmental documents in accordance with CEQA prior to the SFPUC or the Wholesale Customers determining whether to proceed with any of the Discretionary Actions. Accordingly, and notwithstanding any provision of this Agreement to the contrary, nothing in this Agreement commits the SFPUC or the Wholesale Customers to approve or carry out any Discretionary Actions that are subject to CEQA. Furthermore, the SFPUC's or Wholesale Customers' decisions to approve any of these Discretionary Actions are subject to the requirement that San Francisco and each Wholesale Customer, as either a "Lead Agency" (as defined in Section 21067 of CEQA and Section 15367 of the CEQA Guidelines) or a "Responsible Agency" (as defined in Section 21069 of CEQA and Section 15381 of the CEQA Guidelines) shall have completed any CEQA-required environmental review prior to approving a proposed Discretionary Action.

B. In considering any proposed Discretionary Actions, the SFPUC and Wholesale Customers retain absolute discretion to: (1) make such modifications to any of the proposed Discretionary Actions as may be necessary to mitigate significant environmental impacts; (2) select feasible alternatives to the proposed Discretionary Actions that avoid significant adverse impacts; (3) require the implementation of specific measures to mitigate the significant adverse environmental impacts as part of the decision to approve the Discretionary Actions; (4) balance the benefits of the proposed Discretionary Actions against any significant environmental impacts before taking final actions to approve the proposed Discretionary Actions if such significant impacts cannot otherwise be avoided; or (5) determine not to proceed with the proposed Discretionary Actions.

Article 5. Wholesale Revenue Requirement

5.01 Scope of Agreement

This Article shall be applicable only to the water rates charged by San Francisco to the Wholesale Customers. Nothing contained in this Agreement shall limit, constrain, or in any way affect the rates which San Francisco may charge for water sold to Retail Customers or the methodology by which such rates are determined.

5.02 General Principles

This Article sets forth the method by which the Wholesale Customers' collective share of expenses incurred by the SFPUC in delivering water to them will be determined. This collective share is defined as the "Wholesale Revenue Requirement."

A. The SFPUC currently operates several enterprises, including the Water Enterprise, the Wastewater Enterprise, and the Hetch Hetchy Enterprise.

B. The Wastewater Enterprise is responsible for treating sewage within San Francisco and provides no benefit to the Wholesale Customers.

C. The Hetch Hetchy Enterprise is responsible for storing and transmitting water to the Water Enterprise, generating hydroelectric power and transmitting it to San Francisco, generating electric power within San Francisco, and distributing electricity and steam heat within San Francisco. Its water supply operations provide benefits to the Wholesale Customers.

D. The Water Enterprise delivers water to both Retail Customers, which are located both within and outside San Francisco, and to the Wholesale Customers, all of which are located outside San Francisco.

E. This Article implements two general principles as follows: (1) the Wholesale Customers should not pay for expenses of SFPUC operations from which they receive no benefit and (2) the Wholesale Customers should pay their share of expenses incurred by the SFPUC in delivering water to them on the basis of Proportional Annual Use unless otherwise explicitly provided in this Agreement.

F. To implement these general principles, the Wholesale Revenue Requirement will consist of, and be limited to, the Wholesale Customers' shares of the following categories of expense:

1. Capital cost recovery of Water Enterprise Existing Assets, and Hetch Hetchy Enterprise Existing Assets classified as Water-Only and the Water-Related portion of Joint assets (Section 5.03)

2. Contribution to the capital cost of Water Enterprise New Regional Assets (Section 5.04)

3. Water Enterprise operation and maintenance expenses, including power purchased from the Hetch Hetchy Enterprise that is used in the operation of the Water Enterprise (Section 5.05)

4. Water Enterprise administrative and general expenses (Section 5.06)

5. Water Enterprise property taxes (Section 5.07)

6. The Water Enterprise's share of the Hetch Hetchy Enterprise's operation and maintenance, administrative and general, and property tax expenses (Section 5.08)

7. The Water Enterprise's share of the Hetch Hetchy Enterprise's capital cost of New Assets classified as Water-Only and the Water-Related portion of Joint assets (Section 5.09)

In each of these cost categories, Direct Retail Expenses will be allocated entirely to Retail Customers. Direct Wholesale Expenses will be allocated entirely to the Wholesale Customers. Regional Expenses will be allocated between Retail Customers and Wholesale Customers as provided in this Article.

G. For purposes of establishing the rates to be charged Wholesale Customers, expenses will be based on the budget for, and estimates of water purchases in, the following fiscal year, as provided in Article 6. For purposes of accounting, the Wholesale Revenue Requirement will be determined on the basis of actual expenses incurred and actual water use, as provided in Article 7.

H. In addition, rates charged to Wholesale Customers may include the Wholesale Customers' contribution to a Wholesale Revenue Coverage Reserve, as provided in Section 6.06, which is not included in the Wholesale Revenue Requirement itself.

5.03 Capital Cost Recovery - Existing Regional Assets

A. SFPUC has previously advanced funds to acquire or construct Existing Assets used and useful in the delivery of water to both Wholesale Customers and Retail Customers. The parties estimate that the Wholesale Customers' share of the net book value of these assets, as of the expiration of the 1984 Agreement on June 30, 2009, will be approximately $366,734,424, as shown on Attachment K-1.

B. In addition, SFPUC has also previously advanced funds received from Retail Customer revenues to acquire or construct assets included in Construction-Work-In-Progress (CWIP) as of June 30, 2009. The parties estimate that the Wholesale Customers' share of the book value of these revenue funded capital expenditures, as of the expiration of the 1984 Agreement on June 30, 2009, will be approximately $15,594,990, as shown on Attachment K-2. The Wholesale Customers shall pay their share of the cost of Existing Assets and revenue-funded CWIP by amortizing the amounts shown on Attachment K-1 and Attachment K-2 over 25 years at an interest rate of 5.13 percent. The amounts to be included in the Wholesale Revenue Requirement pursuant to this section shall be the sum of the annual principal and interest amounts shown on Attachments K-3 (for Water Enterprise Regional Assets and the one Direct Wholesale Asset) and K-4 (for Hetch Hetchy Enterprise Water-Only Assets and the Water-Related portion [45 percent] of Joint assets) calculated on the basis of monthly amortization of principal as set forth on Attachments K-3 and K-4.

C. In addition, the Commission has previously appropriated funds, advanced through rates charged to Retail Customers, for construction of capital projects. Some of these projects are active, and have unexpended balances of appropriated funds that are not included in CWIP as of June 30, 2009. These projects, and the associated balances, are shown on Attachment K-5. Expenditures of funds from these balances during FY 2009-10, FY 2010-11 and FY 2011-12 will be reviewed in FY 2012-13. The SFPUC will prepare a report showing the amount expended in each year on each project and the total expended during all years on all projects that are categorized as Regional or, in the case of Hetch Hetchy Enterprise, are categorized as either Water-Only or Joint. The wholesale share of that total will be determined using the allocation principles in this Agreement based on Proportional Water Use during those three years. The result, plus accrued interest at the rate specified in Section 6.05.B, will be calculated by the SFPUC and its calculation reviewed by the Compliance Auditor as part of the Compliance Audit for FY 2012-13. The audited total will be paid based on a schedule of level annual principal and interest amounts over ten years at an interest rate of 4.00%, calculated on

a monthly amortization basis. All or any portion of the balance may be prepaid. The first year's payment will be included in the Wholesale Revenue Requirement for FY 2014-15.

D. The parties agree that the Wholesale Customers' share of the net book values of Existing Regional Assets as of June 30, 2008 as shown on Attachment K-1 are accurate. The compliance audit conducted on the calculation of the FY 2008-09 Suburban Revenue Requirement required by the 1984 Agreement will determine the actual amounts of depreciation on, and capital additions to, plant in service during that fiscal year. Those amounts will be compared to the corresponding estimates shown on Attachments K-1 and K-2. The differences will be added to or subtracted from the estimated asset values shown on Attachments K-1 and K-2 and the amortization schedules in Attachments K-3 and K-4 will be recalculated. The wholesale allocation factors shall be fixed at 70.1% for the Water Enterprise Existing Assets and 64.2% for Hetch Hetchy Enterprise Existing Assets for both the preliminary and final payment schedules. The SFPUC will prepare and provide to the Wholesale Customers revised Attachments K-1 through K-4 based on the Wholesale Customers' share of the net book value of the assets placed in service as of June 30, 2009 used to provide water service to the Wholesale Customers and the net book value of revenue-funded CWIP expended as of June 30, 2009. The revised Attachments K-1 through K-4 shall be approved by the General Manager of the SFPUC and the General Manager/CEO of BAWSCA and will be substituted for the original Attachments K-1 through K-4.

E. The original Attachments K-1 through K-4, based on estimates, shall be used for estimating the Wholesale Revenue Requirement for the fiscal year beginning July 1, 2009. The revised Attachments, based on audited actuals, shall be used to determine the actual Wholesale Revenue Requirement for FY 2009-10 and to determine the Wholesale Revenue Requirement(s) in all subsequent years, except as may be provided elsewhere in this Agreement.

F. The Wholesale Customers, acting through BAWSCA, may prepay the remaining unpaid Existing Assets principal balance, in whole or in part, at any time without penalty or early payment premium. Any prepayments will be applied in the month immediately following the month in which the prepayment is made and the revised monthly amount(s) will be used to calculate the Wholesale Revenue Requirement. Any partial prepayments must be in an amount at least equal to $10 million. In the event of a partial prepayment, an updated schedule for the remaining payments shall be prepared reflecting the unpaid balance after prepayment,

amortized through the end of FY 2034, calculated as provided in this section. The updated schedule, approved by the General Manager of the SFPUC and the General Manager/CEO of BAWSCA, will be substituted for Attachment K-3 and/or Attachment K-4.

5.04 Capital Cost Contribution - New Regional Assets

A. Debt-Funded Capital Additions. The Wholesale Customers shall pay the wholesale share of Net Annual Debt Service for New Regional Assets. The Regional projects in the WSIP are identified in Attachment L-1.

1. The amount of Net Annual Debt Service for New Regional Assets will be determined for each series of Indebtedness issued. Until the proceeds of a particular series are Substantially Expended, the amount attributable to specific projects will be based on the expected use of proceeds shown in the "Certificate Regarding Use of Proceeds" executed by the SFPUC General Manager on behalf of the Commission in connection with the sale of the Indebtedness, provided such certificate identifies the use of proceeds at a level of detail equivalent to that shown on Attachment L-2, which is a copy of the certificate prepared for the 2006 Revenue Bonds, Series A. If a certificate does not identify the use of proceeds at that level of detail, the SFPUC General Manager shall prepare and execute a separate certificate which does identify the use of proceeds at the level of detail shown on Attachment L-2 and deliver it to BAWSCA within 15 days from the closing of the sale of the Indebtedness.

2. After the proceeds of a series are Substantially Expended, the SFPUC General Manager will prepare and execute a certificate showing the actual expenditure of proceeds at a level of detail equivalent to the initial General Manager certificate. The resulting allocation of Net Debt Service to New Regional Assets for a series of bonds will be used in the fiscal year in which the proceeds have been Substantially Expended and thereafter. Differences between the amount of Net Debt Service paid by Wholesale Customers prior to that year and the amount of Net Debt Service that they should have paid during that time based on the actual expenditure of proceeds will be taken into account in calculation of the balancing account for the fiscal year in which the proceeds were Substantially Expended. The application of the remaining proceeds shall be proportionate to the allocation of the Net Debt Service to New Regional Assets.

3. The Wholesale Customers' share of Net Annual Debt Service for the New Regional Assets that are categorized as Direct Wholesale will be 100 percent. (None of the

projects in the WSIP are categorized as Direct Wholesale.) The Wholesale Customers' share of Net Annual Debt Service for all other New Regional Assets will be determined each year and will be equal to the Wholesale Customers' Proportional Annual Use.

4. If Indebtedness is issued by the SFPUC to refund the 2006 Revenue Bonds, Series A or to refund any other long-term Indebtedness issued after July 1, 2009, the Net Annual Debt Service attributable to proceeds used for refunding will be allocated on the same basis as the Indebtedness being refunded.

5. The SFPUC will prepare an annual report showing for each issue of Indebtedness and through the most recently completed fiscal year: (1) net financing proceeds available to pay project costs, (2) actual earnings on proceeds, (3) actual expenditures by project. The report shall be substantially in the form of Attachment L-3 and shall be delivered to BAWSCA on or before November 30 of each year, commencing November 2009.

6. In addition to Net Debt Service, Wholesale Customers will pay a proportionate share of annual administrative costs associated with Indebtedness, such as bond trustee fees, credit rating agency fees, letter of credit issuer fees, San Francisco Revenue Bond Oversight Committee fees, etc., but only to the extent such fees are neither paid from proceeds of Indebtedness nor included in SFPUC operation and maintenance or administrative and general expenses.

B. **Revenue-Funded Capital Additions**. The Wholesale Customers shall pay the wholesale share of the appropriation contained in the SFPUC annual budget for each year to be used to acquire or construct New Regional Assets. If such appropriations are reimbursed from proceeds of Indebtedness, the Wholesale Customers will be credited for prior payments made under this Section 5.04.B.

The Wholesale Customers' share of the annual appropriation for revenue-funded New Regional Assets that are categorized as Direct Wholesale will be 100 percent. (None of the Repair and Replacement projects in the SFPUC's most recent capital improvement program updated on February 10, 2009, is categorized as Direct Wholesale.) The Wholesale Customers' share of the annual appropriation for all other revenue-funded New Regional Assets will be determined each year and will be equal to the Wholesale Customers' Proportional Annual Use in each fiscal year. The amount appropriated in each fiscal year for the wholesale share of New

Regional Assets shall be contributed to the Wholesale Capital Fund described in Section 6.08 and reported on and administered as shown in that section and Attachments M-1 through M-3.

5.05 **Water Enterprise Operation and Maintenance Expenses**

There are five categories of Water Enterprise Operation and Maintenance Expenses, described below:

A. Source of Supply

1. Description: This category consists of the costs of labor, supervision and engineering; materials and supplies; and other expenses incurred in the operation and maintenance of collecting and impounding reservoirs, dams, wells and other water supply facilities located outside San Francisco; watershed protection; water supply planning; and the purchase of water.

2. Allocation: Direct Retail expenses, including water supply planning for Retail operations (such as City Retail water conservation programs), will be assigned to the Retail Customers. Regional expenses will be allocated between Retail Customers and Wholesale Customers on the basis of Proportional Annual Use. Direct Wholesale expenses will be assigned to the Wholesale Customers. (As of the Effective Date there are no Direct Wholesale expenses in the Source of Supply category.)

B. Pumping

1. Description: This category consists of the costs of labor, supervision and engineering; materials and supplies; and other expenses incurred in the operation and maintenance of water pumping plants, ancillary structures and equipment and surrounding grounds; and fuel and power purchased for pumping water.

2. Allocation: Direct Retail expenses will be assigned to the Retail Customers. Regional expenses will be allocated between Retail Customers and Wholesale Customers on the basis of Proportional Annual Use. Direct Wholesale expenses will be assigned to the Wholesale Customers. (As of the Effective Date there are no Direct Wholesale expenses in the Pumping category.)

C. Treatment

1. Description: This category consists of the costs of labor, supervision and engineering; materials and supplies and other expenses incurred in the operation and

maintenance of water treatment plants and drinking water quality sampling and testing. The cost of water quality testing will not include expenses incurred on behalf of the Wastewater Enterprise. Any remaining costs, after adjusting for the Wastewater Enterprise, will be reduced by the amount of revenue received for laboratory analyses of any type performed for agencies, businesses and/or individuals other than the Water and Hetch Hetchy Enterprises.

2. Allocation: Direct Retail expenses will be assigned to the Retail Customers. Regional expenses will be allocated between Retail Customers and Wholesale Customers on the basis of Proportional Annual Use. Direct Wholesale expenses will be assigned to the Wholesale Customers. (As of the Effective Date there are no Direct Wholesale expenses in the Treatment category.)

D. **Transmission and Distribution**

1. Description: This category consists of the cost of labor, supervision and engineering; materials and supplies; and other expenses incurred in the operation and maintenance of transmission and distribution pipelines, appurtenances, meters (other than those expenses payable by individual Wholesale Customers pursuant to Section 5.10.C.3), distribution reservoirs storing treated water, craft shops and auto shops servicing vehicles used for operation and maintenance of the Regional Water System rather than for Direct Retail facilities, and miscellaneous facilities related to the transmission and distribution of water.

2. Allocation: Direct Retail Transmission and Distribution expenses will be assigned to the Retail Customers. Regional Transmission and Distribution expenses will be allocated between Retail and Wholesale Customers on the basis of Proportional Annual Use. Expenses incurred for the operation and maintenance of three terminal reservoirs, i.e., Sunset Reservoir (North and South Basins), University Mound Reservoir (North and South Basins), and Merced Manor Reservoir, as well as transmission pipelines delivering water to them, are classified as Regional expenses notwithstanding the location of the reservoirs within San Francisco. Direct Wholesale expenses will be assigned to the Wholesale Customers. (As of the Effective Date the only Direct Wholesale expenses in the Transmission and Distribution category are associated with the Palo Alto pipeline.)

E. Customer Services

1. Description: This category consists of labor; materials and supplies; and other expenses incurred for meter reading, customer record keeping, and billing and collection for the Water Enterprise.

2. Allocation: Customer Services expenses will be allocated among the Water Enterprise, the Wastewater Enterprise, and Hetch Hetchy Enterprise in proportion to the time spent by employees in Customer Services for each operating department/enterprise. The Water Enterprise's share of Customer Services expense will be allocated 98 percent to the Retail Customers and two percent to the Wholesale Customers, as illustrated on Attachment N-2, Schedule 1.

5.06 Water Enterprise Administrative and General Expenses

Administrative and General expenses consist of the Water Enterprise's share of the cost of general government distributed through the full-cost Countywide Cost Allocation Plan, the services of SFPUC support bureaus, Water Enterprise administrative and general expenses that cannot be directly assigned to a specific operating and maintenance category, and the cost of the Compliance Audit. These four subcategories, and the method by which costs in each are to be calculated and allocated, are as follows:

A. Countywide Cost Allocation Plan

1. Description: This subcategory consists of the Water Enterprise's share of the costs of San Francisco general government and other City central service departments which are not directly billed to the Water Enterprise or other operating departments. All San Francisco operating departments are assigned a prorated share of these costs through the full-cost Countywide Cost Allocation Plan (COWCAP) prepared annually by the San Francisco Controller.

2. Allocation: The Water Enterprise's assigned share of central government costs as shown in the annual full-cost COWCAP prepared by the San Francisco Controller, will be allocated between Retail Customers and Wholesale Customers on the basis of the composite percentage of the allocated expenses in the five categories of operation and maintenance expense described in Section 5.05. The composite wholesale percentage shown on Attachment N-2, Schedule 1 is 42.07 percent, derived by dividing the wholesale share of

Operation and Maintenance expenses ($46,573,883) by total Operation and Maintenance expenses ($110,700,133).

B. Services of SFPUC Bureaus

1. Description: This subcategory consists of the support services provided to the Water Enterprise by the SFPUC Bureaus, which presently consist of the General Manager's Office, Business Services, External Affairs, and Infrastructure Bureau. Business Services presently includes Financial Services, Information Technology Services, Human Resource Services, Fleet Management, and Customer Services.

2. Allocation: There are three steps involved in determining the Wholesale Customers' share of SFPUC Bureau costs.

a. Step One: Bureau expenses which have either been recovered separately or which provide no benefit to Wholesale Customers will be excluded. Examples of Bureau expenses recovered separately include (1) Customer Services expenses, which are recovered as provided in Section 5.05.E, and (2) Infrastructure expenses, which are assigned to individual projects and capitalized. An example of a Bureau expense that provides no benefit to Wholesale Customers is Information Technology Services expenses for support of the San Francisco Municipal Railway. In addition, the SFPUC will continue its practice of assigning City Attorney Office expenses charged to the General Manager's Office for projects or lawsuits that relate to only one enterprise directly to that enterprise. For example, costs related to a lawsuit involving the Wastewater Enterprise will not be assigned to the Water Enterprise.

b. Step Two: Bureau expenses adjusted as provided in Step One will be allocated among the Water Enterprise, the Wastewater Enterprise and the Hetch Hetchy Enterprise on the basis of the actual salaries of employees in each enterprise or department, as illustrated on Attachment N-2, Schedule 7.

c. Step Three: The amount allocated to the Water Enterprise through Step Two will be allocated between Retail Customers and Wholesale Customers on the basis of Proportional Annual Use.

C. **Water Enterprise Administrative and General**

1. Description: This category includes expenses incurred by the Water Enterprise that are not readily assignable to specific operating divisions. This category includes the following expenses:

a. Water Administration: This includes the costs of labor and other expenses of the administrative section of the Water Enterprise, supervision and engineering expenses, professional services, travel and training, equipment purchases, and materials and supplies not directly assignable to a specific operating unit.

b. Services Provided by Other City Departments: This includes charges of other San Francisco departments directly billed to the Water Enterprise administration by other San Francisco departments for services ordered by the Water Enterprise, such as legal services, risk management, telecommunications, employee relations, purchasing, mail services, and workers compensation claims paid.

c. Litigation and Claims Paid: This includes charges incurred for attorney services and claims and judgments paid in litigation arising from the operation of the Water Enterprise.

2. Allocation: In each of these three subcategories, expenses that benefit only Retail Customers will be excluded. For example, the cost of claims and judgments resulting from a break in or leak from pipelines or reservoirs in the Retail Service Area (with the exception of the three terminal reservoirs and pipelines delivering water to them) will be assigned to the Retail Customers. Remaining Water Enterprise Administrative and General expenses will be allocated between Retail Customers and Wholesale Customers on the basis of the composite percentage of allocated operation and maintenance expense categories described in Section 5.05.

D. **Compliance Audit**. The cost of the Compliance Audit described in Section 7.04 will be assigned 50 percent to the Retail Customers and 50 percent to the Wholesale Customers.

5.07 Water Enterprise Property Taxes

A. Description: This category consists of property taxes levied against property owned by San Francisco located in Alameda, San Mateo and Santa Clara counties and used and managed by the SFPUC.

B. Allocation: All property taxes paid, net of (1) reimbursements received from lessees and permit holders, and (2) refunds from the taxing authority, are Regional expenses. Net property taxes will be allocated between Retail Customers and Wholesale Customers on the basis of Proportional Annual Use.

5.08 Hetch Hetchy Enterprise Expenses

A. Introduction. There are two steps involved in determining the amount of the Wholesale Customers' share of Hetch Hetchy Enterprise expenses.

1. The first step is to determine the Water Enterprise's share of Hetch Hetchy Enterprise operation expenses, maintenance expenses, administrative and general expenses, and property taxes.

2. The second step is to determine the Wholesale Customers' share of expenses allocable to the Water Enterprise.

B. Determination of the Water-Related Portion of Hetch Hetchy Enterprise Expenses

1. Operation and Maintenance Expenses: This category consists of the cost of labor, materials and supplies, and other expenses incurred in operating and maintaining Hetch Hetchy Enterprise physical facilities.

a. Description: Expenses associated exclusively with the production and distribution of hydroelectric power (e.g., generating plants and power transmission lines and towers, transformers and associated electric equipment, purchased power, wheeling charges, rental of power lines, etc.) are categorized as Power-Only and are allocated to power. Expenses associated exclusively with the operation and maintenance of facilities that serve only the water function (e.g., water transmission pipelines and aqueducts, activities related to compliance with federal and state drinking water quality laws, etc.) are categorized as Water-Only and are allocated entirely to water. Expenses associated with the operation and maintenance of facilities that serve both the water and power functions (e.g., dams, security

programs, etc.) are categorized as Joint and are reallocated as 55 percent Power-Related and 45 percent Water-Related.

2. Administrative and General Expenses: There are three subcategories of Hetch Hetchy Enterprise Administrative and General expenses.

a. Full-Cost Countywide Cost Allocation Plan: This subcategory consists of the cost of San Francisco general government and other City central service departments which are not directly billed to operating departments but allocated through the full-cost Countywide Cost Allocation Plan described in Section 5.06.A. Costs in this subcategory are classified as Joint, and are reallocated as 55 percent Power-Related and 45 percent Water-Related.

b. SFPUC Bureau Costs: This subcategory consists of the expenses described in Section 5.06.B. One hundred percent of Customer Services expenses allocated to the Hetch Hetchy Enterprise are categorized as Power-Only. The remaining amount of Bureau expenses allocated to the Hetch Hetchy Enterprise pursuant to Section 5.06.B will be reallocated between power and water in proportion to the salaries of Hetch Hetchy Enterprise employees assigned to each function as shown on Attachment N-2, Schedule 7.1.

c. Other Administrative and General: This subcategory includes payments to the United States required by the Act, labor, supervision and engineering and other costs not readily assignable to a specific operation or maintenance function or program. Costs related to power administration (such as long range planning and policy analysis for energy development, administration of power contracts, and administration of work orders to City departments for energy services) are Power-Only costs. Costs related to water administration (such as legal and professional services for the protection of the City's water rights) are Water-Only costs and will be assigned to the Water Enterprise. Costs related to both power administration and water administration (such as general administration, office rents, office materials and supplies, and services of other City departments benefitting to both power and water are Joint administrative and general costs and are reallocated as 55 percent Power-Related and 45 percent Water-Related.

3. Property Taxes. This category consists of property taxes levied against property owned by San Francisco in Tuolumne, Stanislaus, San Joaquin, and Alameda counties and operated and managed by the Hetch Hetchy Enterprise.

Allocation: Property taxes are classified as Joint costs. They will be reallocated as 55 percent Power-Related and 45 percent Water-Related.

C. Calculation of Wholesale Customers' Share of Hetch Hetchy Enterprise Expenses. The Water Enterprise's share of Hetch Hetchy Enterprise expenses consist of 100 percent of Water-Only expenses and the Water-Related portion (45%) of Joint expenses.

The Wholesale Customers' share of the sum of the Water Enterprise's share of Hetch Hetchy Enterprise expenses determined under subsection B shall be calculated by multiplying that dollar amount by Adjusted Proportional Annual Use.

5.09 Hetch Hetchy Enterprise Capital Costs

A. Introduction. Wholesale Customers are also allocated a share of Hetch Hetchy Enterprise capital costs.

B. Components of Capital Costs. The components of Hetch Hetchy Enterprise capital costs are as follows:

1. Existing Assets Cost Recovery. The Wholesale Customers' repayment of their share of Hetch Hetchy Existing Assets (Water-Only and the Water-Related portion [45 percent] of Joint assets) is shown on Attachment K-4 accompanying Section 5.03.

2. Debt Service on New Assets. The Water Enterprise will be assigned 100 percent of Net Annual Debt Service attributable to acquisition and construction of New Hetch Hetchy Enterprise assets that are Water-Only and the Water-Related portion (45 percent) of Net Annual Debt Service on New Hetch Hetchy Enterprise Joint assets. The provisions of Section 5.04.A apply to debt service on New Hetch Hetchy Enterprise assets.

3. Revenue-Funded Capital Additions. The Water Enterprise will be assigned 100 percent of capital expenditures from revenues for New Hetch Hetchy Enterprise assets that are Water-Only and the Water-Related portion (45 percent) of such expenditures for new Hetch Hetchy Enterprise Joint assets. The provisions of Section 5.04.B apply to the payment of New revenue-funded Hetch Hetchy Enterprise assets.

C. Calculation of Wholesale Customers' Share of Hetch Hetchy Enterprise Capital Costs. The Wholesale Customers' share of the Net Annual Debt Service and revenue funded capital expenditures determined under subsections B.2 and 3 shall be calculated by multiplying that dollar amount by Adjusted Proportional Annual Use.

5.10 **Additional Agreements Related to Financial Issues**

A. **Wholesale Customers Not Entitled to Certain Revenues**. The Wholesale Customers have no entitlement to any of the following sources of revenue to the SFPUC.

1. Revenues from leases or sales of SFPUC real property.

2. Revenues from the other utility services such as the sale of electric power, natural gas and steam.

3. Revenues from the sale of water to customers and entities other than the Wholesale Customers.

4. Revenues earned from the investment of SFPUC funds other than funds contributed by the Wholesale Customers to the Wholesale Revenue Coverage Reserve described in Section 6.06 or the Wholesale Capital Fund described in Section 6.08. Wholesale Customers are also entitled to the benefit of earnings on proceeds of Indebtedness (through expenditure on New Regional Assets and /or application to Debt Service) and to interest on the Balancing Account as provided in Section 6.05.B.

5. Revenues not related to the sale of water.

B. **Wholesale Customers Not Charged with Certain Expenses**. The Wholesale Customers will not be charged with any of the following expenses:

1. Capital costs for assets constructed or acquired prior to July 1, 1984 other than Existing Asset costs that are repaid pursuant to Section 5.03.

2. Expenses incurred by the SFPUC for generation and distribution of electric power, including Hetch Hetchy Enterprise Power-Only expenses and the Power-Related share of Hetch Hetchy Enterprise Joint expenses. An exception to this is Regional energy costs incurred by the Water Enterprise, for which Wholesale Customers are charged on the basis of Proportional Annual Use.

3. Expenses incurred by SFPUC in providing water to Retail Customers.

4. Expenses associated with the SFPUC's accruals or allocations for uncollectible Retail Water accounts.

5. Attorneys' fees and costs incurred by the Wholesale Customers that a court of competent jurisdiction orders San Francisco to pay as part of a final, binding judgment against San Francisco as provided in Section 8.03.B.2.

6. Any expenses associated with funding any reserves (other than the required Wholesale Revenue Coverage Reserve described in Section 6.06) accrued and not anticipated to be paid within one year unless such reserve is established by mutual agreement of the SFPUC and BAWSCA.

7. Any expenses accrued in respect to pending or threatened litigation, damage or personal injury claims or other loss contingencies unless projected to be paid within one year. Otherwise, such expenses will be charged to the Wholesale Customers when actually paid.

8. Any expense associated with installing, relocating, enlarging, removing or modifying meters and service connections at the request of an individual Wholesale Customer.

9. The Retail Customers' portion of any Environmental Enhancement Surcharges imposed to enforce the Interim Supply Limitation set forth in Section 4.04.

C. **Revenues Not Credited to Payment of Wholesale Revenue Requirement.** The following payments by Wholesale Customers, individually or collectively, are not credited as Wholesale revenues for purposes of Section 6.05.B:

1. Payments by individual Wholesale Customers of the Environmental Enhancement Surcharge imposed to enforce the Interim Supply Limitation set forth in Section 4.04.

2. Payments of attorneys' fees and costs incurred by San Francisco that a court of competent jurisdiction orders the Wholesale Customers to pay as part of a final, binding judgment against the Wholesale Customers, as provided in Section 8.03.B.3.

3. Payments by individual Wholesale Customers for installation, relocation, enlargement, removal or modification of meters and service connections requested by, and charged to, a Wholesale Customer.

4. Payments applied to the amortization of the ending balance in the balancing account under the 1984 Agreement, pursuant to Section 6.05.A.

5. Payments of the Water Management Charge which are delivered to BAWSCA pursuant to Section 3.06.

6. Payments directed to the Wholesale Revenue Coverage Reserve pursuant to Section 6.06.

7. Prepayments authorized by Sections 5.03.C and 5.03.F.

D. <u>Other</u>

1. The Wholesale Customers will receive a proportional benefit from funds received by the SFPUC from (a) governmental grants, rebates, reimbursements or other subventions, (b) private-sector grants for Regional capital or operating purposes of the Water Enterprise and the Water-Only and Water-related portion of Joint Hetch Hetchy Water Enterprise expenses, or (c) a SFPUC use of taxable bonds.

2. The Wholesale Customers will receive a proportionate benefit from recovery of damages, including liquidated damages, by SFPUC from judgments against or settlements with contractors, suppliers, sureties, etc., related to Regional Water System projects and the Water-Only and Water-Related portion of Joint Hetch Hetchy Enterprise projects.

3. The SFPUC will continue to charge Wholesale Customers for assets acquired or constructed with proceeds of Indebtedness on which Wholesale Customers paid Debt Service during the Term of this Agreement on the "cash" basis (as opposed to the "utility" basis) after the expiration or earlier termination of this Agreement. The undertaking in this Section 5.10.D.3 will survive the expiration or earlier termination of this Agreement.

Article 6. Integration of Wholesale Revenue Requirement with SFPUC Budget Development and Rate Adjustments

6.01 General

A. The purpose of the allocation bases set forth in Article 5 is to determine the Wholesale Revenue Requirement for each fiscal year. The Wholesale Revenue Requirement can only be estimated in advance, based on projected costs and water deliveries. These projections are used to establish water rates applicable to the Wholesale Customers.

B. After the close of each fiscal year, the procedures described in Article 7 will be used to determine the actual Wholesale Revenue Requirement for that year, based on actual costs incurred, allocated according to the provisions of Article 5, and using actual water delivery data. The amount properly allocated to the Wholesale Customers shall be compared to the amount billed to the Wholesale Customers for the fiscal year, other than those identified in Section 5.10.C. The difference will be entered into a balancing account to be charged to, or credited to, the Wholesale Customers, as appropriate.

C. The balancing account shall be managed as described in Section 6.05.

6.02 Budget Development

The SFPUC General Manager will send a copy of the proposed SFPUC budget to BAWSCA at the same time as it is sent to the Commission. In addition, a copy of materials submitted to the Commission for consideration at meetings prior to the meeting at which the overall SFPUC budget is considered (including (a) operating budgets for the Water Enterprise and the Hetch Hetchy Enterprise, (b) budgets for SFPUC Bureaus, and (c) capital budgets for the Water Enterprise and the Hetch Hetchy Enterprise) will also be sent to BAWSCA concurrently with their submission to the Commission.

6.03 Rate Adjustments

A. Budget Coordinated Rate Adjustments. Adjustments to the rates applicable to the Wholesale Customers shall be coordinated with the budget development process described in this section except to the extent that Sections 6.03.B and 6.03.C authorize emergency rate increases and drought rate increases, respectively.

If the SFPUC intends to increase wholesale water rates during the ensuing fiscal year, it will comply with the following procedures:

1. Adjustments to the wholesale rates will be adopted by the Commission at a regularly scheduled meeting or at special meeting, properly noticed, called for the purpose of adjusting rates or for taking any other action under the jurisdiction of the Commission.

2. The SFPUC will send a written notice by mail or electronic means to each Wholesale Customer and to BAWSCA of the recommended adjustment at least thirty (30) days prior to the date of the meeting at which the Commission will consider the proposed adjustment. The notice will include the date, time and place of the Commission meeting.

3. The SFPUC shall prepare and provide to each Wholesale Customer and to BAWSCA the following materials: (a) a table illustrating how the increase or decrease in the Wholesale Revenue Requirement and wholesale rates were calculated, substantially in the form of Attachment N-1, (b) a schedule showing the projected expenses included in the Wholesale Revenue Requirement for the fiscal year for which the rates are being proposed, and supporting materials, substantially in the form of Attachment N-2, and (c) a schedule showing projected water sales, Wholesale Revenue Requirements and wholesale rates for the fiscal year for which rates are being set and the following four years, substantially in the form of Attachment N-3. These materials will be included with the notification required by Section 6.03.A.2.

4. Rate adjustments will be effective no sooner than thirty (30) days after adoption of the wholesale rate by the Commission.

5. San Francisco will use its best efforts to provide the Wholesale Customers with the information described above. San Francisco's failure to comply with the requirements set forth in this section shall not invalidate any action taken by the Commission (including, but not limited to, any rate increase or decrease adopted). In the event of such failure, the Wholesale Customers may either invoke arbitration, as set forth in Section 8.01, or seek injunctive relief, to compel San Francisco to remedy the failure as soon as is reasonably practical, and San Francisco shall be free to oppose the issuance of the requested judicial or arbitral relief on any applicable legal or equitable basis. The existence of this right to resort to arbitration shall not be deemed to preclude the right to seek injunctive relief.

6. Because delays in the budget process or other events may cause San Francisco to defer the effective date of Wholesale Customer rate adjustments until after the beginning of San Francisco's fiscal year, nothing contained in this Agreement shall require San Francisco to make any changes in the water rates charged to Wholesale Customers effective at

the start of San Francisco's fiscal year or at any other specific date. Nothing in the preceding sentence shall excuse non-compliance with the provisions of Section 6.02 and this section.

B. **Emergency Rate Increases**. The Commission may adjust the Wholesale Customers' rates without complying with the requirements of Section 6.03.A in response to an Emergency that damages the Regional Water System and disrupts San Francisco's ability to maintain normal deliveries of water to Retail and Wholesale Customers. In such an Emergency, the Commission may adopt an emergency rate surcharge applicable to Wholesale Customers without following the procedures set forth in this section, provided that any such rate surcharge imposed by the Commission shall be applicable to both Retail and Wholesale Customers and incorporate the same percentage increase for all customers. Any emergency rate surcharge adopted by the Commission shall remain in effect only until the next-budget coordinated rate-setting cycle.

C. **Drought Rates**. If the Commission declares a water shortage emergency under Water Code Section 350, implements the Tier 1 Shortage Plan (Attachment H) described in Section 3.11.C, and imposes drought rates on Retail Customers, it may concurrently adjust wholesale rates independently of coordination with the annual budget process. Those adjustments may be designed to encourage water conservation and may constitute changes to the structure of the rates within the meaning of Section 6.04. The parties agree, however, that, in adopting changes in rates in response to a declaration of water shortage emergency; the Commission shall comply with Section 6.03.A.1 and 2 but need not comply with Section 6.04.B. Drought Rate payments and payments of excess use charges levied in accordance with the Tier 1 Shortage Plan described in Section 3.11.C constitute Wholesale Customer Revenue and count towards the Wholesale Revenue Requirement. The SFPUC may use these revenues to purchase additional water for the Wholesale Customers from the State Drought Water Bank or other willing seller.

6.04 Rate Structure

A. This Agreement is not intended and shall not be construed to limit the Commission's right (a) to adjust the structure of the rate schedule applicable to the Wholesale Customers (i.e., the relationship among the several charges set out therein) or (b) to add, delete, or change the various charges which make up the rate schedule, provided that neither such charges nor the structure of the rate schedule(s) applicable to the Wholesale Customers shall be arbitrary, unreasonable, or unjustly discriminatory as among said customers. The

SFPUC will give careful consideration to proposals for changes in the rate schedule made jointly by the Wholesale Customers but, subject to the limitations set out above, shall retain the sole and exclusive right to determine the structure of the rate schedule.

B. If the SFPUC intends to recommend that the Commission adopt one or more changes to the structure of wholesale rates (currently set forth in SFPUC Rate Schedule W-25), it shall prepare and distribute to the Wholesale Customers and BAWSCA a report describing the proposed change(s), the purpose(s) for which it/they are being considered, and the estimated financial effect on individual Wholesale Customers or classes of customers. Wholesale Customers may submit comments on the report to the SFPUC for sixty (60) days after receiving the report. The SFPUC will consider these comments and, if it determines to recommend that the Commission adopt the change(s), as described in the report or as modified in response to comments, the SFPUC General Manager shall submit a report to the Commission recommending specific change(s) in the rate structure. Copies of the General Manager's report shall be sent to all Wholesale Customers and BAWSCA at least thirty (30) days prior to the Commission meeting at which the changes will be considered.

C. The SFPUC may recommend, and the Commission may adopt, changes in the structure of wholesale rates at any time. However, the new rate schedule implementing these changes will become effective at the beginning of the following fiscal year.

6.05 Balancing Account

A. **Balancing Account Established Under 1984 Agreement**. The amount of credit in favor of San Francisco as of the expiration of the term of 1984 Agreement (June 30, 2009) is not known with certainty as of preparation and execution of this Agreement. It will not be known with certainty until the Compliance Audit for FY 2008-09 is completed and disputes, if any, that the Wholesale Customers or the SFPUC may have with the calculation of the Suburban Revenue Requirement for that fiscal year and for previous fiscal years have been settled or decided by arbitration.

The parties anticipate that the amount of the credit in favor of San Francisco as of June 30, 2009 may be within the range of $15 million to $20 million.

In order to reduce the credit balance due San Francisco under the 1984 Agreement in an orderly manner, while avoiding unnecessary fluctuations in wholesale rates, the parties agree to implement the following procedure.

1. In setting wholesale rates for FY 2009-10, SFPUC will include a balancing account repayment of approximately $2 million.

2. In setting wholesale rates for FY 2010-11 and following years, SFPUC will include a balancing account repayment of not less than $2 million and not more than $5 million annually until the full amount of the balance due, plus interest at the rate specified in Section 6.05.B, is repaid.

3. The actual ending balance as of June 30, 2009 will be determined, by the parties' agreement or arbitral ruling, after the Compliance Audit report for FY 2008-09 is delivered to BAWSCA. That amount, once determined, will establish the principal to be amortized through subsequent years' repayments pursuant to this Section 6.05.A.

B. Balancing Account Under This Agreement

1. Operation. After the close of each fiscal year, the SFPUC will compute the costs allocable to the Wholesale Customers for that fiscal year pursuant to Article 5, based on actual costs incurred by the SFPUC and actual amounts of water used by the Wholesale Customers and the Retail Customers. That amount will be compared to the amounts billed to the Wholesale Customers for that fiscal year (including any Excess Use Charges, but excluding revenues described in Section 5.10.C). The difference will be posted to a "balancing account" as a credit to, or charge against, the Wholesale Customers. Interest shall also be posted to the balancing account calculated by multiplying the amount of the opening balance by the average net interest rate, certified by the Controller as earned in the San Francisco Treasury for the previous fiscal year on the San Francisco County Pooled Investment Account. Interest, when posted, will carry the same mathematical sign (whether positive or negative) as carried by the opening balance. The amount posted to the balancing account in each year shall be added to, or subtracted from, the balance in the account from previous years. The calculation of the amount to be posted to the balancing account shall be included in the report prepared by the SFPUC pursuant to Section 7.02.

The opening balance for fiscal year 2009-10 shall be zero.

2. Integration of Balancing Account with Wholesale Rate Setting Process. If the amount in the balancing account is owed to the Wholesale Customers (a positive balance), the SFPUC shall take it into consideration in establishing wholesale rates. However, the SFPUC need not apply the entire amount to reduce wholesale rates for the immediately ensuing

year. Instead, the SFPUC may prorate a positive ending balance over a period of up to three successive years in order to avoid fluctuating decreases and increases in wholesale rates.

a. If a positive balance is maintained for three successive years and represents 10 percent or more of the Wholesale Revenue Requirement for the most recent fiscal year, the SFPUC shall consult with BAWSCA as to the Wholesale Customers' preferred application of the balance. The Wholesale Customers shall, through BAWSCA, direct that the positive balance be applied to one or more of the following purposes: (a) transfer to the Wholesale Revenue Coverage Reserve, (b) amortization of any remaining negative balance from the ending balancing account under the 1984 Agreement, (c) prepayment of the existing asset balance under Section 5.03, (d) water conservation or water supply projects administered by or through BAWSCA, (e) immediate reduction of wholesale rates, or (f) continued retention for future rate stabilization purposes. In the absence of a direction from BAWSCA, the SFPUC shall continue to retain the balance for rate stabilization in subsequent years.

b. If the amount in the balancing account is owed to the SFPUC (a negative balance), the SFPUC shall not be obligated to apply all or any part of the negative balance in establishing wholesale rates for the immediately ensuring year. Instead, the SFPUC may prorate the negative balance in whole or in part over multiple years in order to avoid fluctuating increases and decreases in wholesale rates.

6.06 <u>Wholesale Revenue Coverage Reserve</u>

A. The SFPUC may include in wholesale rates for any fiscal year an additional dollar amount ("Wholesale Revenue Coverage"), which for any fiscal year shall equal the following:

1. The lesser of (i) 25% of the Wholesale Customers' share of Net Annual Debt Service for that fiscal year determined as described in Section 5.04.A, or (ii) the amount necessary to meet the Wholesale Customers' proportionate share of Debt Service coverage required by then-current Indebtedness for that fiscal year, minus

2. A credit for (i) the actual amounts previously deposited in the "Wholesale Revenue Coverage Reserve" (as defined in subsection B below), (ii) accrued interest on the amounts on deposit in the Wholesale Revenue Coverage Reserve, and (iii) an amount equal to any additional interest that would have accrued on the actual amounts previously deposited in

the Wholesale Revenue Coverage Reserve assuming no withdrawals had been made therefrom.

B. During each fiscal year, the SFPUC will set aside and deposit that portion of revenue equal to Wholesale Revenue Coverage into a separate account that the SFPUC will establish and maintain, to be known as the "Wholesale Revenue Coverage Reserve." Deposits into the Wholesale Revenue Coverage Reserve shall be made no less frequently than monthly. The Wholesale Revenue Coverage Reserve shall be credited with interest at the rate specified in Section 6.05.B. The SFPUC may use amounts in the Wholesale Revenue Coverage Reserve for any lawful purpose. Any balance in the Wholesale Revenue Coverage Reserve in excess of the Wholesale Revenue Coverage amount as of the end of any fiscal year (as calculated in subsection 6.06(A) above) shall be applied as a credit against wholesale rates in the immediately following fiscal year unless otherwise directed by BAWSCA.

C. Within 180 days following the later of expiration of the Term or final payment of Debt Service due on Indebtedness issued during the Term to which Wholesale Customers were contributing, SFPUC shall rebate to the Wholesale Customers an amount equal to the Wholesale Revenue Coverage amount in effect for the fiscal year during which the Term expires or the final payment of Debt Service on Indebtedness is made based on each Wholesale Customer's Proportional Annual Use in the fiscal year during which the Term expires or the final payment of debt service on Indebtedness is made.

D. SFPUC shall provide a schedule of debt issuance (with assumptions), and the Wholesale Customers' share of Net Annual Debt Service (actual and projected) expected to be included in wholesale rates starting in 2009-10 through the expected completion of the WSIP. The schedule is to be updated annually prior to rate setting. If estimated Debt Service is used in rate setting, the SFPUC must be able to demonstrate that the Water Enterprise revenues will be sufficient to meet the additional bonds test for the proposed bonds and rate covenants for the upcoming year.

E. Conditions in the municipal bond market may change from those prevailing in 2009. If, prior to expiration of the Term, the SFPUC determines that it would be in the best financial interest of both Retail Customers and Wholesale Customers of the Regional Water System for the Debt Service coverage requirement to be increased in one or more series of proposed new Indebtedness above 1.25%, or for the coverage covenant to be strengthened in

other ways, it will provide a written report to BAWSCA. The report will contain (1) a description of proposed covenant(s) in the bond indenture; (2) an explanation of how savings are expected to be achieved (e.g., increase in the SFPUC's credit rating over the then-current level; ability to obtain credit enhancement, etc.); (3) the estimated all-in true interest cost savings; (4) a comparison of the Wholesale Revenue Requirements using the Debt Service coverage limitation in subsection A and under the proposed methodology; and (5) a comparison of the respective monetary benefits expected to be received by both Retail and Wholesale Customers. The SFPUC and BAWSCA agree to meet and confer in good faith about the proposed changes.

F. Any increase in Debt Service coverage proposed by the SFPUC shall be commensurate with Proportional Water Use by Retail and Wholesale Customers. If the SFPUC demonstrates that an increase in Debt Service coverage will result in equivalent percentage reductions in total Wholesale and Retail Debt Service payments over the life of the proposed new Indebtedness, based on Proportional Water Use, BAWSCA may agree to a modification of the Wholesale Revenue Coverage requirement in subsection A. If BAWSCA does not agree to a proposed modification in coverage requirements in the covenants for new Indebtedness, SFPUC may nevertheless proceed with the modification and the issuance of new Indebtedness. Any Wholesale Customer, or BAWSCA, may challenge an increase in the Wholesale Revenue Requirement resulting from the modification in Debt Service coverage through arbitration as provided in Section 8.01.A. If the arbitrator finds that the increase in Debt Service coverage (1) did not and will not result in equivalent percentage reductions in total Wholesale and Retail Debt Service payments over the life of the proposed new Indebtedness, based on Proportional Water Use, or (2) was not commensurate with Proportional Water Use, the arbitrator may order the Wholesale Revenue Requirement to be recalculated both retrospectively and prospectively to eliminate the differential impact to Wholesale or Retail Customers, subject to the limitation in Section 8.01.C.

6.07 <u>Working Capital Requirement</u>

A. The SFPUC maintains working capital in the form of unappropriated reserves for the purpose of bridging the gap between when the SFPUC incurs operating expenses required to provide service and when it receives revenues from its Retail and Wholesale Customers. The Wholesale Customers shall fund their share of working capital as part of the annual Wholesale Revenue Requirement calculation. The amount of wholesale working capital for which the Wholesale Customers will be responsible will be determined using the 60-day standard formula approach.

B. Applying this approach, annual wholesale working capital equals one-sixth of the wholesale allocation of operation and maintenance, administrative and general, and property tax expenses for the Water and Hetch Hetchy Enterprises. Wholesale working capital shall be calculated separately for the Water and Hetch Hetchy Enterprises.

C. Each month, the sum of the Water Enterprise and Hetch Hetchy Enterprise working capital components will be compared with the ending balance in the Wholesale Revenue Coverage Reserve to determine if the Wholesale Customers provided the minimum required working capital. If the Wholesale Revenue Coverage Reserve is greater than the total Water Enterprise and Hetch Hetchy Enterprise working capital requirement, the Wholesale Customers will have provided their share of working capital. If the Wholesale Revenue Coverage Reserve is less than the total Water Enterprise and Hetch Hetchy Enterprise working capital requirement, the Wholesale Customers will be charged interest on the difference, which will be included in the adjustment to the Balancing Account under Section 6.05.B for the subsequent fiscal year.

6.08 <u>Wholesale Capital Fund</u>

A. The SFPUC currently funds revenue-funded capital projects through annual budget appropriations that are included in rates established for that fiscal year and transferred to a capital project fund from which expenditures are made. Consistent with the San Francisco Charter and Administrative Code, the SFPUC appropriates funds in advance of construction in order to maintain a positive balance in the capital project fund. The capital project fund also accrues interest and any unspent appropriations in excess of total project costs. It is the SFPUC's practice to regularly monitor the capital project fund balance to determine whether a surplus has accumulated, which can be credited against the next fiscal year's capital project appropriation.

B. The SFPUC shall establish a comparable Wholesale Revenue-Funded Capital Fund (Wholesale Capital Fund) to enable the Wholesale Customers to fund the wholesale share of revenue-funded New Regional Assets. The Wholesale Capital Fund balance is zero as of July 1, 2009. The SFPUC may include in wholesale rates for any fiscal year an amount equal to the wholesale share of the SFPUC's appropriation for revenue funded New Regional Assets for that year, which sum will be credited to the Wholesale Capital Fund. The wholesale share of other sources of funding, where legally permitted and appropriately accounted for under GAAP,

will also be credited to the Wholesale Capital Fund, together with interest earnings on the Wholesale Capital Fund balance.

C. The SFPUC will expend revenues appropriated and transferred to the Wholesale Capital Fund only on New Regional Assets. The annual capital appropriation included in each fiscal year's budget will be provided to BAWSCA in accordance with Section 6.02 and will take into account the current and projected balance in the Wholesale Capital Fund, as well as current and projected unexpended and unencumbered surplus, as shown on attachment M-1, which will be prepared by the SFPUC each year.

D. Commencing on November 30, 2010 and thereafter in each fiscal year during the Term, the SFPUC will also provide an annual report to BAWSCA on the status of individual revenue-funded New Regional Assets, substantially in the form of Attachment M-2.

E. In order to prevent the accumulation of an excessive unexpended and unencumbered surplus in the Wholesale Capital Fund, the status of the fund balance will be reviewed through the Compliance Audit at five-year intervals, commencing in FY 2014-15. Any excess fund balance (i.e., an accumulated unexpended, unencumbered amount in excess of ten percent (10%) of the wholesale share of total capital appropriations for New Regional Assets during the five preceding years) will be transferred to the credit of the Wholesale Customers to the Balancing Account described in Section 6.05. Attachment M-3 illustrates the operation of this review process, covering FY 2009-10 through FY 2013-14 and FY 2014-15 through 2018-19.

F. Three years prior to the end of the Term, the SFPUC and BAWSCA will discuss the disposition of the Wholesale Capital Fund balance at the end of the Term. Absent agreement, any balance remaining in the Wholesale Capital Fund at the end of the Term shall be transferred to the Balancing Account, to the credit of the Wholesale Customers.

Article 7. Accounting Procedures; Compliance Audit

7.01 SFPUC Accounting Principles, Practices

A. **Accounting Principles.** San Francisco will maintain the accounts of the SFPUC and the Water and Hetch Hetchy Enterprises in conformity with Generally Accepted Accounting Principles. San Francisco will apply all applicable pronouncements of the Governmental Accounting Standards Board (GASB) as well as statements and interpretations of the Financial Accounting Standards Board and Accounting Principles Board opinions issued on or before March 30, 1989, unless those pronouncements or opinions conflict with GASB pronouncements.

B. **General Rule.** San Francisco will maintain the accounting records of the SFPUC and the Water and Hetch Hetchy Enterprises in a format and level of detail sufficient to allow it to determine the annual Wholesale Revenue Requirement in compliance with this Agreement and to allow its determination of the Wholesale Revenue Requirement to be audited as provided in Section 7.04.

C. **Water Enterprise.** San Francisco will maintain an account structure which allows utility plant and operating and maintenance expenses to be segregated by location (inside San Francisco and outside San Francisco) and by function (Direct Retail, Regional and Direct Wholesale).

D. **Hetch Hetchy Enterprise.** San Francisco will maintain an account structure which allows utility plant and operating and maintenance expenses to be segregated into Water Only, Power Only and Joint categories.

E. **SFPUC.** San Francisco will maintain an account structure which allows any expenses of SFPUC bureaus that benefit only the Wastewater Enterprise, the Power-Only operations of the Hetch Hetchy Enterprise or Retail Customers to be excluded from the Wholesale Revenue Requirement.

F. **Utility Plant Ledgers.** San Francisco will maintain subsidiary plant ledgers for the Water and Hetch Hetchy Enterprises that contain unique identifying numbers for all assets included in the rate base and identify the original cost, annual depreciation, accumulated depreciation, date placed in service, useful life, salvage value if any, source of funding (e.g., bond series, revenues, grants), and classification for purposes of this Agreement.

G. **Debt.** San Francisco will maintain documentation identifying:

1. The portion of total bonded debt outstanding related to each series of each bond issue.

2. The portion of total interest expense related to each series of each bond issue.

3. The use of proceeds of each bond issue (including proceeds of commercial paper and/or other interim financial instruments redeemed or expected to be redeemed from bonds and earnings on the proceeds of financings) in sufficient detail to determine, for each bond issue, the proceeds and earnings of each (including proceeds and earnings of interim financing vehicles redeemed by a bond issue) and the total amounts expended on Direct Retail improvements and the total amounts expended on Regional improvements.

H. **Changes in Accounting.** Subject to subsections A thru G, San Francisco may change the chart of accounts and accounting practices of the SFPUC and the Water and Hetch Hetchy Enterprises. However, the allocation of any expense to the Wholesale Customers that is specified in the Agreement may not be changed merely because of a change in (1) the accounting system or chart of accounts used by SFPUC, (2) the account to which an expense is posted or (3) a change in the organizational structure of the SFPUC or the Water or Hetch Hetchy Enterprises.

I. **Audit.** San Francisco will arrange for an audit of the financial statements of Water and Hetch Hetchy Enterprises to be conducted each year by an independent certified public accountant, appointed by the Controller, in accordance with Generally Accepted Auditing Standards.

7.02 Calculation of and Report on Wholesale Revenue Requirement

A. Within five months after the close of each fiscal year, San Francisco will prepare a report showing its calculation of the Wholesale Revenue Requirement for the preceding fiscal year and the change in the balancing account as of the end of that fiscal year. The first such report will be prepared by November 30, 2010 and will cover fiscal year 2009-10 and the balancing account as of June 30, 2010.

B. The report will consist of the following items:

1. Statement of changes in the balancing account for the fiscal year being reported on, and for the immediately preceding fiscal year, substantially in the form of Attachment O.

2. Detailed supporting schedules 8.1 through 8.2 substantially in the form of Attachment N-2.

3. Description and explanation of any changes in San Francisco's accounting practices from those previously in effect.

4. Explanation of any line item of expense (shown on Attachment N-2, schedules 1 and 4) for which the amount allocated to the Wholesale Customers increased by (a) ten percent or more from the preceding fiscal year, or (b) more than $1,000,000.

5. Representation letter signed by the SFPUC General Manager and by other SFPUC financial staff shown on Attachment P, as the General Manager may direct, subject to change in position titles at the discretion of the SFPUC.

C. The report will be delivered to the BAWSCA General Manager by the date identified in Subsection A.

Once the report has been delivered to BAWSCA, San Francisco will, upon request:

1. Provide BAWSCA with access to, and copies of, all worksheets and supporting documents used or prepared by San Francisco during its calculation of the Wholesale Revenue Requirement;

2. Make available to BAWSCA all supporting documentation and calculations used by San Francisco in preparing the report; and

3. Promptly provide answers to questions from BAWSCA staff about the report.

7.03 Appointment of Compliance Auditor

A. **Purpose**. The purpose of this section is to provide for an annual Compliance Audit by an independent certified public accountant of the procedures followed and the underlying data used by San Francisco in calculating the Wholesale Revenue Requirement for the preceding fiscal year. The annual Compliance Audit shall also determine whether the Wholesale Revenue Requirement has been calculated in accordance with the terms of the Agreement and whether amounts paid by the Wholesale Customers in excess of or less than the Wholesale Revenue Requirement have been posted to the balancing account, together with interest as provided in Section 6.05.

B. **Method of Appointment**. The Controller shall select an independent certified public accountant ("Compliance Auditor") to conduct the Compliance Audit described below. The Compliance Auditor may be the same certified public accountant engaged by the Controller to audit the financial statements of the Water and Hetch Hetchy Enterprises. Subject to approval by the Controller and the General Manager of the SFPUC, the Compliance Auditor shall have the authority to engage such consultants as it deems necessary or appropriate to assist in the audit. The terms of this Article shall be incorporated into the contract between San Francisco and the Compliance Auditor, and the Wholesale Customers shall be deemed to be third-party beneficiaries of said contract.

7.04 Conduct of Compliance Audit

A. **Standards**. The Compliance Auditor shall perform the Compliance Audit in accordance with Generally Accepted Auditing Standards. In particular, its review shall be governed by the standards contained in Section AU 623 (Reports on Specified Elements, Accounts or Items of a Financial Statement) of the AICPA, *Professional Standards*, as amended from time to time.

B. **Preliminary Meeting; Periodic Status Reports; Access to Data**. Prior to commencing the audit, the Compliance Auditor shall meet with San Francisco and BAWSCA to discuss the audit plan, the procedures to be employed and the schedule to be followed. During the course of the audit, the Compliance Auditor shall keep San Francisco and BAWSCA informed of any unforeseen problems or circumstances which could cause a delay in the audit or any material expansion of the audit's scope. The Compliance Auditor shall be given full

access to all records of the SFPUC and the Water and Hetch Hetchy Enterprises that the Auditor deems necessary for the audit.

C. **Audit Procedures**. The Compliance Auditor shall review San Francisco's calculation of the Wholesale Revenue Requirement and the underlying data in order to carry out the purpose of the audit described in Section 7.03.A and to issue the report described in Section 7.05. At a minimum, the Compliance Auditor shall address the following:

1. Water Enterprise Operating and Maintenance Expenses. The Compliance Auditor shall review Water Enterprise cost ledgers to determine whether the recorded operating and maintenance expenses fairly reflect the costs incurred, were recorded on a basis consistent with applicable Generally Accepted Accounting Principles, and were allocated to the Wholesale Customers as provided in this Agreement.

2. Water Enterprise Administrative and General Expenses. The Compliance Auditor shall review Water Enterprise cost ledgers and other appropriate financial records, including those of the SFPUC, to determine whether the recorded administrative and general expenses fairly reflect the costs incurred by or allocated to the Water Enterprise, whether they were recorded on a basis consistent with applicable Generally Accepted Accounting Principles, whether SFPUC charges were allocated to the Water Enterprise in accordance with this Agreement, and whether the amount of administrative and general expenses allocated to the Wholesale Customers was determined as provided by this Agreement.

3. Property Taxes. The Compliance Auditor shall review Water Enterprise cost ledgers to determine whether the amount of property taxes shown on the report fairly reflects the property tax expense incurred by San Francisco for Water Enterprise property outside of San Francisco and whether there has been deducted from the amount to be allocated (1) all taxes actually reimbursed to San Francisco by tenants of Water Enterprise property under leases that require such reimbursement and (2) any refunds received from the taxing authority. The Compliance Auditor also shall determine whether the amount of property taxes allocated to the Wholesale Customers was determined as provided in this Agreement.

4. Debt Service. The Compliance Auditor shall review SFPUC records to determine whether debt service, and associated coverage requirements, were allocated to the Wholesale Customers as provided in this Agreement.

5. Amortization of Existing Assets in Service as of June 30, 2009. The Compliance Auditor shall review both Water and Hetch Hetchy Enterprise records to determine whether the payoff amount for Existing Assets allocated to the Wholesale Customers as shown on Attachment K-1 through K-4 was calculated as provided in Section 5.03 of this Agreement.

6. Revenue-Funded Capital Appropriations/Expenditures. The Compliance Auditor shall review San Francisco's calculation of actual expenditures on the wholesale share of revenue-funded New Regional Assets and remaining unexpended and unencumbered project balances in the "Wholesale Capital Fund" described in Section 6.08, to determine whether the procedures contained in that section were followed.

7. Hetch Hetchy Expenses. The Compliance Auditor shall determine whether Hetch Hetchy Enterprise expenses were allocated to the Wholesale Customers as provided in this Agreement.

D. **Use of and Reliance on Audited Financial Statements and Water Use Data**

1. In performing the audit, the Compliance Auditor shall incorporate any adjustments to the cost ledgers recommended by the independent certified public accountant, referred to in Section 7.01.t, which audited the financial statements of the Water and Hetch Hetchy Enterprises. The Compliance Auditor may rely upon the work performed by that independent certified public accountant if the Compliance Auditor reviews the work and is willing to take responsibility for it as part of the compliance audit.

2. In performing the Compliance Audit and issuing its report, the Compliance Auditor may rely on water use data furnished by the Water Enterprise, regardless of whether the Wholesale Customers contest the accuracy of such data. The Compliance Auditor shall have no obligation to independently verify the accuracy of the water use data provided by San Francisco; however, the Compliance Auditor shall disclose in its report any information which came to its attention suggesting that the water use data provided by San Francisco are inaccurate in any significant respect.

E. **Exit Conference**. Upon completion of the audit, the Compliance Auditor shall meet with San Francisco and BAWSCA to discuss audit findings, including (1) any material weakness in internal controls and (2) adjustments proposed by the Compliance Auditor and San Francisco's response (i.e., booked or waived).

7.05 Issuance of Compliance Auditor's Report

A. San Francisco will require the Compliance Auditor to issue its report no later than nine months after the fiscal year under audit (i.e., March 31 of the following calendar year). The Compliance Auditor's report shall be addressed and delivered to San Francisco and BAWSCA. The report shall contain:

1. A statement that the Auditor has audited the report on the calculation of the Wholesale Revenue Requirement and changes in the balancing account, and supporting documents, prepared by San Francisco as required by Section 7.02.

2. A statement that the audit was conducted in accordance with auditing standards generally accepted in the United States of America, and that the audit provides a reasonable basis for its opinion.

3. A statement that in the Compliance Auditor's opinion the Wholesale Revenue Requirement was calculated by San Francisco in accordance with this Agreement and that the change in the balancing account shown in San Francisco's report was calculated as required by this Agreement and presents fairly, in all material respects, changes in and the balance due to (or from) the Wholesale Customers as of the end of the fiscal year under audit.

7.06 Wholesale Customer Review

A. One or more Wholesale Customers, or BAWSCA, may engage an independent certified public accountant (CPA) to conduct a review (at its or their expense) of San Francisco's calculation of the annual Wholesale Revenue Requirement and a review of changes in the balancing account.

B. If a Wholesale Customer or BAWSCA wishes such a review to be conducted it will provide written notice to SFPUC within 30 days of the date the Compliance Auditor's report is issued. The notice will identify the CPA or accounting/auditing firm that will conduct the review and the specific aspects of the Compliance Auditor's report that are the subject of the review. If more than one notice of review is received by the SFPUC, the requesting Wholesale Customers shall combine and coordinate their reviews and select a lead auditor to act on their behalf for the purposes of requesting documents and conducting on-site investigations.

C. San Francisco will cooperate with the CPA appointed by a Wholesale Customer or BAWSCA. This cooperation includes making requested records promptly available, making

knowledgeable SFPUC personnel available to timely and truthfully answer the CPA's questions and directing the Compliance Auditor to cooperate with the CPA.

D. The Wholesale Customer's review shall be completed within 60 days after the date the Compliance Auditor's report is issued. At the conclusion of the review, representatives of San Francisco and BAWSCA shall meet to discuss any differences between them concerning San Francisco's compliance with Articles 5 or 6 of this Agreement during the preceding fiscal year or San Francisco's calculation of the Wholesale Revenue Requirement for the preceding fiscal year. If such differences cannot be resolved, the dispute shall be submitted to arbitration in accordance with Section 8.01.

Article 8. Other Agreements of the Parties

8.01 Arbitration and Judicial Review

A. General Principles re Scope of Arbitration. All questions or disputes arising under the following subject areas shall be subject to mandatory, binding arbitration and shall not be subject to judicial determination:

1. the determination of the Wholesale Revenue Requirement, which shall include both the calculations used in the determination and the variables used in those calculations;

2. the SFPUC's adherence to accounting practices and conduct of the Compliance Audit; and

3. the SFPUC's classification of new assets for purposes of determining the Wholesale Revenue Requirement.

All other questions or disputes arising under this Agreement shall be subject to judicial determination. Disputes about the scope of arbitrability shall be resolved by the courts.

B. Demand for Arbitration. If any arbitrable question or dispute should arise, any Wholesale Customer or the SFPUC may commence arbitration proceedings hereunder by service of a written Demand for Arbitration. Demands for arbitration shall set forth all of the issues to be arbitrated, the general contentions relating to those issues, and the relief sought by the party serving the Demand. Within 45 days after service of a Demand upon it, any Wholesale Customer or the SFPUC may serve a Notice of Election to become a party to the arbitration and a Response to the issues set forth in the Demand. The Response shall include the party's general contentions and defenses with respect to the claims made in the Demand, and may include any otherwise arbitrable claims, contentions and demands that concern the fiscal year covered by the Demand. If a timely Notice of Election and Response is not filed by any such entity, it shall not be a party to the arbitration but shall nonetheless be bound by the award of the arbitrator. If no party to this Agreement serves a timely Notice of Election and Response, the party seeking arbitration shall be entitled to the relief sought in its Demand for Arbitration without the necessity of further proceedings. Any claims not made in a Demand or Response shall be deemed waived.

If a Demand or Notice of Election is made by the SFPUC, it shall be served by personal delivery or certified mail to each Wholesale Customer at the address of such customer as set forth in the billing records of the SFPUC. If a Demand or Notice of Election is made by a Wholesale Customer, service shall be by certified mail or personal delivery to the General Manager, SFPUC, 1155 Market Street, 11th Floor, San Francisco, California 94103, and to each of the other Wholesale Customers. If arbitration is commenced, the Wholesale Customers shall use their best efforts to formulate a single, joint position with respect thereto. In any event, with respect to the appointment of arbitrators, as hereinafter provided, all Wholesale Customers that take the same position as to the issues to be arbitrated shall jointly and collectively be deemed to be a single party.

C. **Limitations Period.** All Demands For Arbitration shall be served within twelve months of receipt by BAWSCA of the Wholesale Revenue Requirement Compliance Auditor's Report for that year. If a party fails to file a Demand within the time period specified in this subsection, that party waives all present and future claims with respect to the fiscal year in question. If no such Demand is served within the twelve month period specified above, the SFPUC's determination of the Wholesale Revenue Requirement for that year shall be final and conclusive. Whether any particular claim is barred by the twelve month limitations period provided for herein shall be for the arbitrator to determine. Prior to the expiration of the twelve month limitations period, the parties to the dispute may agree by written stipulation to extend the period by up to six additional months.

The Arbitrator may order the alteration or recalculation of underlying Water Enterprise and/or Hetch Hetchy Enterprise accounts or asset classifications. Such changes shall be used to calculate the Wholesale Revenue Requirement for the fiscal year in dispute and shall also be used to determine future Wholesale Revenue Requirements, if otherwise applicable, even though the existing entries in such accounts or the asset classifications, in whole or in part, predate the twelve month period described above, so long as a timely arbitration Demand has been filed in accordance with this subsection.

D. **Number and Appointment of Arbitrators.** All arbitration proceedings under this section shall be conducted by a single arbitrator, selected by the SFPUC and a designated representative of the Wholesale Customers or each group of Wholesale Customers that take the same position with respect to the arbitration, within 75 days after service of the Demand. If the parties to the arbitration cannot agree on an arbitrator within 75 days, any party may petition

the Marin County Superior Court for the appointment of an arbitrator pursuant to Code of Civil Procedure Section 1281.6 (or any successor provision).

E. **Guidelines for Qualifications of Arbitrators.** The Wholesale Customers and the SFPUC acknowledge that the qualifications of the arbitrator will vary with the nature of the matter arbitrated, but, in general, agree that such qualifications may include service as a judge or expertise in one or more of the following fields: public utility law, water utility rate setting, water system and hydraulic engineering, utility accounting methods and practices, and water system operation and management. The parties to the arbitration shall use their best efforts to agree in advance upon the qualifications of any arbitrator to be appointed by the Superior Court.

F. **Powers of Arbitrator; Conduct of Proceedings**

1. Except as provided in this section, arbitrations under this section shall be conducted under and be governed by the provisions of California Code of Civil Procedure Sections 1282.2 through 1284.2 (hereinafter, collectively, "Code sections"), and arbitrators appointed hereunder shall have the powers and duties specified by the Code sections.

2. Within the meaning of the Code sections, the term "neutral arbitrator" shall mean the single arbitrator selected by the parties to the arbitration.

3. Unless waived in writing by the parties to the arbitration, the notice of hearing served by the arbitrator shall not be less than 90 days.

4. The lists of witnesses (including expert witnesses), and the lists of documents (including the reports of expert witnesses) referred to in Code of Civil Procedure Section 1282.2 shall be mutually exchanged, without necessity of demand therefore, no later than 60 days prior to the date of the hearing, unless otherwise agreed in writing by the parties to the arbitration. Upon application of any party, or on his or her own motion, the arbitrator may schedule one or more prehearing conferences for the purposes of narrowing and/or expediting resolution of the issues in dispute. Strict conformity to the rules of evidence is not required, except that the arbitrator shall apply applicable law relating to privileges and work product. The arbitrator shall consider evidence that he or she finds relevant and material to the dispute, giving the evidence such weight as is appropriate. The arbitrator may limit testimony to exclude evidence that would be immaterial or unduly repetitive, provided that all parties are afforded the opportunity to present material and relevant evidence.

5. Within thirty days after the close of the arbitration hearing, or such other time as the arbitrator shall determine, the parties will submit proposed findings and a proposed remedy to the arbitrator. The parties may file objections to their adversary's proposed findings and remedy within a time limit to be specified by the arbitrator. The arbitrator shall not base his or her award on information not obtained at the hearing.

6. The arbitrator shall render a written award no later than twelve months after the arbitrator is appointed, either by the parties or by the court, provided that such time may be waived or extended as provided in Code of Civil Procedure Section 1283.8.

7. The provisions for discovery set forth in Code of Civil Procedure Section 1283.05 are incorporated into and made part of this Agreement, except that: (a) leave of the arbitrator need not be obtained for the taking of depositions, including the depositions of expert witnesses; (b) the provisions of Code of Civil Procedure Section 2034.010 et seq., relating to discovery of expert witnesses, shall automatically be applicable to arbitration proceedings arising under this Agreement without the necessity for a formal demand pursuant to Section 2034.210 and the date for the exchange of expert discovery provided by Sections 2034.260 and 2034.270 shall be not later than 60 days prior to the date for the hearing; and (c) all reports, documents, and other materials prepared or reviewed by any expert designated to testify at the arbitration shall be discoverable. In appropriate circumstances, the arbitrator may order any party to this Agreement that is not a party to the arbitration to comply with any discovery request.

8. For the purposes of allocation of expenses and fees, as provided in Code of Civil Procedure Section 1284.2, if any two or more Wholesale Customers join together in a single, joint position in the arbitration, those Wholesale Customers shall be deemed to be a single party. If any Wholesale Customer or customers join together with the SFPUC in a single joint position in the arbitration, those Wholesale Customers and the SFPUC together shall be deemed to be a single party.

9. Subject to any other limitations imposed by the Agreement, the arbitrator shall have power to issue orders mandating compliance with the terms of the Agreement or enjoining violations of the Agreement. With respect to any arbitration brought to redress a claimed wholesale overpayment to the SFPUC, the arbitrator's power to award monetary relief

shall be limited to entering an order requiring that an adjustment be made in the amount posted to the balancing account for the fiscal year covered by the Demand.

10. All awards of the arbitrator shall be binding on the SFPUC and the Wholesale Customers regardless of the participation or lack thereof by any Wholesale Customer or the SFPUC as a party to the arbitration proceeding. The parties to an arbitration shall have the power to modify or amend any arbitration award by mutual consent. The arbitrator shall apply California law.

8.02 Attorneys' Fees

A. **Arbitration or Litigation Between San Francisco and Wholesale Customers Arising under the Agreement or Individual Water Sales Contracts**. Each party will bear its own costs, including attorneys' fees, incurred in any arbitration or litigation arising under this Agreement or the Individual Water Sales Contracts between San Francisco and the Wholesale Customers. Notwithstanding the foregoing, and subject to the limitations contained herein, the SFPUC may allocate to the Wholesale Customers as an allowable expense, utilizing the composite rate used for allocating other Water Enterprise administrative and general expenses, any attorneys' fees and costs incurred by the SFPUC in connection with arbitration and/or litigation arising under this Agreement and/or the Individual Water Sales Contracts. Attorneys' fees incurred by the SFPUC for attorneys employed in the San Francisco City Attorney's office shall be billed at the hourly rates charged for the attorneys in question by the San Francisco City Attorney's Office to the SFPUC. Attorneys' fees incurred by the SFPUC for attorneys other than those employed in the San Francisco City Attorney's Office shall be limited to the hourly rates charged to the SFPUC for attorneys and paralegals with comparable experience employed in the San Francisco City Attorney's office and in no event shall exceed the highest hourly rate charged by any attorney or paralegal employed in the City Attorney's Office to the SFPUC.

B. **Arbitration or Litigation Outside of Agreement Concerning the SFPUC Water System or Reserved Issues**

1. The attorneys' fees and costs incurred by the SFPUC in litigation between San Francisco and one or more of the Wholesale Customers arising from matters outside of the Agreement, including, without limitation, litigation and/or arbitration concerning the issues specifically reserved in the Agreement, shall be allocated between the Retail Customers and the

Wholesale Customers utilizing the composite rate used for allocating other Water Enterprise administrative and general expenses.

2. If, in any litigation described in subsection B.1 above, attorneys' fees and costs are awarded to one or more of the Wholesale Customers as prevailing parties, the SFPUC's payment of the Wholesale Customers' attorneys' fees and costs shall not be an allowable expense pursuant to subsection A.

3. If, in any litigation described in subsection B.1, the SFPUC obtains an award of attorneys' fees and costs as a prevailing party against one or more of the Wholesale Customers, any such award shall be reduced to offset the amount of the SFPUC's fees and costs, if any, that have already been paid by the Wholesale Customers in the current or any prior fiscal years pursuant to subsection B.1 and the provisions of Articles 5 and 6 of the Agreement.

4. Nothing contained in this Agreement, including this subsection, shall authorize a court to award attorneys' fees and costs to a prevailing party as a matter of contract and/or the provisions of Civil Code Section 1717, in litigation between San Francisco and one or more of the Wholesale Customers arising from matters outside of the Agreement, including, without limitation, litigation and/or arbitration concerning the issues specifically reserved in the Agreement.

C. **Attorneys Fees and Costs Incurred by the SFPUC in Connection with the Operation and Maintenance of the SFPUC Water Supply System**. All attorneys' fees and costs incurred by the SFPUC in connection with the operation and maintenance of the SFPUC's water supply system shall be allocated between Retail Customers and the Wholesale Customers utilizing the composite rate used for allocating other Water Enterprise administrative and general expenses.

8.03 Annual Meeting and Report

A. The parties wish to ensure that the Wholesale Customers may, in an orderly way, be informed of matters affecting the Regional Water System, including matters affecting the continuity and adequacy of their water supply from San Francisco.

For this purpose, the General Manager of the SFPUC shall meet annually with the Wholesale Customers and BAWSCA during the month of February, commencing

February 2010. At these annual meetings, the SFPUC shall provide the Wholesale Customers a report on the following topics:

1. Capital additions under construction or being planned for the Regional Water System, including the status of planning studies, financing plans, environmental reviews, permit applications, etc.;

2. Water use trends and projections for Retail Customers and Wholesale Customers;

3. Water supply conditions and projections;

4. The status of any administrative proceedings or litigation affecting San Francisco's water rights or the SFPUC's ability to deliver water from the watersheds which currently supply the Regional Water System;

5. Existing or anticipated problems with the maintenance and repair of the Regional Water System or with water quality;

6. Projections of Wholesale Revenue Requirements for the next five years;

7. Any other topic which the SFPUC General Manager places on the agenda for the meeting;

8. Any topic which the Wholesale Customers, through BAWSCA, request be placed on the agenda, provided that the SFPUC is notified of the request at least 10 days before the meeting.

B. The General Manager of the SFPUC, the Assistant General Manager of the Water Enterprise, and the Assistant General Manager of Business Services-CFO will use their best efforts to attend the annual meetings. If one or more of these officers are unable to attend, they will designate an appropriately informed assistant to attend in their place.

8.04 <u>Administrative Matters Delegated to BAWSCA</u>

A. The Wholesale Customers hereby delegate the authority and responsibility for performing the following administrative functions contemplated in this Agreement to BAWSCA:

1. Approval of calculations of Proportional Annual Water Use required by Section 3.14 and Attachment J, "Water Use Measurement and Tabulation";

2. Approval of amendments to Attachments J and K-3 and K-4, "25-Year Payoff Schedules for Existing Rate Base";

3. Agreement that the Water Meter and Calibration Procedures Manual to be prepared by the SFPUC may supersede some or all of the requirements in Attachment J, as described in Section 3.14;

4. Conduct of Wholesale Customer review of SFPUC's calculation of annual Wholesale Revenue Requirement/Change in Balancing Account described in Section 7.06;

5. Approval of an adjustment to Wholesale Revenue Coverage as described in Section 6.06.

B. A majority of the Wholesale Customers may, without amending this Agreement, delegate additional administrative functions to BAWSCA. To be effective, such expanded delegation must be evidenced by resolutions adopted by the governing bodies of a majority of the Wholesale Customers.

C. Unless otherwise explicitly stated, the administrative authority delegated to BAWSCA may be exercised by the General Manager/CEO of BAWSCA, rather than requiring action by the BAWSCA Board of Directors. In addition, the Wholesale Customers may, with the consent of BAWSCA, delegate to BAWSCA the initiation, defense, and settlement of arbitration proceedings provided for in Section 8.01.

8.05 Preservation of Water Rights; Notice of Water Rights Proceedings

A. It is the intention of San Francisco to preserve all of its water rights, irrespective of whether the water held under such water rights is allocated under this Agreement. Nothing in this Agreement shall be construed as an abandonment, or evidence of an intent to abandon, any of the water rights that San Francisco presently possesses.

B. San Francisco shall use its best efforts to give prompt notice to BAWSCA of any litigation or administrative proceedings to which San Francisco is a party involving water rights to the Regional Water System. The failure of San Francisco to provide notice as required by this section, for whatever reason, shall not give rise to any monetary liability.

8.06 SFPUC Rules and Regulations.

The sale and delivery of all water under this Agreement shall be subject to such of the "Rules and Regulations Governing Water Service to Customers" of the Water Enterprise adopted by the Commission, as those rules and regulations may be amended from time to time, as are (1) applicable to the sale and delivery of water to the Wholesale Customers, (2) reasonable, and (3) not inconsistent with either this Agreement or with an Individual Water Sales Contract. The SFPUC will give the Wholesale Customers notice of any proposal to amend the Rules and Regulations in a manner that would affect the Wholesale Customers. The notice will be delivered at least thirty days in advance of the date on which the proposal is to be considered by the Commission and will be accompanied by the text of the proposed amendment.

8.07 Reservations of, and Limitations on, Claims

A. General Reservation of Raker Act Contentions. The 1984 Agreement resolved a civil action brought against San Francisco by certain of the Wholesale Customers. Plaintiffs in that action contended that they, and other Wholesale Customers that are municipalities or special districts, were "co-grantees" within the meaning of Section 8 of the Act and were entitled to certain rights, benefits and privileges by virtue of that status. San Francisco disputed those claims.

Nothing in this Agreement, or in the Individual Water Sales Contracts, shall be construed or interpreted in any way to affect the ultimate resolution of the controversy between the parties concerning whether any of the Wholesale Customers are "co-grantees" under the Act and, if so, what rights, benefits and privileges accrue to them by reason of that claimed status.

B. Claims Reserved but not Assertable During Term or Portions Thereof. The following claims, which San Francisco disputes, are reserved but may not be asserted during the Term (or portions thereof, as indicated):

1. The Wholesale Customers' claim that the Act entitles them to water at cost.

2. The Wholesale Customers' claim that San Francisco is obligated under the Act or state law to supply them with additional water in excess of the Supply Assurance. This claim may not be asserted unless and until San Francisco decides not to meet projected

water demands of Wholesale Customers in excess of the Supply Assurance pursuant to Section 4.06.

3. The claim by San Jose and Santa Clara that they are entitled under the Act, or any other federal or state law, to permanent, non-interruptible status and to be charged rates identical to those charged other Wholesale Customers. This claim may not be asserted unless and until San Francisco notifies San Jose or Santa Clara that it intends to interrupt or terminate water deliveries pursuant to Section 4.05.

4. The Wholesale Customers' claim that the SFPUC is not entitled to impose a surcharge for lost power generation revenues attributable to furnishing water in excess of the Supply Assurance. This claim may not be asserted unless and until SFPUC furnishes water in excess of the Supply Assurance during the Term and also includes such a surcharge in the price of such water.

5. Claims by Wholesale Customers (other than San Jose and Santa Clara, whose service areas are fixed) that SFPUC is obligated under the Act or state law to furnish water, within their Individual Supply Guarantee, for delivery to customers outside their existing service area and that Wholesale Customers are entitled to enlarge their service areas to supply those customers. Such claims may be asserted only after compliance with the procedure set forth in Section 3.03, followed by SFPUC's denial of, or failure for six months to act on, a written request by a Wholesale Customer to expand its service area.

C. **Waived Activities**. The Wholesale Customers (and the SFPUC, where specified) will refrain from the following activities during the Term (or portions thereof, as specified):

1. The Wholesale Customers and the SFPUC will not contend before any court, administrative agency or legislative body or committee that the methodology for determining the Wholesale Revenue Requirement (or the requirements for (a) amortization of the ending balance under the 1984 Agreement, or (b) contribution to the Wholesale Revenue Coverage) determined in accordance with this Agreement violates the Act or any other provision of federal law, state law, or San Francisco's City Charter, or is unfair, unreasonable or unlawful.

2. The Wholesale Customers will not challenge the transfer of funds by the SFPUC to any other San Francisco City department or fund, provided such transfer complies with the San Francisco City Charter. The transfer of its funds, whether or not permitted by the

City Charter, will not excuse the SFPUC from its failure to perform any obligation imposed by this Agreement.

3. The Wholesale Customers and the SFPUC will not assert monetary claims against one another based on the 1984 Agreement other than otherwise arbitrable claims arising from the three fiscal years immediately preceding the start of the Term (i.e., FYs 2006-07, 2007-08 and 2008-09). Such claims, if any, shall be governed by the dispute resolution provisions of this Agreement, except that the time within which arbitration must be commenced shall be 18 months from delivery of the Compliance Auditor's report.

D. Other

1. This Agreement shall determine the respective monetary rights and obligations of the parties with respect to water sold by the SFPUC to the Wholesale Customers during the Term. Such rights and obligations shall not be affected by any judgments or orders issued by any court in litigation, whether or not between parties hereto, and whether or not related to the controversy over co-grantee status, except for arbitration and/or litigation expressly permitted in this Agreement. No judicial or other resolution of issues reserved by this section will affect the Wholesale Revenue Requirement which, during the Term, will be determined exclusively as provided in Articles 5, 6 and 7 of this Agreement.

2. Because delays in the budget process or other events may cause the SFPUC to defer the effective date of changes in wholesale rates until after the beginning of the fiscal year, this Agreement does not require the SFPUC to make changes in wholesale rates effective at the start of the fiscal year or at any other specific date.

3. The Wholesale Customers do not, by executing this Agreement, concede the legality of the SFPUC's establishing Interim Supply Allocations, as provided in Article 4 or imposing Environmental Enhancement Surcharges on water use in excess of such allocations. Any Wholesale Customer may challenge such allocation when imposed and/or such surcharges if and when levied, in any court of competent jurisdiction.

4. The furnishing of water in excess of the Supply Assurance by San Francisco to the Wholesale Customers shall not be deemed or construed to be a waiver by San Francisco of its claim that it has no obligation under any provision of law to supply such water to the Wholesale Customers, nor shall it constitute a dedication by San Francisco to the Wholesale Customers of such water.

8.08 Prohibition of Assignment

A. This Agreement shall be binding on, and shall inure to the benefit of, the parties and their respective successors and permitted assigns. Each Wholesale Customer agrees that it will not transfer or assign any rights or privileges under this Agreement, either in whole or in part, or make any transfer of all or any part of its water system or allow the use thereof in any manner whereby any provision of this Agreement will not continue to be binding on it, its assignee or transferee, or such user of the system. Any assignment or transfer in violation of this covenant, and any assignment or transfer that would result in the supply of water in violation of the Act, shall be void.

B. Nothing in this section shall prevent any Wholesale Customer (except the California Water Service Company and Stanford) from entering into a joint powers agreement or a municipal or multi-party water district with any other Wholesale Customer (except the two listed above) to exercise the rights and obligations granted to and imposed upon the Wholesale Customers hereunder, nor shall this section prevent any Wholesale Customer (except the two listed above) from succeeding to the rights and obligations of another Wholesale Customer hereunder as long as the Wholesale Service Area served by the Wholesale Customers involved in the succession is not thereby enlarged.

8.09 Notices

A. All notices and other documents that San Francisco is required or permitted to send to the Wholesale Customers under this Agreement shall be sent to each and all of the Wholesale Customers by United States mail, first class postage prepaid, addressed to each Wholesale Customer at the address to which monthly water bills are mailed by the Water Enterprise.

B. All notices or other documents which the Wholesale Customers are required or permitted to send to San Francisco under this Agreement shall be sent by United States mail, first class postage prepaid, addressed as follows:

General Manager
San Francisco Public Utilities Commission
1155 Market Street, 11th Floor
San Francisco, CA 94103

C. Each Wholesale Customer is a member of BAWSCA. San Francisco shall send a copy of each notice or other document which it is required to send to all Wholesale Customers to BAWSCA addressed as follows:

General Manager/CEO
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302
San Mateo, CA 94402

The failure of San Francisco to send a copy of such notices or documents to BAWSCA shall not invalidate any rate set or other action taken by San Francisco.

D. Any party (or BAWSCA) may change the address to which notice is to be sent to it under this Agreement by notice to San Francisco (in the case of a change desired by a Wholesale Customer or BAWSCA) and to the Wholesale Customer and BAWSCA (in the case of a change desired by San Francisco).

The requirements for notice set forth in Section 8.01 concerning arbitration shall prevail over this section, when they are applicable.

8.10 Incorporation of Attachments

Attachments A through Q, referred to herein, are incorporated in and made a part of this Agreement.

8.11 Interpretation

In interpreting this Agreement, or any provision thereof, it shall be deemed to have been drafted by all signatories, and no presumption pursuant to Civil Code Section 1654 may be invoked to determine the Agreement's meaning. The marginal headings and titles to the sections and paragraphs of this Agreement are not a part of this Agreement and shall have no effect upon the construction or interpretation of any part hereof.

8.12 Actions and Approvals by San Francisco

Whenever action or approval by San Francisco is required or contemplated by this Agreement, authority to act or approve shall be exercised by the Commission, except if such action is required by law to be taken, or approval required to be given, by the San Francisco Board of Supervisors. The Commission may delegate authority to the General Manager in

accordance with the San Francisco City Charter and Administrative Code, except for actions that this Agreement requires to be taken by the Commission.

8.13 Counterparts

Execution of this Agreement may be accomplished by execution of separate counterparts by each signatory. San Francisco shall deliver its executed counterpart to BAWSCA and the counterpart which each Wholesale Customer executes shall be delivered to San Francisco. The separate executed counterparts, taken together, shall constitute a single agreement.

8.14 Limitations on Damages

A. Unless otherwise prohibited by this Agreement, general or direct damages may be recovered for a breach of a party's obligations under this Agreement. No party is liable for, or may recover from any other party, special, indirect or consequential damages or incidental damages, including, but not limited to, lost profits or revenue. No damages may be awarded for a breach of Section 8.17.

B. The limitations in subsection A apply only to claims for damages for an alleged breach of this Agreement. These limitations do not apply to claims for damages for an alleged breach of a legal duty that arises independently of this Agreement, established by constitution or statute.

C. If damages would be an inadequate remedy for a breach of this Agreement, equitable relief may be awarded by a court in a case in which it is otherwise proper.

D. This section does not apply to any claim of breach for which arbitration is the exclusive remedy pursuant to Section 8.01.A.

8.15 Force Majeure

A. Excuse from Performance. No party shall be liable in damages to any other party for delay in performance of, or failure to perform, its obligations under this Agreement, including the obligations set forth in Sections 3.09 and 4.06, if such delay or failure is caused by a "Force Majeure Event."

B. Notice. The party claiming excuse shall deliver to the other parties a written notice of intent to claim excuse from performance under this Agreement by reason of a Force

Majeure Event. Notice required by this section shall be given promptly in light of the circumstances, and, in the case of events described in (c), (d) or (e) of the definition of Force Majeure Event only, not later than ten (10) days after the occurrence of the Force Majeure Event. Such notice shall describe the Force Majeure Event, the services impacted by the claimed event, the length of time that the party expects to be prevented from performing, and the steps which the party intends to take to restore its ability to perform.

C. **Obligation to Restore Ability to Perform**. Any suspension of performance by a party pursuant to this section shall be only to the extent, and for a period of no longer duration than, required by the nature of the Force Majeure Event, and the party claiming excuse shall use its best efforts to remedy its inability to perform as quickly as possible.

8.16 **No Third-Party Beneficiaries**

This Agreement is exclusively for the benefit of the parties and not for the benefit of any other Person. There are no third-party beneficiaries of this Agreement and no person not a party shall have any rights under or interests in this Agreement.

No party may assert a claim for damages on behalf of a person other than itself, including a person that is not a party.

8.17 **Good Faith and Fair Dealing**

San Francisco and the Wholesale Customers each acknowledge their obligation under California law to act in good faith toward, and deal fairly with, each other with respect to this Agreement.

Article 9. Implementation and Special Provisions Affecting Certain Wholesale Customers

9.01 General; Individual Water Sales Contracts

A. As described in Section 1.03, San Francisco previously entered into Individual Water Sales Contracts with each of the Wholesale Customers. The term of the majority of Individual Water Sales Contracts will expire on June 30, 2009, concurrently with the expiration of the 1984 Agreement. Except as provided below in this Article, each of the Wholesale Customers will execute a new Individual Water Sales Contract with San Francisco concurrently with its approval of the Agreement.

B. The Individual Water Sales Contracts will describe the service area of each Wholesale Customer, identify the location and size of connections between the Regional Water System and the Wholesale Customer's distribution system, provide for periodic rendering and payment of bills for water usage, and in some instances contain additional specialized provisions unique to the particular Wholesale Customer and not of general concern or applicability. A sample Individual Water Sales Contract is provided at Attachment F. The Individual Water Sales Contracts between San Francisco and the Wholesale Customers will not contain any provision inconsistent with Articles 1 through 8 of this Agreement except (1) as provided below in this Article or (2) to the extent that such provisions are not in derogation of the Fundamental Rights of other Wholesale Customers under this Agreement. Any provisions in an Individual Water Sales Contract which are in violation of this section shall be void.

9.02 California Water Service Company

A. The parties recognize that the California Water Service Company is an investor-owned utility company and, as such, has no claim to co-grantee status under the Act, which specifically bars private parties from receiving for resale any water produced by the Hetch Hetchy portion of the Regional Water System. Accordingly, the following provisions shall apply to the California Water Service Company, notwithstanding anything to the contrary elsewhere in this Agreement.

B. The total quantity of water delivered by San Francisco to the California Water Service Company shall not in any calendar year exceed 47,400 acre feet, which is the estimated average annual production of Local System Water. If San Francisco develops additional Local System Water after the Effective Date, it may (1) increase the maximum

delivery amount stated herein; and (2) increase the Supply Assurance, but not necessarily both. San Francisco has no obligation to deliver water to California Water Service Company in excess of the maximum stated herein, except as such maximum may be increased by San Francisco pursuant to this subsection. The maximum annual quantity of Local System Water set forth in this subsection is intended to be a limitation on the total quantity of water that may be allocated to California Water Service Company, and is not an Individual Supply Guarantee for purposes of Section 3.02. The maximum quantity of Local System Water set forth in this subsection is subject to reduction in response to (1) changes in long-term hydrology or (2) environmental water requirements that may be imposed by or negotiated with state and federal resource agencies in order to comply with stato or federal law or to secure applicable permits for construction of Regional Water System facilities. San Francisco shall notify California Water Service Company of any anticipated reduction of the quantity of Local System Water set forth in this subsection, along with an explanation of the basis for the reduction.

C. Notwithstanding anything in Section 8.08 to the contrary, California Water Service Company shall have the right to assign to a public agency having the power of eminent domain all or a portion of the rights of California Water Service Company under any contract between it and San Francisco applicable to any individual district of California Water Service Company in connection with the acquisition by such public agency of all or a portion of the water system of California Water Service Company in such district. In the event of any such assignment of all the rights, privileges and obligations of California Water Service Company under such contract, California Water Service Company shall be relieved of all further obligations under such contract provided that the assignee public agency expressly assumes the obligations of California Water Service Company thereunder. In the event of such an assignment of a portion of the rights, privileges and obligations of California Water Service Company under such contract, California Water Service Company shall be relieved of such portion of such obligations so assigned thereunder provided that the assignee public agency shall expressly assume such obligations so assigned to it.

D. Should California Water Service Company seek to take over or otherwise acquire, in whole or in part, the service obligations of another Wholesale Customer under Section 3.03.E, it will so inform San Francisco at least six months prior to the effective date of the sale and provide information concerning the total additional demand proposed to be served, in order that San Francisco may compare the proposed additional demand to the then-current estimate of Local System Water. In this regard, California Water Service Company has notified

the SFPUC that it has reached an agreement to acquire the assets of Skyline County Water District ("Skyline") and assume the responsibility for providing water service to customers in the Skyline service area. California Water Service Company has advised the SFPUC that, on September 18, 2008, the California Public Utilities Commission approved California Water Service Company's acquisition of Skyline. The SFPUC anticipates approving the transfer of Skyline's Supply Guarantee as shown on Attachment C to California Water Service Company and the expansion of California Water Service Company's service area to include the current Skyline service area before the Effective Date of this Agreement. All parties to this Agreement authorize corresponding modifications of Attachment C, as well as any of the Agreement's other provisions, to reflect the foregoing transaction without the necessity of amending this Agreement.

E. Nothing in this Agreement shall preclude San Francisco from selling water to any county, city, town, district, political subdivision, or other public agency for resale to customers within the service area of the California Water Service Company. Nothing in this Agreement shall require or contemplate any delivery of water to California Water Service Company in violation of the Act.

F. Nothing in this Agreement shall alter, amend or modify the Findings of Fact and Conclusions of Law and the Judgment dated May 25, 1961, in that certain action entitled *City and County of San Francisco v. California Water Service Company* in the Superior Court of the State of California in and for the County of Marin, No. 23286, as modified by the Quitclaim Deed from California Water Service Company to San Francisco dated August 22, 1961. The rights and obligations of San Francisco and California Water Service Company under these documents shall continue as therein set forth.

9.03 <u>City of Hayward</u>

A. San Francisco and the City of Hayward ("Hayward") entered into a water supply contract on February 9, 1962 ("the 1962 contract") which provides, *inter alia*, that San Francisco will supply Hayward with all water supplemental to sources and supplies of water owned or controlled by Hayward as of that date, in sufficient quantity to supply the total water needs of the service area described on an exhibit to the 1962 contract "on a permanent basis." The service area map attached as Exhibit C to the 1962 contract was amended in 1974 to remove an area of land in the Hayward hills and in 2008 to make minor boundary adjustments identified in SFPUC Resolution No. 08-0035.

B. The intention of the parties is to continue the 1962 contract, as amended, in effect as the Individual Water Sales Contract between San Francisco and Hayward. Accordingly, it shall not be necessary for San Francisco and Hayward to enter into a new Individual Water Sales Contract pursuant to this Article and approval of this Agreement by Hayward shall constitute approval of both this Agreement and an Individual Water Sales Contract for purposes of Section 1.03. The 1962 contract, as amended, will continue to describe the service area of Hayward, while rates for water delivered to Hayward during the Term shall be governed by Article 5 hereof. The 1962 contract, as amended, will continue in force after the expiration of the Term.

9.04 Estero Municipal Improvement District

A. San Francisco and the Estero Municipal Improvement District ("Estero") entered into a water supply contract on August 24, 1961, the term of which continues until August 24, 2011 ("the 1961 Contract"). The 1961 Contract provides, *inter alia*, that San Francisco will supply Estero with all water supplemental to sources and supplies of water owned or controlled by Estero as of that date, in sufficient quantity to supply the total water needs of the service area described on an exhibit to the 1961 Contract.

B. The intention of the parties is to terminate the 1961 Contract and replace it with a new Individual Water Sales Contract which will become effective on July 1, 2009. The new Individual Water Sales Contract will describe the current service area of Estero. The Individual Supply Guarantee applicable to Estero shall be 5.9 MGD, rather than being determined as provided in the 1961 Contract.

9.05 Stanford University

A. The parties recognize that The Board of Trustees of The Leland Stanford Junior University ("Stanford") operates a non-profit university, and purchases water from San Francisco for redistribution to the academic and related facilities and activities of the university and to residents of Stanford, the majority of whom are either employed by or students of Stanford. Stanford agrees that all water furnished by San Francisco shall be used by Stanford only for domestic purposes and those directly connected with the academic and related facilities and activities of Stanford, and no water furnished by San Francisco shall be used in any area now or hereafter leased or otherwise used for industrial purposes or for commercial purposes other than those campus support facilities that provide direct services to Stanford faculty, students or staff such as the U.S. Post Office, the bookstore and Student Union.

Nothing in this Agreement shall preclude San Francisco from selling water to any county, city, town, political subdivision or other public agency for resale to Stanford or to customers within the service area of Stanford.

B. Notwithstanding anything in Section 8.08 to the contrary, Stanford shall have the right to assign to a public agency having the power of eminent domain all or a portion of the rights of Stanford under this Agreement or the Individual Water Sales Contract between it and San Francisco in connection with the acquisition by such public agency of all or a portion of Stanford's water system. In the event of any such assignment of all the rights, privileges, and obligations of Stanford under such contract, Stanford shall be relieved of all further obligations under such contract, provided that the assignee public agency expressly assumes Stanford's obligations thereunder. In the event of such an assignment of a portion of the rights, privileges, and obligations of Stanford under such contract, Stanford shall be relieved of such obligations so assigned thereunder, provided that the assignee public agency shall expressly assume such obligations so assigned to it.

Nothing in this Agreement shall require or contemplate any delivery of water to Stanford in violation of the Act.

9.06 <u>City of San Jose and City of Santa Clara</u>

A. <u>Continued Supply on Temporary, Interruptible Basis</u>. During the term of the 1984 Agreement, San Francisco provided water to the City of San Jose ("San Jose") and the City of Santa Clara ("Santa Clara") on a temporary, interruptible basis pursuant to SFPUC Resolution No. 85-0256. Subject to termination or reduction of supply as provided in Section 4.05 of this Agreement, San Francisco will continue to supply water to San Jose and Santa Clara on a temporary, interruptible basis pending a decision by the Commission, pursuant to Section 4.05.H, as to whether to make San Jose and Santa Clara permanent customers of the Regional Water System. San Francisco will furnish water to San Jose and Santa Clara at the same rates as those applicable to other Wholesale Customers pursuant to this Agreement. Water delivered to San Jose and Santa Clara after July 1, 2009 may be limited by the SFPUC's ability to meet the full needs of all its other Retail and Wholesale Customers. The service areas of San Jose and Santa Clara set forth in their Individual Water Sales Contracts may not be expanded using the procedure set forth in Section 3.03. The combined annual average water usage of San Jose and Santa Clara shall not exceed 9 MGD. The allocation of that total

amount between San Jose and Santa Clara shall be as set forth in their Individual Water Sales Contracts.

B. **Reservation of Rights.** In signing this Agreement, neither San Jose nor Santa Clara waives any of its rights to contend, in the event that San Francisco (1) elects to terminate or interrupt water deliveries to either or both of the two cities prior to 2018 using the process set forth in Section 4.05, or (2) does not elect to take either city on as a permanent customer in 2018, that it is entitled to permanent customer status, pursuant to the Act or any other federal or state law. In signing this Agreement, San Francisco does not waive its right to deny any or all such contentions.

9.07 City of Brisbane, Guadalupe Valley Municipal Improvement District, Town of Hillsborough

A. The parties acknowledge that San Francisco has heretofore provided certain quantities of water to the City of Brisbane ("Brisbane"), Guadalupe Valley Municipal Improvement District ("Guadalupe") and the Town of Hillsborough ("Hillsborough") at specified rates or without charge pursuant to obligations arising out of agreements between the predecessors of San Francisco and these parties, which agreements are referred to in judicial orders, resolutions of the SFPUC and/or the 1960 contracts between San Francisco and Brisbane, Guadalupe and Hillsborough. The parties intend to continue those arrangements and accordingly agree as follows:

1. Nothing in this Agreement is intended to alter, amend or modify the terms of SFPUC Resolution No. 74-0653 or the indenture of July 18, 1908 between the Guadalupe Development Company and the Spring Valley Water Company.

2. Nothing in this Agreement is intended to alter, amend or modify the Findings of Fact and Conclusions of Law and Judgment dated May 25, 1961 in that certain action entitled *City and County of San Francisco v. Town of Hillsborough* in the Superior Court of the State of California in and for the County of Marin, No. 23282, as modified by the Satisfaction of Judgment filed October 23, 1961 and the Compromise and Release between Hillsborough and San Francisco dated August 22, 1961. The rights and obligations of Hillsborough under these documents shall continue as therein set forth.

3. Nothing in this Agreement is intended to affect or prejudice any claims, rights or remedies of Guadalupe or of Crocker Estate Company, a corporation, or of Crocker

Land Company, a corporation, or of San Francisco, or of their successors and assigns, respectively, with respect to or arising out of that certain deed dated May 22, 1884, from Charles Crocker to Spring Valley Water Works, a corporation, recorded on May 24, 1884, in Book 37 of Deeds at page 356, Records of San Mateo County, California, as amended by that certain Deed of Exchange of Easements in Real Property and Agreement for Trade in Connection Therewith, dated July 29, 1954, recorded on August 4, 1954, in Book 2628, at page 298, Official Records of said San Mateo County, or with respect to or arising out of that certain action involving the validity or enforceability of certain provisions of said deed entitled *City and County of San Francisco v. Crocker Estate Company*, in the Superior Court of the State of California in and for the County of Marin, No. 23281.

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IN WITNESS WHEREOF the parties have executed this Agreement by their duly authorized officers.

CITY AND COUNTY OF SAN FRANCISCO
Acting by and through its Public Utilities Commission

By: _____
Edward Harrington
General Manager

Date: July 17, 2009

Approved by Commission Resolution No. 09-0069, adopted April 28, 2009

_____
Michael Housh
Secretary to Commission

Approved as to form:

DENNIS J. HERRERA
City Attorney

By: _____
Joshua D. Milstein
Deputy City Attorney

CITY OF SANTA CLARA

By: _____
Jennifer Sparacino
City Manager

Date: June 30, 2009

Attest: Approved by City Council Resolution No. 09-7639, adopted on June 9, 2009

_____
Rod Diridon Jr.
City Clerk

Approved as to form:

By: _____
Helene L. Leichter
City Attorney

Attachment A - Definitions

"1984 Agreement" refers to the 1984 Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and certain Suburban Purchasers in San Mateo County, Santa Clara County and Alameda County, which expires on June 30, 2009.

"Act" refers to the Raker Act, 38 Stat. 242, the Act of Congress, enacted in 1913, that authorized the construction of the Hetch Hetchy system on federal lands.

"Adjusted Proportional Annual Use" means the respective percentages of annual water use, as adjusted to reflect deliveries of water by the Hetch Hetchy Enterprise to outside City Retail Customers. The adjustment is calculated each year as described in Section B of Attachment J and is shown on lines 18 and 19 of Table 1 of that Attachment.

"Agreement" refers to this Water Supply Agreement, by and among San Francisco and the Wholesale Customers who approve this Agreement in accordance with Section 1.03.

"BAWSCA" refers to the Bay Area Water Supply and Conservation Agency established pursuant to Division 31 of the California Water Code (Water Code §§81300-81461) or its successor and permitted assigns.

"CEQA" refers to the California Environmental Quality Act found at §§21000 et seq. of the Public Resources Code and the Guidelines for the California Environmental Quality Act found at §§15000 et seq. of Title 14 of the California Code of Regulations, as amended from time to time.

"Commission" means the governing board of the SFPUC, whose members, as of the date of this Agreement, are appointed by the Mayor of San Francisco and confirmed by the San Francisco Board of Supervisors.

"Compliance Audit" refers to the annual audit of the Wholesale Revenue Requirement by the Compliance Auditor required by Sections 7.03 through 7.05.

"Compliance Auditor" refers to the independent certified public accountant chosen by the San Francisco Controller to conduct each fiscal year's audit of the SFPUC's calculation of the Wholesale Revenue Requirement as provided in Section 7.03.B.

"**Countywide Cost Allocation Plan**" refers to the full costs of the Water and Hetch Hetchy Enterprises' prorated share of San Francisco city government expenses that are not directly billed to city departments, as determined by the Controller of the City and County of San Francisco.

"**Debt Service**" means principal and interest paid during a fiscal year on Indebtedness incurred by the SFPUC for the 2006 Revenue Bonds, Series A, and subsequently issued Indebtedness (exclusive of 2006 Revenue Bonds Series B and C), the proceeds of which are used or are scheduled to be used for the acquisition or construction of New Regional Assets or to refund such Indebtedness.

"**Direct Retail**" refers to Regional Water System capital or operating expenditures that are incurred to provide water service solely to Retail Customers.

"**Direct Wholesale**" refers to Regional Water System capital or operating expenditures that are incurred to provide water service solely to one or more Wholesale Customers.

"**Drought**" means a water shortage caused by lack of precipitation, as reflected in resolutions of the Commission calling for voluntary or mandatory water rationing based on evaluation of water stored or otherwise available to the Regional Water System, whether or not the Commission declares a water shortage emergency pursuant to Water Code §§ 350 et seq., as amended from time to time.

"**Effective Date**" refers to the date this Agreement will become effective in accordance with the terms of Section 1.03.

"**Emergency**" means a sudden, non-drought event, such as an earthquake, failure of Regional Water System infrastructure or other catastrophic event or natural disaster that results in an insufficient supply of water available to the Retail or Wholesale Service Areas for basic human consumption, firefighting, sanitation, and fire protection.

"**Encumbrance**" or "**Encumber**" refers to the process by which the City Controller certifies the availability of amounts previously appropriated by the Commission for specifically identified SFPUC capital projects performed either by third parties or through work orders to other City departments.

"Environmental Enhancement Surcharge" means the surcharge to be imposed by the SFPUC on individual parties to this Agreement whose use exceeds their Interim Supply Allocation when the collective use of water by all parties to this Agreement is in excess of the Interim Supply Limitation.

"ERRP" refers to a SFPUC document entitled *Emergency Response and Recovery Plan: Regional Water System* ("ERRP") dated August 23, 2003, and updated November 2006.

"Excess Use Charges" are monthly charges set by the SFPUC, in the form of multipliers, that are applied to the Wholesale Customer water rates during times of mandatory rationing if a Wholesale Customer's water usage is greater than its shortage allocation. Excess Use Charges are further described in Section 4 of the Tier 1 Shortage Plan (Attachment H).

"Existing Assets" refers to Regional and Hetch Hetchy Water-Only and Water-Related capital assets plant in service as of June 30, 2009.

"Force Majeure Event" means an event not the fault of, and beyond the reasonable control of, the party claiming excuse which makes it impossible or extremely impracticable for such party to perform obligations imposed on it by this Agreement, by virtue of its effect on physical facilities and their operation or employees essential to such performance. Force Majeure Events include (a) an "act of God" such as an earthquake, flood, earth movement, or similar catastrophic event, (b) an act of the public enemy, terrorism, sabotage, civil disturbance or similar event, (c) a strike, work stoppage, picketing or similar concerted labor action, (d) delays in construction caused by unanticipated negligence or breach of contract by a third party or inability to obtain essential materials after diligent and timely efforts; or (e) an order or regulation issued by a federal or state regulatory agency after the Effective Date or a judgment or order entered by a federal or state court after the Effective Date.

"Fundamental Rights" of Wholesale Customers are their status as parties to this Agreement, their allocation of water recognized in Section 3.02, their protection against arbitrary, unreasonable, or unjustly discriminatory rates provided in Section 6.04, and any specific rights described in Article 9.

"Hetch Hetchy Enterprise" refers to Hetch Hetchy Water and Power Enterprise, a SFPUC operating department.

"Include" and its variants mean "including but not limited to" whenever used in this Agreement, regardless of whether or not it is capitalized.

"Indebtedness" includes revenue bonds, bond anticipation notes, certificates of participation (excluding certificates of participation towards which SFPUC contributes debt service as an operating expense), and commercial paper.

"Individual Water Sales Contract" refers to the contracts between each Wholesale Customer and San Francisco contemplated in Section 9.01 that details customer-specific matters such as location of service connections, service area maps and other matters specific to that customer.

"Individual Supply Guarantee" refers to each Wholesale Customer's share of the Supply Assurance, as shown in Attachment C.

"Interim Supply Allocation" refers to each Wholesale Customer's share, to be established by the SFPUC pursuant to Section 4.02, of the Interim Supply Limitation.

"Interim Supply Limitation" refers to the 265 MGD annual average limitation on water deliveries until December 31, 2018 from Regional Water System watersheds imposed by the SFPUC in its approval of the WSIP in Resolution Number 08-0200 dated October 30, 2008.

"Joint," when used in connection with Hetch Hetchy Enterprise assets or expenses, refers to assets used or expenses incurred in providing both water supply ("Water-Related") and in the generation and transmission of electrical energy ("Power-Related").

"Local System Water" refers to Regional Water System water supplies developed in San Mateo, Alameda and Santa Clara Counties or otherwise not produced by the Hetch Hetchy Enterprise under rights of way granted by the Raker Act.

"MGD" refers to an average flow rate of one million gallons per day over a specific time period, often a year. For example, one MGD is equal to 365 million gallons per year or 1,120 acre feet per year.

"Net Annual Debt Service" refers to debt service less payments made from proceeds of Indebtedness (e.g., capitalized interest), earnings on bond proceeds (e.g., reserve fund earnings) used to pay Debt Service, and interest paid from renewed commercial paper, or from reserve fund liquidation.

"New Assets" refers to Regional and Hetch Hetchy Water-Only and Water-Related capital assets added to Regional Water System plant in service after June 30, 2009.

"New Regional Assets" refers to New Assets placed in service on or after July 1, 2009 that are used and useful in delivering water to Wholesale Customers. The following four categories comprise New Regional Assets:

1. Water Enterprise Regional Assets
2. Water Enterprise Direct Wholesale Assets
3. Hetch Hetchy Water Only Assets
4. Water-Related portion (45 percent) of Hetch Hetchy Joint Assets

"Power-Only," when used with reference to Hetch Hetchy Enterprise capital costs and operating and maintenance expenses, means capital costs and expenses that are incurred solely for the construction and operation of assets used to generate and transmit electrical energy.

"Power-Related" refers to the power related portion (55%) of Joint Hetch Hetchy Enterprise assets or expenses.

"Prepayment" refers to payments of principal and interest amounts not due in the year the prepayment is made, as described in Section 5.03.

"Proportional Annual Use" means the shares of deliveries from the Regional Water System used by City Retail Customers and by the Wholesale Customers in a fiscal year, expressed as a percentage. The percentages of annual use are calculated each year as described in Section B of Attachment J and are shown on lines 10 and 11 of Table 1 of that Attachment.

"Proportional Water Use" refers the general principle of allocating Regional Water System costs based on the relative purchases of water by Retail and Wholesale Customers.

"Regional," when used with reference to Water Enterprise capital assets and operating expenses, refers to assets and expenses that benefit Wholesale and Regional Customers.

"Regional Water System" means the water storage, transmission and treatment system operated by the SFPUC in Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo and San Francisco counties, including projects constructed under the WSIP, but excluding Direct Retail and Direct Wholesale assets.

"Retail Customers" means any customer that purchases water from San Francisco that is not a Wholesale Customer, whether located inside or outside of San Francisco.

"Retail Service Area" means the areas where SFPUC sells water to Retail Customers.

"Retail Water" means water sold by the SFPUC to its Retail Customers within and outside San Francisco.

"San Francisco" refers to the City and County of San Francisco.

"SFPUC" refers to the San Francisco Public Utilities Commission as an operating department of San Francisco, the General Manager of which reports to the Commission.

"SFPUC Bureaus" refers to the portions of the SFPUC that provide support services to the SFPUC Operating Departments. These presently consist of the General Manager's Office, Business Services, and External Affairs.

"SFPUC Operating Departments" refers to the Water, Hetch Hetchy and Wastewater Program Enterprises under the control and management of the SFPUC pursuant to the San Francisco Charter.

"Substantially Expended": A bond issue series is substantially expended when 98% of the proceeds and investment earnings contributed to the project fund have been expended.

"Supply Assurance" means the 184 MGD maximum annual average metered supply of water dedicated by San Francisco to public use in the Wholesale Service Area (not including San Jose and Santa Clara) in the 1984 Agreement and Section 3.01 of this Agreement.

"Term" means the 25-year term commencing July 1, 2009, including one or both 5-year extensions authorized by Section 2.02.A and B.

"Tier 1 Shortage Plan" refers to the Water Shortage Allocation Plan (Attachment H) adopted by the SFPUC and the Wholesale Customers in conjunction with this Agreement describing the method for allocating water between the SFPUC and the Wholesale Customers collectively for shortages of up to 20% of deliveries from the Regional Water System, as amended from time-to-time.

"Water Enterprise" refers to the San Francisco Water Department (SFWD), an SFPUC Operating Department.

"Water Management Charge" refers to the charge collected by San Francisco on behalf of BAWSCA for local water resource development in the Wholesale Service Area pursuant to Section 3.06 of this Agreement.

"Water-Only," when used with reference to Hetch Hetchy Enterprise capital costs and operating and maintenance expenses, means capital costs and expenses that are incurred solely for the construction and operation of assets used to protect water quality or to provide for the delivery of water for consumptive purposes.

"Water-Related" refers to the water related portion (45%) of Joint Hetch Hetchy Enterprise assets or expenses.

"Water Supply Development Report" refers to the annual report prepared pursuant to Section 4.05, and submitted to the Commission for purposes of estimating whether Regional Water System demand will be within the Interim Supply Limitation by June 30, 2018.

"Wheeling Statute" refers to Article 4 of Chapter 11 of the California Water Code, as amended from time to time.

"Wholesale Capital Fund" is the account established by the SFPUC for deposit of Wholesale Customer revenue that is used to fund the wholesale share of revenue-funded New Regional Assets, as described in Section 6.08.

"Wholesale Customer" or **"Customers"** means one or more of the 27 water customers identified in Section 1.01 that are contracting for purchase of water from San Francisco pursuant to this Agreement.

"Wholesale Revenue Coverage" refers to the additional dollar amount included in wholesale rates each fiscal year that is charged to Wholesale Customers by the SFPUC for their proportionate share of Debt Service coverage under Section 6.06.A.

"Wholesale Revenue Coverage Reserve" refers to the account established by the SFPUC for deposit of Wholesale Revenue Coverage under Section 6.06.B.

"Wholesale Revenue Requirement" means the calculated Wholesale Customer portion of SFPUC Regional Water System capital and operating costs as determined in accordance with the provisions of Article 5 of this Agreement, formerly called the "Suburban Revenue Requirement" in the 1984 Agreement.

"Wholesale Service Area" means the combined service areas of the Wholesale Customers, as delineated on the service area maps attached to each individual Water Sales Contract.

"WSIP" refers to the Water System Improvement Program approved by the Commission in Resolution No. 08-0200 on October 30, 2008, as amended from time to time.

ATTACHMENT B

WHOLESALE CUSTOMER REGIONAL WATER SYSTEM PURCHASES FY 2007-2008*

(To determine 75% approval process for Section 1.02)

WHOLESALE CUSTOMER	MGD
Alameda County Water District	12.90
California Water Service Company	37.72
City of Brisbane	0.23
City of Burlingame	4.50
City of Daly City	4.49
City of East Palo Alto	2.16
City of Hayward	19.33
City of Menlo Park	3.69
City of Millbrae	2.46
City of Milpitas	6.95
City of Mountain View	10.51
City of Palo Alto	12.72
City of Redwood City	11.01
City of San Bruno	1.86
City of San Jose	4.80
City of Santa Clara	3.49
City of Sunnyvale	10.52
Coastside County Water District	2.08
Estero Municipal Improvement District	5.51
Guadalupe Valley Municipal Improvement District	0.40
Mid-Peninsula Water District	3.25
North Coast County Water District	3.25
Purissima Hills Water District	2.31
Skyline County Water District	0.16
Stanford University	2.31
Town of Hillsborough	3.83
Westborough Water District	0.95
Total	173.39

*Source: SFPUC Commercial Division Records

Note: FY 2007-2008 was a Leap Year with 366 days.

ATTACHMENT C

INDIVIDUAL SUPPLY GUARANTEES

WHOLESALE CUSTOMER	(1) 100 Cubic Feet*	(2) MGD
Alameda County Water District	6,714,439	13.760
California Water Service Company**	17,320,807	35.499
City of Brisbane	224,435	0.460
City of Burlingame	2,553,753	5.234
City of Daly City	2,094,386	4.292
City of East Palo Alto	957,813	1.963
City of Menlo Park	2,174,231	4.456
City of Millbrae	1,538,120	3.152
City of Milpitas	4,504,533	9.232
City of Mountain View	6,567,648	13.460
City of Palo Alto	8,331,697	17.075
City of Redwood City	5,333,115	10.930
City of San Bruno	1,583,899	3.246
City of Sunnyvale	6,138,122	12.580
Coastside County Water District	1,061,453	2.175
Estero Municipal Improvement District	2,878,807	5.900
Guadalupe Valley Municipal Improvement District	254,436	0.521
Mid-Peninsula Water District	1,898,707	3.891
North Coast County Water District	1,872,928	3.838
Purissima Hills Water District	792,832	1.625
Skyline County Water District	88,537	0.181
Stanford University	1,479,764	3.033
Town of Hillsborough	1,995,644	4.090
Westborough Water District	644,172	1.320
Total:***	79,004,278	161.913

* 100 Cubic feet equals MGD divided by 0.00000204946. Figures in this column are calculated using unrounded MGD values and are more precise than the figures listed in column (2).

** Includes quantities from Los Trancos County Water District and Palomar Park Water District.

*** Total does not equal sum of MGD figures due to rounding. Total is not 184 MGD because table does not include the City of Hayward.

**** Cordilleras Mutual Water Association is not a party to this Agreement, but it has its own Supply Assurance of 3,007 hundred cubic feet (CCF).

ATTACHMENT D

PROCEDURE FOR PRO-RATA REDUCTION OF WHOLESALE CUSTOMERS' INDIVIDUAL SUPPLY GUARANTEES (SECTION 3.02).

The 23 wholesale customers listed on Attachment C have individual Supply Guarantees that total approximately 161.9 MGD.

If the amount of water purchased from SFPUC by Hayward exceeds 22.1 MGD for three consecutive fiscal years, the individual Supply Guarantees of each of those 23 wholesale customers will be reduced as described below.

STEP ONE:

Obtain the average annual excess purchases during the three fiscal year period. For example, assume Hayward uses 25.0 MGD, 24.2 MGD and 26.0 MGD in three consecutive years. The average annual excess use for that period is 2.9 MGD; calculated as follows:

$$\frac{[25.0\ \text{MGD} + 24.2\ \text{MGD} + 26.0\ \text{MGD}]}{3} + 161.9\ \text{MGD} = 186.9\ \text{MGD}$$

$$186.9\ \text{MGD} - 184.0\ \text{MGD} = 2.9\ \text{MGD}$$

STEP TWO:

Allocate the excess purchases among the 23 Wholesale Customers in proportion to each customer's Supply Guarantee as a percentage of the total Supply Guarantees (161.9 MGD as of FY 2009-10).

For example, assume that Wholesale Customer A's Supply Guarantee is 12.0 MGD. Wholesale Customer A's percentage share of the total individual supply guarantees is 0.074, calculated as follows:

$$\frac{12.0\ \text{MGD}}{161.9\ \text{MGD}} = 0.074$$

and its share of the excess use is 0.22 MGD, calculated as follows:

$$2.9\ \text{MGD} \times 0.074 = 0.22\ \text{MGD}$$

STEP THREE:

Determine Wholesale Customer's adjusted Supply Guarantee by subtracting the result of Step Two from the Wholesale Customer's Supply Guarantee:

12 MGD - 0.22 MGD = 11.78 MGD

* * * * * * * * * * *

Adjustments will be made at intervals comprised of distinct three-year periods of use by Hayward in excess of 22.1 MGD rather than overlapping periods. For example, assuming that the first adjustment were to occur in FY 2014-15 (based on use during FY 2011-12, FY 2012-13 and FY 2013-14), a second adjustment will not occur earlier than three full fiscal years thereafter (i.e., FY 2017-18, based on use by Hayward in FY 2014-15, FY 2015-16 and FY 2016-17). The figures used in the second and subsequent adjustments will reflect previous adjustments. For example, a second adjustment will use 158.9 MGD as the total of individual Supply Guarantees (161.6 MGD - 2.7 MGD = 158.9 MGD).

For purposes of simplicity, the volumetric units used in the foregoing example are MGD. For actual adjustment calculations, the unit employed will be hundreds of cubic feet ("ccf"), the unit by which the SFPUC measures water deliveries for billing purposes.

The procedure described and illustrated above is independent of and unrelated to the establishment by the SFPUC of Interim Supply Limitations described in Article 4.

ATTACHMENT E

MINIMUM ANNUAL PURCHASE QUANTITIES

(Section 3.07.C)

AGENCY	MINIMUM ANNUAL PURCHASE QUANTITY (IN MGD)
Alameda County Water District	7.648
City of Milpitas	5.341
City of Mountain View	8.930
City of Sunnyvale	8.930

Water Dept.
FILE COPY

DUPLICATE CITY CLERK FILE COPY
City of Santa Clara

WATER SALES CONTRACT

This Contract, dated as of July 1, 2009, is entered into by and between the City and County of San Francisco ("San Francisco") and the City of Santa Clara ("Customer").

RECITALS

San Francisco and the Customer have entered into a Water Supply Agreement ("WSA"), which sets forth the terms and conditions under which San Francisco will continue to furnish water for domestic and other municipal purposes to Customer and to other Wholesale Customers. The WSA contemplates that San Francisco and each individual Wholesale Customer will enter into an individual contract describing the location or locations at which water will be delivered to each customer by the San Francisco Public Utilities Commission ("SFPUC"), the customer's service area within which water so delivered is to be sold, and other provisions unique to the individual purchaser. This Water Sales Contract is the individual contract contemplated by the WSA.

AGREEMENTS OF THE PARTIES

1. Incorporation of the WSA

The terms and conditions of the WSA are incorporated into this Contract as if set forth in full herein.

2. Term

Unless explicitly provided to the contrary in Article 9 of the WSA, the term of this Contract shall be identical to that provided in Section 2.01 of the WSA.

3. Service Area

Water delivered by San Francisco to the Customer may be used or sold within the service area shown on the map designated Exhibit A attached hereto. Customer shall not deliver or sell any water provided by San Francisco outside of this area.

4. Location and Description of Service Connections

Sale and delivery of water to Customer will be made through a connection or connections to the SFPUC Regional Water System at the location or locations listed, with the applicable present account number, service location, service size, and meter size shown on Exhibit B attached hereto.

5. Interties With Other Systems

Customer maintains interties with neighboring water systems at the location or locations and with the connection size(s) as shown on Exhibit C attached hereto.

6. Billing and Payment

San Francisco shall compute the amounts of water delivered and bill Customer therefor on a monthly basis. The bill shall show the separate components of the charge (e.g., service, consumption, demand). Customer shall pay the amount due within thirty (30) days after receipt of the bill.

If Customer disputes the accuracy of any portion of the water bill it shall (a) notify the General Manager of the SFPUC in writing of the specific nature of the dispute and (b) pay the undisputed portion of the bill within thirty (30) days after receipt. Customer shall meet with the General Manager of the SFPUC or a delegate to discuss the disputed portion of the bill.

7. Temporary Water Supply

Service to Customer under this Contract is temporary only and water is delivered subject to the provisions of Sections 4.05 and 9.06 of the WSA. The combined annual average water usage of Customer and the City of San Jose shall not exceed 9 MGD. Customer's individual share of the 9 MGD temporary supply allocated to Customer and the City of San Jose is 4.5 MGD. Irrespective of Customer's and San Jose's individual shares of the total 9 MGD supply increment, water purchases by either Santa Clara or San Jose may exceed 4.5 MGD on an annual average basis so long as the total used by both Cities does not exceed 9 MGD

(combined annual average). By supplying water to Customer, San Francisco does not dedicate water or a water supply to Customer nor obligate itself, contractually or otherwise, to supply water to Customer beyond the term of this Contract. Customer acknowledges that it is not presently a permanent customer of San Francisco.

IN WITNESS WHEREOF, the parties hereto have executed this Contract, to become effective upon the effectiveness of the WSA, by their duly authorized representatives.

CITY AND COUNTY OF SAN FRANCISCO
Acting by and through its Public Utilities Commission

By: _____
Edward Harrington
General Manager

Date: July 17, 2009

Approved by Commission Resolution No. 09-0069, adopted April 28, 2009

_____
Michael Housh
Secretary to Commission

Approved as to form:

DENNIS J. HERRERA
City Attorney

By: _____
Joshua D. Milstein
Deputy City Attorney

CITY OF SANTA CLARA

By: _____
Jennifer Sparacino
City Manager

Date: June 30, 2009

Attest: Approved by City Council Resolution No. 09-7640, adopted on June 9, 2009

_____
Rod Diridon Jr.
City Clerk

Approved as to form:

By: _____
Helene L. Leichter
City Attorney

Exhibit A

Service Area Map

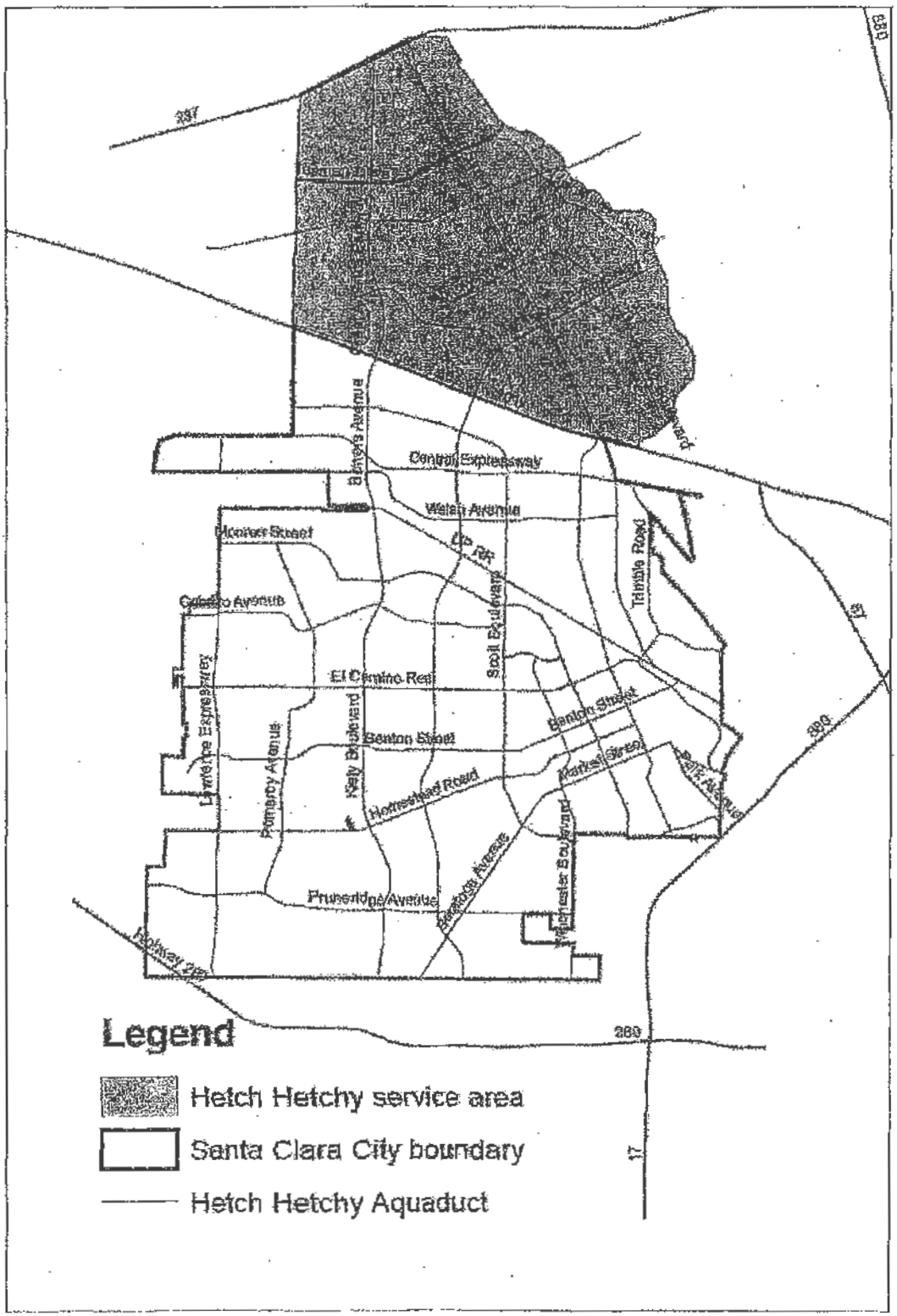


Exhibit B

Location and Description of Service Connections to the SFPUC Regional Water System

Account	Meter Connection	Service Address	Service Street	Service Street Suffix	Service City	Service Size	Meter Size
010002012	1	4790	GREAT AMERICAN PARK	WY	Santa Clara	12	10
010002012	1	2700	TASMAN	DR	Santa Clara	16	10

Exhibit C

Emergency Connections with Other Water Systems (within Hetch-Hetchy Service Area)

Connection With	Number	Size
San Jose Municipal Water System	1	8"

ATTACHMENT G

WATER QUALITY NOTIFICATION AND COMMUNICATIONS PLAN
REVISION 4- JANUARY 2009

SFPUC
WATER
WASTEWATER
POWER

Updated by:
Water Quality Engineering
Olivia Chen Consultants, Inc.

San Francisco Public
Utilities Commission Water
Quality Bureau

Water Quality Notification
and Communications Plan
Revision 4 - January 2009

1914841.1

ATTACHMENT H

WATER SHORTAGE ALLOCATION PLAN

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Wholesale Customers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Wholesale Customers which has been adopted by the Wholesale Customers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan was adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract and has been updated to correspond to the terminology used in the June 2009 Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County ("Agreement").

SECTION 1. SHORTAGE CONDITIONS

1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3.

1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Wholesale Customers and by Retail Customers (as those terms are used in the Agreement) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.

1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.

1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Wholesale Customers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.

1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

SECTION 2. SHORTAGE ALLOCATIONS

2.1. Annual Allocations between the SFPUC and the Wholesale Customers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Wholesale Customers as follows:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The water allocated to the SFPUC shall correspond to the total allocation for all Retail Customers.

2.2 Annual Allocations among the Wholesale Customers. The annual water supply allocated to the Wholesale Customers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Wholesale Customers, as described in Section 3.11(C) of the Agreement. In any year for which the methodology must be applied, the Bay Area Water Supply and Conservation Agency ("BAWSCA") will calculate each Wholesale Customer's individual percentage share of the amount of water allocated to the Wholesale Customers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWSCA will deliver to the SFPUC General Manager a list, signed by the President of BAWSCA's Board of Directors and its General Manager, showing each Wholesale Customer together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Wholesale Customers. The SFPUC shall allocate water to each Wholesale Customer, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan. If BAWSCA or all Wholesale Customers do not provide the SFPUC with individual allocations, the SFPUC may make a final allocation decision after first meeting and discussing allocations with BAWSCA and the Wholesale Customers.

The methodology adopted by the Wholesale Customers utilizes the rolling average of each individual Wholesale Customer's purchases from the SFPUC during the three immediately

preceding Supply Years. The SFPUC agrees to provide BAWSCA by November 1 of each year a list showing the amount of water purchased by each Wholesale Customer during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Wholesale Customers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Wholesale Customers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Wholesale Customers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Wholesale Customers or Retail Customers. Following these discussions, the Tier 1 water allocations set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Wholesale Customers. If the SFPUC and Wholesale Customers meet and cannot agree on an appropriate Tier 1 allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 3.11(C) of the Agreement will apply, unless (2) all of the Wholesale Customers direct in writing that a Tier 2 allocation methodology agreed to by them be used to apportion the water to be made available to the Wholesale Customers collectively, in lieu of the provisions of Section 3.11(C).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of Tier 1 water allocated to the Wholesale Customers collectively pursuant to Section 2.1. The SFPUC General Manager, using the Tier 2 allocation percentages shown on the list delivered by BAWSCA pursuant to Section 2.2, will calculate each Wholesale Customer's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Wholesale Customer with a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Wholesale Customer may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual Tier 2 shortage allocation over the course of the succeeding Supply Year. If a Wholesale Customer does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly Wholesale Customer water budgets will be derived from annual Tier 2 allocations for purposes of accounting for excess use. Monthly Wholesale Customer water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and

transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Wholesale Customers, and between any Wholesale Customers, will be permitted using the same procedure as that for transfers of banked water set forth in Section 3.4. The SFPUC and BAWSCA shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 3.05 of the Agreement. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

SECTION 3. SHORTAGE WATER BANKING

3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Wholesale Customer during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Wholesale Customer will be included with the SFPUC's monthly water bills.

3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.

3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.

3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).

3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SFPUC and any Wholesale Customer, and among the Wholesale Customers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferor's water bank account. The transferring parties must notify the SFPUC and BAWSCA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC.

If the SFPUC incurs extraordinary costs in implementing transfers, it will give written notice to the transferring parties within ten (10) business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Agreement and shall be subject to the disclosure and auditing requirements in the Agreement. In the case of transfers between Wholesale Customers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Wholesale Customers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Wholesale Customer, the SFPUC's share of any extraordinary transfer costs shall not be added to the Wholesale Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 3.05 of the Agreement.

SECTION 4. WHOLESALE EXCESS USE CHARGES

4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 6.03 of the Agreement. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs. The same excess use charge multipliers shall apply to the Wholesale Customers and all Retail Customers. The excess use charge multipliers apply only to the charges for water delivered at the rate in effect at the time the excess use occurred.

4.2. Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Wholesale Customer's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.

4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Wholesale Customer with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Wholesale Customers with net excess use will be paid according to the calendar in Section 6. The SFPUC may dedicate excess use charges paid by Wholesale Customers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Wholesale Customers. Excess use charges paid by the Wholesale Customers constitute Wholesale Customer revenue and shall be included within the SFPUC's annual Wholesale Revenue Requirement calculation.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California.

5.3. Effect on Agreement. This Plan describes the method for allocating water between the SFPUC and the collective Wholesale Customers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Wholesale Customers in accordance with directions provided by the Wholesale Customers through BAWSCA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Wholesale Customers. The provisions of this Plan are intended to implement Section 3.11(C) of the Agreement and do not affect, change or modify any other section, term or condition of the Agreement.

5.4. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Wholesale Customers when no water shortage emergency exists.

5.5. Termination. This Plan shall expire at the end of the Term of the Agreement.. The SFPUC and the Wholesale Customers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

SECTION 6. ALLOCATION CALENDAR

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

6.1.1

In All Years	Target Dates
1. SFPUC delivers list of annual purchases by each Wholesale Customer during the immediately preceding Supply Year	November 1
2. SFPUC meets with the Wholesale Customers and presents water supply forecast for the following Supply Year	February
3. SFPUC issues initial estimate of available water supply	February 1
4. SFPUC announces potential first year of drought (if applicable)	February 1
5. SFPUC and Wholesale Customers meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
6. SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
7. SFPUC issues final estimate of available water supply	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.
8. SFPUC determines amount of water available to Wholesale Customers collectively	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.

In Drought Years	Target Dates
9. SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	April 15-31
10. SFPUC declares the need for a voluntary or mandatory response	April 15-31
11. BAWSCA submits calculation to SFPUC of individual Wholesale Customers' percentage shares of water allocated to Wholesale Customers collectively	April 15-31
12. SFPUC determines individual shortage allocations, based on BAWSCA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule)	April 25—May 10
13. Wholesale Customers submit alternative monthly water budgets (optional)	May 8-May 24
14. Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	June 1
15. Monthly water budgets become effective	July 1
16. Excess use charges indicated on monthly Suburban bills	August 1 (of the beginning year) through June 30 (of the succeeding year)
17. Excess use charges paid by Wholesale Customers for prior year	August of the succeeding year

ATTACHMENT I

NOT USED

ATTACHMENT J

DEFINITIONS AND FORMULAS FOR CALCULATING PROPORTIONAL ANNUAL WATER USE

TABLE OF CONTENTS

This Attachment contains four sections, three figures, and five tables.

Section A:	Water Meters
Section B:	Calculation of Proportional Annual Water Use
Section C:	Data Requirements and Schedule
Section D:	County Line and In-City Terminal Reservoir Meter Calibration and Maintenance
Figure 1:	Locations of SFPUC County-Line Meters and In-City Terminal Reservoirs
Figure 2:	Generalized Schematic of Lake Merced Pump Station
Figure 3:	Locations of System Input and In-Line Meters
Table 1:	Base Usage and Allocation Rates
Table 2:	Locations of SFPUC County-line Meters and In-City Terminal Reservoirs
Table 3:	Locations of SFPUC System Input and In-line Meters
Table 4:	County-line Meters, In-City Terminal Reservoirs and Associated Metering Equipment
Table 5:	Meter Calibration and Maintenance Frequency

Table 1 presents the format for the water usage and allocation rate calculations for reference and to illustrate the definitions and formulas described in Sections A through C. Tables 2 and 3 list the meters whose locations are shown on Figures 1 and 3, respectively. Table

4 identifies the type of meter and associated metering equipment for the County-line Meters and Terminal Reservoirs. Table 5 identifies the meter calibration and maintenance frequency for the meters and equipment listed in Table 4.

SECTION A. WATER METERS

1. General

The Agreement provides that certain operating and maintenance expenses and the capital cost of certain categories of utility plant in service are to be allocated between San Francisco and the Wholesale Customers on the basis of proportionate annual usage of the Regional Water System. The purpose of this Attachment is to describe the meters and illustrate the method by which proportionate annual usage will be calculated.

2. Units of Measurement, Rounding, Conversion

The SFPUC will compile the usage data required to complete Table 1 annually. The units of measurement and conventions for converting and rounding will be as follows.

The data in the Table 1 will be presented, and the calculations contemplated by this Attachment shown, in units of millions of gallons per day (mgd), rounded to the nearest tenth of an mgd. Percentages (e.g., the City and Wholesale usage rates) shall be carried to two digits to the right of the decimal point and reduction factors shall be carried to four digits to the right of the decimal point. Data compiled by the SFPUC in units of hundreds of cubic feet per year (ccf) shall be converted to mgd by multiplying hundreds of cubic feet per year by 0.0000020493 (or 2.0493×10^{-6}) for non-leap years and 0.0000020437 (or 2.0437×10^{-6}) for leap years.

In rounding, if the rightmost digit dropped is 0 through 4, the preceding digit shall be left unchanged; if the rightmost digit dropped is 5 through 9, the preceding digit shall be increased by 1.

3. Location of Meters/Gauges

The SFPUC presently maintains meters and gauges that have been used to determine the proportionate usage of the Regional Water System, in accordance with the methods and calculations described in Exhibit J to the 1984 contract between San Francisco and the Wholesale Customers. These meters consist of "County-Line Meters," "In-City Terminal Reservoir Meters" and "System Input and In-line Meters" as described in the following subsections. As new capital improvement projects are designed and constructed by the SFPUC, it may be necessary for new meters to be installed to ensure continued accurate determinations of the proportionate usage of the Regional Water System. "Planned meters" are included in the following subsections where planned capital improvement projects are likely to require the installation of additional meters.

a. County-line Meters

The SFPUC presently maintains meters at or near the San Mateo-San Francisco County line to measure flow through all transmission pipelines entering the City ("County-line Meters"). The existing and planned County-line Meters are listed in Table 2 and shown on Figures 1 and 2. Additional details pertaining to the County-line meters located at the Lake Merced Pump Station, and specifically to water deliveries from the pump station to Sunset Reservoir, Sutro Reservoir, and Lake Merced are provided below.

(1) County-Line deliveries to Sunset and Sutro Reservoirs

Water delivered to the City through the Sunset Supply Pipeline may be pumped from the Lake Merced Pump Station to either Sunset Reservoir or Sutro Reservoir located within the City. When water is pumped from the Lake Merced Pump Station to both Sunset and Sutro reservoirs simultaneously, the recording instrumentation on the Sunset and Sutro venturi meters are designed to record flows through both meters. When water is pumped to Sutro Reservoir only (typically utilizing Pump No. 4 at the

Lake Merced Pump Station), the source water is from the Sunset Reservoir (not the County-line), and the direction of flow through the Sunset venturi meter is reversed. Under this pumping scenario, the recording instrumentation on the Sunset and Sutro venturi meters are designed to not record flow on their respective recorders such that the in-City transfer of water between Sunset and Sutro Reservoirs is not included as a County-line delivery to the City. Figure 2 provides a generalized schematic of the Lake Merced Pump Station and the typical direction of flow from the County-line, through the pump station.

(2) County-line deliveries to Lake Merced

In order to raise and maintain water levels in Lake Merced, the SFPUC occasionally delivers water directly from the Regional Water System to Lake Merced. Deliveries from the Regional Water System to Lake Merced are accomplished at the Lake Merced Pump Station. The procedure involves operating valves on the suction side of Sunset Pump No. 2 such that water may flow by gravity in the Sunset Supply Pipeline, from San Mateo County, across the County-line and into San Francisco, through Lake Merced Pump Station and into the Lake Merced wet well. A 16-inch pipeline connection on the suction side of Sunset Pump No. 2 allows for deliveries of water to the wet well (see Figure 2). Water deliveries from the Regional Water System to Lake Merced are considered County-line deliveries and an in-City usage in the calculation of water allocation rates.

b. In-City Terminal Reservoirs

Water usage by the City includes water deliveries from the SFPUC's "terminal reservoirs." The terminal reservoirs are: 1) Sunset Reservoir, 2) University Mound Reservoir, and 3) Merced Manor Reservoir. The terminal reservoirs are shown on Figure 1.

c. System Input and In-Line Meters

The SFPUC presently measures water flow into and through the Regional System utilizing "System Input and In-Line Meters." The existing and planned System Input and In-Line Meters are listed in Table 3 and shown on Figure 3.

d. Wholesale Customer Meters and City Retail Customer Meters Located Outside the Boundaries of the City

The SFPUC presently measures water deliveries from the Regional Water System to its Wholesale Customers at various locations where the water delivery systems of the individual Wholesale Customers tie into the Regional Water System. The meters at these locations are referred to as the Wholesale Customers' "master meters." The SFPUC also measures water deliveries from the Regional Water System to other customers located outside of the boundaries of the City that are not Wholesale Customers. Water deliveries to the Wholesale Customers and Retail Customers outside the City's boundaries that receive water from the Regional Water System are accounted for by the SFPUC's Customer Service Division as described in Section B.

4. Replacement and Relocation of Meters, Gauges, and Recording Devices.

The SFPUC presently equips all of its large venturi meters with differential pressure transmitters. The smaller meters utilize other methods and equipment to register and record flows. The SFPUC will maintain the meters, gauges, and recording devices described above in subsections (a), (b), (c), and (d) unless and until such meters, gauges, and recording devices are replaced.

The SFPUC may replace the meters, gauges, and recording devices described above in subsections (a), (b), (c), and (d) or install new meters, gauges, and recording devices at new locations, provided that such changes do not diminish the accuracy of the water flow measurements or impair the ability of the SFPUC to separate direct City water use from water use by the wholesale customers. Maintenance and calibration procedures for new or replaced equipment may change. Modified maintenance and calibration procedures for new or replaced equipment will conform to industry standards set forth in AWWA Manual M33, the applicable

standards in the International Society of Automation, and will implement the manufacturer's instructions for maintenance and calibration. The SFPUC will provide BAWSCA with advance written notice of any such changes, together with a brief explanation of the reasons therefor and a description of the type and location of the replacement. Such notice shall automatically amend the list of meters, gauges, and recording devices set forth above in subsections (a), (b), (c), and (d).

5. Recording of Water Flow Data

a. Flow Data

The City shall record and maintain data measuring base water flow throughout the SFPUC Regional Water System as necessary to determine proportional annual water usage.

b. Reservoir Data

The SFPUC shall record and maintain data measuring the levels of the terminal reservoirs described above in subsection A.3.b and shown on Figure 1 on an hourly basis. Flow values derived from reservoir level readings for all reservoirs in the SFPUC wholesale system shall be calculated using the tables contained in the SFPUC publication "Reservoir Data" (aka "The Weir Book"), which set forth the relationship between reservoir levels and water volumes, as such tables may be amended from time to time to reflect changes in the volumes of the various reservoirs. The tables to be used initially shall be those from the current edition of The Weir Book.

SECTION B. CALCULATION OF PROPORTIONAL ANNUAL USAGE

"Base rates" means the percentages of annual SFPUC deliveries attributed to the Wholesale Customers and to City Retail Customers.

The percentage of annual SFPUC metered deliveries attributed to the Wholesale Customers (i.e., the wholesale base rate) shall be calculated for each fiscal year as described below and illustrated in Table 1. The item numbers listed below correspond to the item numbers listed in Table 1.

(1) "Gross San Francisco County line base deliveries" shall equal the total amount of water flowing into the City's distribution system through transmission pipelines entering the City, as measured by the County-Line Meters described in Section A.3.a. and shown on Figures 1 and 2.

(2) "Daly City base deliveries" shall equal the water flowing to Daly City through meter accounts provided downstream of the County-Line meters or through SFPUC's City Distribution Division. At present these accounts are:

(a) CSPL1/Macdonald Avenue Service (Account number 010084-01-0)

(b) Guttenberg Street Service (Account number 010013-01-3)

(c) Carter Street Service (Account numbers 284070-01-8 and 284071-01-6)

These accounts represent a portion of the total deliveries to Daly City. The quantities of water delivered to these four Daly City accounts are reported monthly in Form MGT441 by the SFPUC's Customer Service Division. These connections to meters are presently located within the City, and thus record water which has already been recorded by the SFPUC's master meters at the County line. So long as this condition continues, Daly City base deliveries shall be subtracted from "Gross San Francisco County line base deliveries."

(3) "Net San Francisco base deliveries" shall equal the result of subtracting "Daly City base deliveries" from "Gross San Francisco County line base deliveries."

(4) "Other suburban raw water base deliveries" shall equal the sum of all deliveries of raw (untreated) water to customers of the SFPUC located outside the City other than deliveries to the Wholesale Customers. "Other suburban raw water base deliveries" include deliveries of raw water in Alameda and San Mateo Counties to SFPUC Retail Customers, City departments and commissions, and other users affiliated with San Francisco.

(5) "Other suburban treated water base deliveries" shall equal the sum of all deliveries of treated water to customers of the SFPUC located outside the City other than deliveries to the Wholesale Customers. Other suburban treated water base deliveries include deliveries of treated water to the SFPUC's Retail Customers in San Mateo, Santa Clara and Alameda Counties (such as NASA Ames Research Center and LLNL), to City departments and commissions and other users affiliated with San Francisco (such as the San Francisco International Airport, the San Francisco County Jail, and tenants of land owned by the City Recreation and Park Department).

(6) "Other suburban base deliveries" shall equal the sum of "Other suburban raw water deliveries" and "Other suburban treated water deliveries." The combined amount of raw and treated water delivered to suburban entities other than the Wholesale Customers is reported monthly in Form MGT440 by the SFPUC's Customer Service Division.

(7) "Total City base usage" shall equal "Net San Francisco base deliveries" plus "Other suburban base deliveries."

(8) "Total wholesale base usage" shall equal the sum of all metered deliveries to the Wholesale Customers measured at their SFPUC master meters (including all deliveries to Daly City which are comprised of deliveries through meters located outside San Francisco and meters located inside San Francisco, deliveries through the latter of which are designated above in paragraph B.1.2 as "Daly City base

deliveries"). The quantity of water delivered to the individual Wholesale Customers, and the combined amount of water delivered to all Wholesale Customers is reported monthly in Form MGT440 by the SFPUC's Customer Service Division.

(9) "Total system base usage" shall equal "City base usage" plus "Wholesale base usage."

(10) "Wholesale base rate" shall equal the percentage obtained by dividing "Wholesale base usage" by "Total system base usage."

(11) "City base rate" shall equal the percentage obtained by subtracting "Wholesale base rate" from 100 percent.

(12) "Base system input" shall equal all amounts of water supplied to the SFPUC Regional Water System, which presently comes from the following sources:

(a) Hetch Hetchy water as measured at the venturi meters on the 58–inch, 61-inch, and 78.5-inch San Joaquin Pipeline Nos. 1, 2, and 3 near Oakdale.

(b) Water supplied by HHWPD to LLNL as measured at the customer meter. Water delivered from the system to LLNL shall be deemed negative in sign for the purpose of determining "Base system input."

(c) Hetch Hetchy water pumped from the Alameda siphons to San Antonio Reservoir as measured at the venturi meter on the 60-inch San Antonio pipeline. Water delivered from the system to San Antonio Reservoir shall be deemed negative in sign for the purpose of determining "Base system input."

(d) Sunol Valley Water Treatment Plant as measured at the meter on the 78-inch effluent pipeline.

(e) Harry Tracy Water Treatment Plant as measured at the venturi meters on the 60-inch and 78-inch effluent pipelines.

(f) Raw water deliveries to all SFPUC Retail Customers outside the City boundaries as measured at the customer meter. These deliveries are considered positive for the purposes of Table 1. Currently, raw water deliveries to the system are represented by the following account numbers contained in Form MGT440 prepared by the SFPUC's Customer Service Division:

266081-01-7 (Calaveras Nursery)
266081-02-5 (Calaveras Nursery)
264355-01-7 (Caltrans)
266084-02-9 (Color Spot Nursery)
272701-02-0 (Color Spot Nursery)
266069-02-0 (Crystal Springs Golf Course)
266078-02-1 (Dell Franklin)
266078-01-3 (Dells Nursery)
266084-01-1 (Hi-C Nursery)
272701-01-2 (Hi-C Nursery)
284112-01-8 (Hansen Aggregates)
266084-03-7 (Jeff Anhorn Nursery)
272701-03-8 (Jeff Anhorn Nursery)
266079-02-9 (Mission Valley Rock)
281043-01-8 (Mission Valley Rock)
267618-02-3 (Nagata Farms)
267618-01-5 (Nagata Farms)
266090-01-8 (Naka Nursery)

266091-01-6 (Naka Nursery)

266090-02-6 (Naka Nursery)

266091-02-4 (Naka Nursery)

264315-02-9 (Pacific Nurseries)

266076-01-7 (Sunol Christmas Tree Farm)

266076-02-5 (Sunol Tree Farm)

276095-01-5 (Sunol Valley Golf & Recreation)

266077-02-3 (Ura Farm)

264352-01-4 (Ura, John)

266075-01-9 (Valley Crest)

268276-01-1 (Valley Crest Nursery)

266093-01-2 (Valley Crest Tree Company)

268426-02-0 (Valley Crest Tree Company)

266075-02-7 (Valley Crest Tree Company)

266093-02-0 (Valley Crest Tree Company)

268276-02-9 (Valley Crest Tree Company)

266082-01-5 (Western Star Nursery)

266089-01-0 (Western Star Nursery)

267254-02-7 (Western Star Nursery)

266082-02-3 (Western Star)

266089-02-8 (Western Star)

267254-03-5 (Western Star)

(g) Raw water deliveries from Pilarcitos Reservoir and Crystal Springs Reservoir to Coastside County Water District as measured at the customer meters. These deliveries are considered positive for the purposes of Table 1. Currently, raw water deliveries to Coastside County Water District from both reservoirs are represented under account number 010027-01-9 contained in Form MGT441 prepared by the SFPUC's Customer Service Division:

(h) Crystal Springs Balancing Reservoir. The flow into or out of the Crystal Springs Balancing Reservoir shall be calculated based on the changes in the amounts of water stored in the reservoir. The amounts of water stored shall be determined by the use of water level sensors, and the application of water level readings to a water level-storage capacity table. Decreases in storage, which indicate a flow from the Balancing Reservoir into the system, shall be deemed positive in sign. Increases in storage, which indicate a flow into the Balancing Reservoir from the system, shall be deemed negative in sign. Over the period of a year, the total flows into and out of Crystal Springs Balancing Reservoir are nearly equivalent. As such, total system input from Crystal Springs Reservoir shall be deemed zero for calculating current base rates.

(i) Deliveries to Crystal Springs Reservoir as measured by the overflow weir at the Pulgas Pump Station. Deliveries from the system to Crystal Springs Reservoir ("spills") shall be deemed negative in sign for the purpose of determining "Base system input."

(j) Terminal Reservoirs. The "terminal reservoirs" consist of Sunset Reservoir, University Mound Reservoir, and Merced Manor Reservoir, each located within the City of San Francisco. The flow into or out of the terminal reservoirs shall be calculated based on the changes in the amounts of water stored in them. The amounts of water stored shall be determined by the use of water level sensors, and the application of water levels to water level-storage capacity tables. Over the period of a year, the total flows into and out of terminal reservoirs are nearly equivalent. As such, total system input from the terminal reservoirs shall be deemed zero for calculating base rates.

(k) Other Sources. Other sources of flow into, or from, the Regional Water System, shall be accounted for as "other sources." Examples of other

sources of system input would include intertie water deliveries between the Regional System and the Santa Clara Valley Water District, and between the Regional System and the East Bay Municipal Utilities District, and deliveries of raw water from Crystal Springs Reservoir in the event of an emergency. Flows from the system shall be deemed negative in sign for the purpose of determining "Base system input."

(13) "Total base system input" shall equal the sum of the system inputs from the sources described in paragraph B.1.12.

(14) "Joint system loss reduction factor" shall equal "Total system base usage" divided by "Total base system input." "Joint system loss reduction factor" shall not exceed 1.0.

(15) "Daly City reduction factor" shall equal "Net San Francisco base deliveries" divided by "Gross San Francisco County line base deliveries." "Daly City reduction factor" shall not exceed 1.0.

(16) "Total suburban base deliveries" shall equal "Other suburban base deliveries" plus "Total wholesale base usage."

(17) "Suburban reduction factor" shall equal "Wholesale base usage" divided by "Total suburban base deliveries." "Suburban reduction factor" shall not exceed 1.0.

(18) "HHWPD Deliveries above Oakdale" shall equal the total amount of water delivered by the HHWPD to users located above the system input meters in Oakdale. Water users located above the system input meters in Oakdale are currently represented by Groveland Community Services District and the HHWPD facility at Moccasin.

(19) "HH Reduction Factor" is calculated for the purpose of determining the Wholesale Customers' share of the Hetch Hetchy Assessment. The factor shall equal a fraction, the numerator of which is the total system input measured at the Oakdale meters (Table 1, line 12.a) and the denominator of which is the sum of the total system input measured at the Oakdale meters (Table 1, line 12.a) plus the total "HHWPD deliveries above Oakdale" (Table 1, line 18).

SECTION C. DATA REQUIREMENTS AND SCHEDULE

1. Collection and Dissemination of Data

The SFPUC presently compiles daily flow data for the County-line meters, System Input and In-Line Meters, and daily reservoir water level data, and provides copies of that data to the Wholesale Customers (through BAWSCA) on a monthly basis. The SFPUC also provides copies of wholesale "Suburban Resale" and City Retail water usage data to BAWSCA on a monthly basis. Additionally, the SFPUC provides BAWSCA access to flow data for the meters as reported and recorded by the SFPUC's SCADA system.

The SFPUC shall continue to provide the flow and water usage data described above to BAWSCA on a monthly basis, and shall continue to allow BAWSCA access to the SCADA system data, so that a coordinated effort between the SFPUC and BAWSCA will allow for updating Table 1 of this Attachment annually on a timely basis.

It shall continue to be the SFPUC's responsibility to compile the data necessary to update Table 1 of this Attachment annually and the City shall deliver to BAWSCA, for review and approval, copies of the updated Table 1 by September 15 for the fiscal year ending the preceding June 30, as shown by the schedule contained in Section C.3.

Upon reasonable notice to the General Manager of the SFPUC, BAWSCA shall be given access to all water flow and usage records compiled by the SFPUC, including raw data, at reasonable times during business hours and shall have the right to copy such records and data at its expense.

2. Lack of Data

The parties recognize that, because of human error, mechanical failure, or other unplanned events, portions of the data required for the calculation of the usage rates and ratios described in Sections B and C of this Attachment occasionally may be unavailable or incorrect. In the event that such data are unavailable or inaccurate, the SFPUC shall make a reasonable estimate of the unavailable or incorrect data or use the most accurate alternative data that are available, and substitute the estimate therefor.

If the SFPUC uses an estimate of the unavailable or inaccurate data or alternative data, it shall provide BAWSCA with the following:

(1) a description of the unavailable or inaccurate data and the estimation or substitution of data used therefor;

(2) an explanation of the cause of the missing or inaccurate data and the reasons underlying the SFPUC's estimation or substitution of alternate data; and

(3) a statement of how the error or malfunction that caused the unavailability or inaccuracy of the data will be avoided in the future.

The SFPUC shall provide this information to BAWSCA upon calculation by the SFPUC of the usage rates and ratios described in this Attachment for the fiscal year in question.

3. Schedule for Completing the Annual Calculations of Water Usage Rates

The parties recognize the importance of updating Table 1 of this Attachment annually in a timely manner, and that historically, doing so has required a coordinated effort between the SFPUC and BAWSCA. To assure timely completion of the annual calculations of water usage rates and ratios, the parties agree to adhere to the following schedule.

(1) By August 15: The SFPUC shall forward to BAWSCA all data for the fiscal year ending the preceding June 30, necessary to make a determination of the base water usage and base allocation rates for the Wholesale Customers and the City.

(2) By September 15. The City shall deliver to BAWSCA, for review and approval, draft copies of the updated Table 1 for the fiscal year ending the preceding June 30.

(3) Between September 15 and October 15. The SFPUC and BAWSCA shall reconcile any discrepancies or inaccuracies in the draft calculations of water usage rates and shall reach agreement on a final updated Table 1 for the fiscal year ending the preceding June 30.

(4) By November 1. The SFPUC shall deliver to BAWSCA a finalized updated Table 1, signed by the SFPUC General Manager, or appropriate designee, representing the water usage rates agreed upon by the SFPUC and BAWSCA, for the fiscal year ended June 30.

(5) By November 15. BAWSCA shall return the finalized Table 1 to the SFPUC, counter-signed by the BAWSCA General Manager/CEO. If the SFPUC does not receive the countersigned Table 1 from BAWSCA by November 15, it may use the water use data as contained in the Table 1 delivered pursuant to paragraph (4) above, subject to arbitration as provided in section 8.01 of the Agreement.

SECTION D. COUNTY LINE AND IN-CITY TERMINAL RESERVOIR METER CALIBRATION AND MAINTENANCE

1. General

This section refers only to the County-Line and In-City Terminal Reservoir Meters. The term "meter(s)" includes the primary meter itself (most of the primary meters in the SFPUC's water system are Venturi-type flow meters) as well as any and all of the associated equipment used to measure, record, and transmit flow and water level data. The metering equipment associated with the primary metering device (also referred to as the secondary metering equipment) includes differential pressure transmitters, recorders, telecommunications equipment and the portion of the SFPUC's Supervisory Control and Data Acquisition (SCADA) System that is used to transmit flow and water level measurements from the water meter to the computer terminal that records the measured data.

The County-Line and In-City Terminal Reservoir meters, their general locations, and their associated metering equipment are listed in Table 4.

2. Frequency and Type of Work to be Performed

The meters, water level sensors, and associated metering equipment are to be inspected, tested, calibrated, and maintained according to the applicable meter calibration and maintenance frequency specified in Table 5.

3. Components of the Calibration and Maintenance Work

The SFPUC will contract with an independent metering consultant to perform periodic inspections, testing, servicing and calibrations of the meters and metering equipment for the County-line meters and In-City Terminal Reservoirs. The metering consultant's calibration and maintenance work will include the following components:

- Annual Pitot Tube Tests: Pitot tube flow tests shall be performed once a year on all Venturi-type flow meters. See Sections 4.b and 4.c for further detail.

- Quarterly Secondary Meter Equipment Testing and Calibration: The secondary metering equipment shall be tested for accuracy and calibrated quarterly at five input levels (0%, 25%, 50%, 75% and 100% of the full range of flow). See Section 4.a for further detail.

- Cleaning: Clean and remove dust, oils, dirt, etc. from all instruments.

- Flushing: Flush and clean Venturi tube differential pressure (D/P) sensing lines.

- Inspecting: Inspections for mechanical fatigue, leaky pipes and fittings, worn parts, and improper operation of electrical/electronic equipment.

- Lubrication: Mechanical parts shall be lubricated as needed.

4. Calibration Procedures

The metering consultant shall continue to calibrate and maintain the County-line meters and metering equipment listed in Table 4 in accordance with the frequency of work specified in Table 5. The work includes documenting meter readings and accuracy before and after calibration. Specific tasks to be completed by the metering consultant are as follows:

a) Quarterly testing and calibration. The secondary metering equipment shall be tested and calibrated quarterly using NIST Traceable test equipment, and a "dead weight tester."

The system loop error for the secondary metering equipment is determined by connecting its output to the differential pressure transmitter and adjusting the dead weight tester to 5 places over the full range of flow: 0%, 25%, 50%, 75% and 100%, while all instruments in the loop are connected. For water level transmitters, provide simulated test head equal to full range of the transmitter being calibrated, comparing the simulated test head to its 4-20 milliamp output signal to determine transmitter error and calibration requirements. The system loop error for the secondary metering equipment may not exceed +/-2%. The individual components of the secondary metering equipment shall also be tested at the same 5 input levels and calibrated as necessary to ensure the error of the system and individual components does not exceed +/- 2%.

b) Annual Pitot Tube Testing and Calibration. Annual Pitot tube testing shall be conducted for a comparison of flow totalized by the Pitot tube test equipment and the totalizer used by the SFPUC for water measurement and billing purposes. Annual Pitot tube flow testing shall be performed on all flow meters for assessment of Venturi error using the Annubar continuous flow method at 22% of the pipe radius. Pitot tube flow testing must be conducted continuously for a minimum of 30 minutes per test.

The Pitot tube flow tests are first performed before any of the secondary metering instruments are calibrated to determine the total system error (system consisting of the primary metering device and secondary metering equipment). Once the total system loop error has been established, perform secondary loop instrument testing and calibration as per the quarterly testing and calibration procedures described in 4.a above. If the total system error exceeds +/- 2% after calibration of the secondary metering equipment, minor adjustments to the differential pressure transmitter shall be made to correct (calibrate) the error in the Venturi meter. Repeat Pitot tube testing must be performed after the individual instrument calibration and differential pressure transmitter adjustments have been performed to establish that total system loop error is within +/- 2%.

c) Pitot tube testing shall be conducted at a flow rate representing the typical flow for the meter (and, if operationally possible, at three different flows ranging from a minimum to near maximum capacity flow).

d) The metering consultant shall perform the meter testing and calibration procedures utilizing the meter characteristic curves (for example, the pressure drop vs. flow for a Venturi meter) that have been obtained during previous meter calibration and maintenance work.

e) During each quarterly site visit, the metering consultant shall inspect, assess and document the condition of all metering equipment, including meter, gauges, indicators, recorders, transmitters and other instrumentation, used in the measurement and recording of flow rates and cumulative flow totals and shall document all operational problems with the calibration instruments and meters during the calibration process. Problems may include air entrainment, leakage, flow disturbance and unstable meter readings.

f) Prior to each quarterly site visit, the metering consultant shall review prior calibration records and reports for each meter to determine if previously-identified errors or equipment deficiencies were corrected as previously recommended.

g) Each quarter, the metering consultant shall submit a final report (See Section 6) containing all of the calibration results for each meter tested and calibrated during the quarter. The metering consultant's report shall include a narrative description of the work conducted on each meter and meter calibration reports for the individual metering equipment. The quarterly report shall also address deficiencies that were not previously corrected according to the recommendations made in the prior report.

5. Calibration Instruments

The instrument used for flow testing of the primary meter (Venturi) must meet the accuracy standards required by the American Water Works Association (AWWA), and be

capable of measuring actual flows with an error of less than +/- 2%. If a particular calibration instrument is not rated for accuracy by the AWWA, its accuracy will be determined by reference to its manufacturer's representations as to accuracy.

6. Calibration Reports

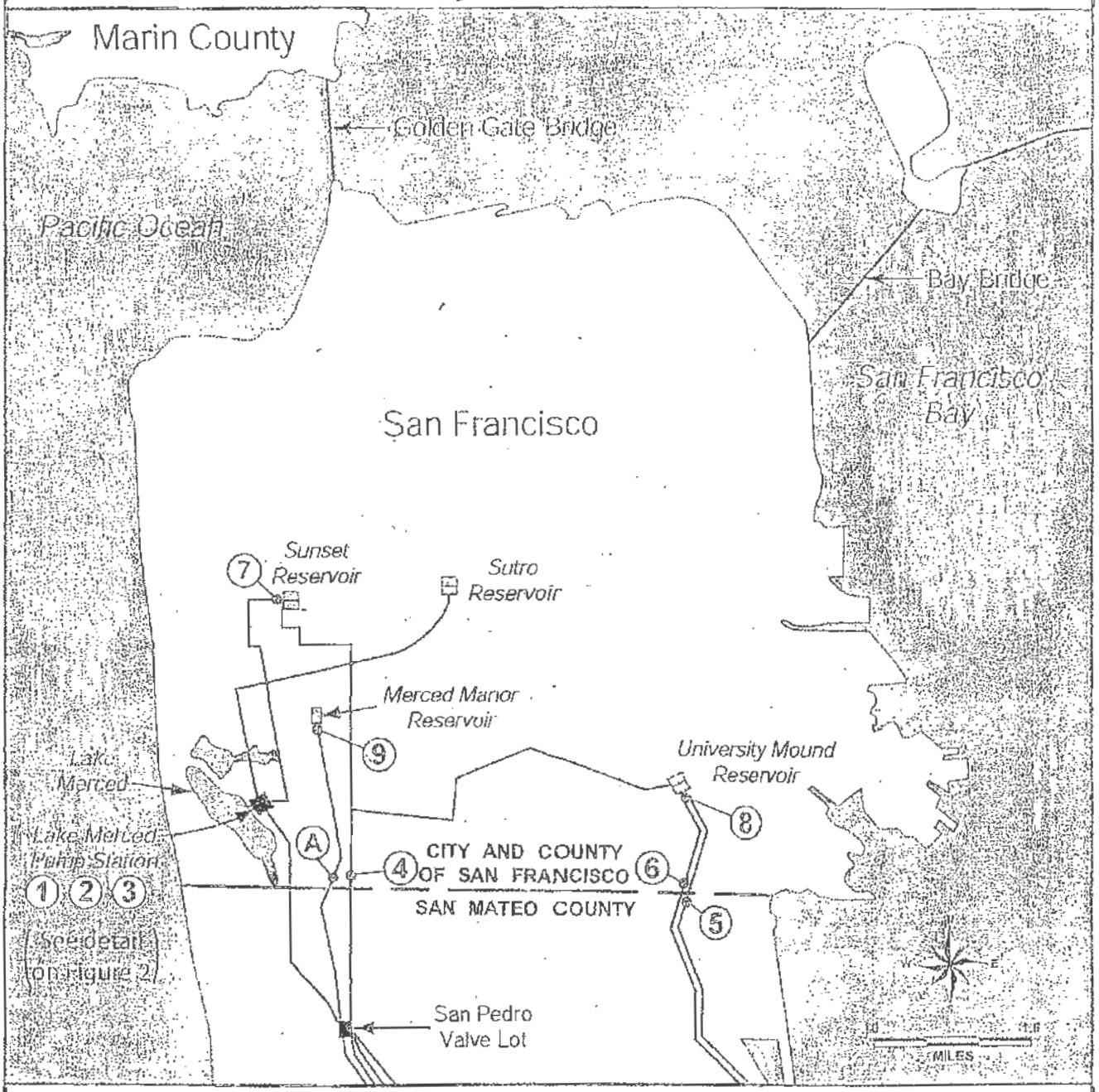
Within fourteen (14) working days after the beginning of each quarter, the metering consultant shall submit a written progress report of the work performed during the previous quarter. Each quarterly report will describe the results of the meter calibrations and any other tasks performed. The report will also include comments regarding any observations of abnormal conditions and any recommendations regarding these meters and their related equipment.

The reports must include complete descriptions and status of meters and related equipment, dates and times of service, all calibration specifics, pipeline dimensions, range of flow rates and totalized volumes, before and after error analysis and accuracy levels achieved, testing equipment used, and the name(s) of the person(s) that performed the work.

When appropriate and necessary, the metering consultant shall provide recommendations for improving the accuracy and reliability of the equipment and/or the methods of data collection. If, in the opinion of the metering consultant, the condition of a meter or its associated metering equipment is found to be defective, damaged, or otherwise in need of immediate repair or replacement, the metering consultant shall: 1) promptly notify the appropriate SFPUC personnel of the problem and recommend a solution to the problem so that the SFPUC can determine how to address it and, 2) include the problem description in its quarterly report.

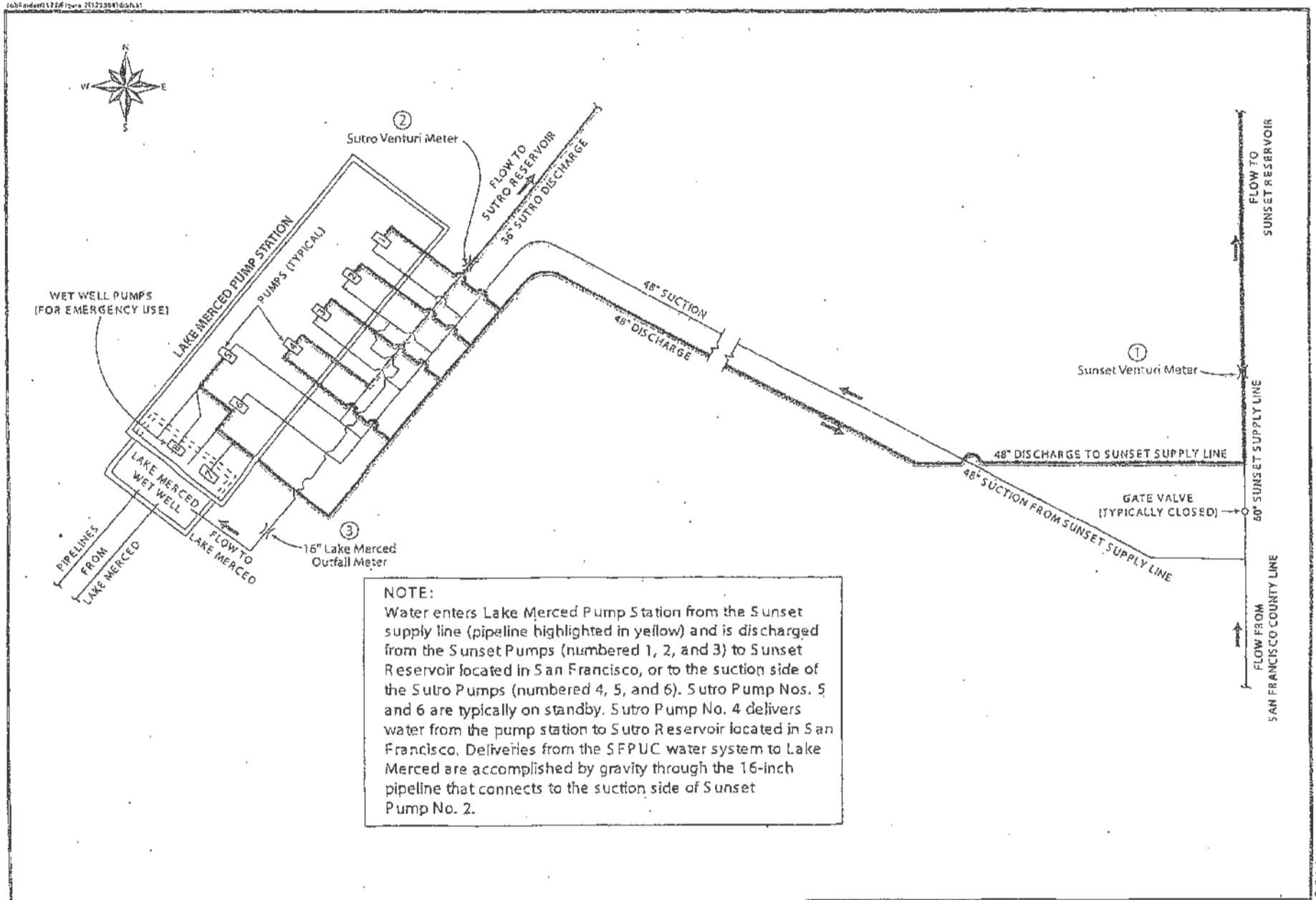
FIGURE 1

Locations of SFPUC County-Line Meters and In-City Terminal Reservoirs



METER	PIPELINE	LOCATION
1	Sunset	Lake Merced Pump Station
2	Sutro	Lake Merced Pump Station
3	Lake Merced Outfall	Lake Merced Pump Station
4	San Andreas No. 2	Junipero Serra (Hwy. 280) South of Belle Ave.
5	Crystal Springs No. 1	PG&E Martin Service Center Yard
6	Crystal Springs No. 2	Tamasco Ct. South of Sunnydale Ave.
A	San Andreas No. 3 (Planned)	To be determined

METER	RESERVOIR	LOCATION
7	Sunset Reservoir	26th Avenue and Ortega
8	University Mound Reservoir	University Avenue and Bacon
9	Merced Manor Reservoir	23rd Avenue and Ocean



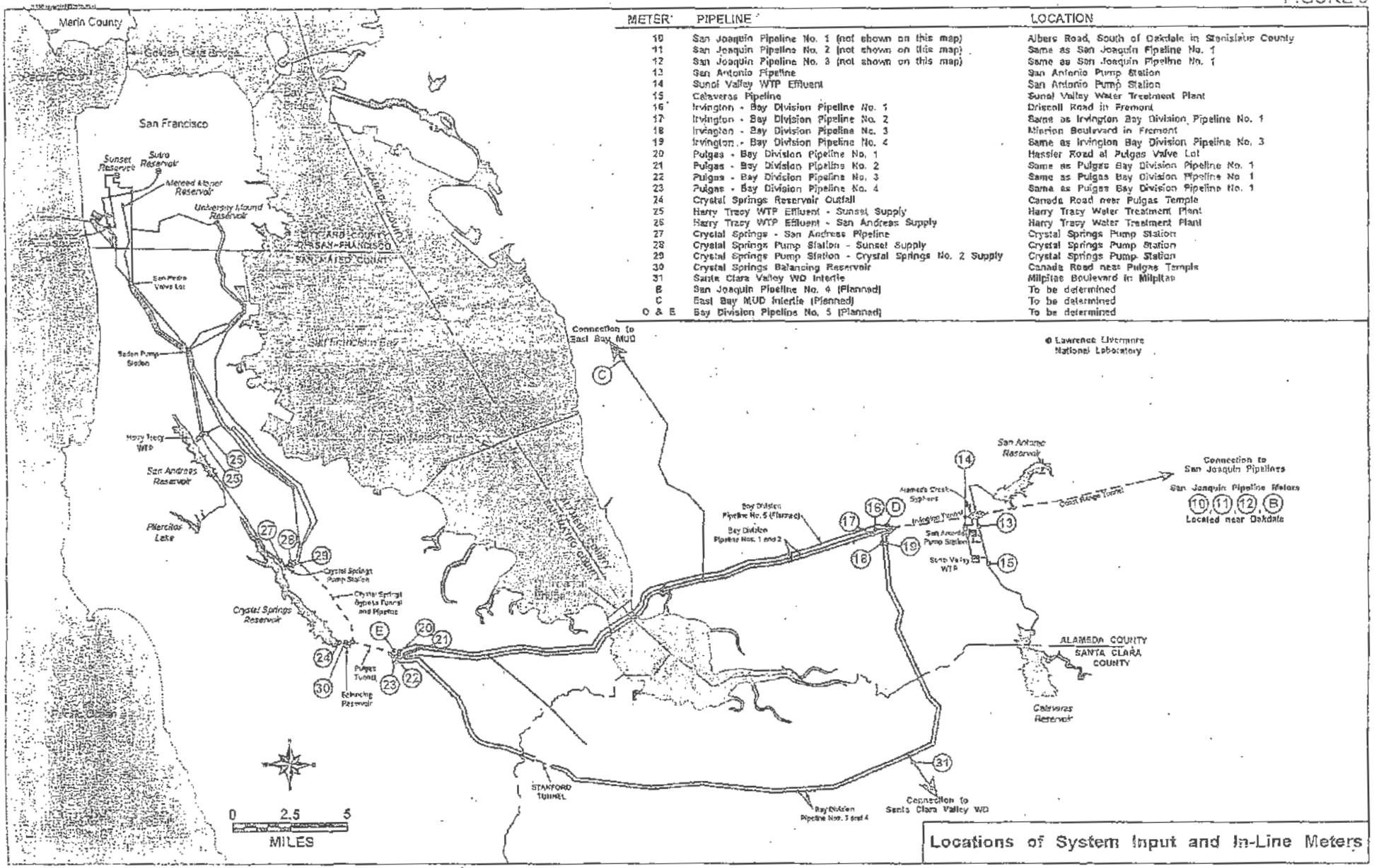
NOTE:
Water enters Lake Merced Pump Station from the Sunset supply line (pipeline highlighted in yellow) and is discharged from the Sunset Pumps (numbered 1, 2, and 3) to Sunset Reservoir located in San Francisco, or to the suction side of the Sutro Pumps (numbered 4, 5, and 6). Sutro Pump Nos. 5 and 6 are typically on standby. Sutro Pump No. 4 delivers water from the pump station to Sutro Reservoir located in San Francisco. Deliveries from the SFPUC water system to Lake Merced are accomplished by gravity through the 16-inch pipeline that connects to the suction side of Sunset Pump No. 2.

Generalized Schematic of Lake Merced P[illegible] Station

FIGURE 2

FIGURE 3

METER	PIPELINE	LOCATION
10	San Joaquin Pipeline No. 1 (not shown on this map)	Albers Road, South of Oakdale in Stanislaus County
11	San Joaquin Pipeline No. 2 (not shown on this map)	Same as San Joaquin Pipeline No. 1
12	San Joaquin Pipeline No. 3 (not shown on this map)	Same as San Joaquin Pipeline No. 1
13	San Antonio Pipeline	San Antonio Pump Station
14	Sunol Valley WTP Effluent	San Antonio Pump Station
15	Calaveras Pipeline	Sunol Valley Water Treatment Plant
16	Irvington - Bay Division Pipeline No. 1	Driscoll Road in Fremont
17	Irvington - Bay Division Pipeline No. 2	Same as Irvington Bay Division Pipeline No. 1
18	Irvington - Bay Division Pipeline No. 3	Marion Boulevard in Fremont
19	Irvington - Bay Division Pipeline No. 4	Same as Irvington Bay Division Pipeline No. 3
20	Pulgas - Bay Division Pipeline No. 1	Hassler Road at Pulgas Valve Lot
21	Pulgas - Bay Division Pipeline No. 2	Same as Pulgas Bay Division Pipeline No. 1
22	Pulgas - Bay Division Pipeline No. 3	Same as Pulgas Bay Division Pipeline No. 1
23	Pulgas - Bay Division Pipeline No. 4	Same as Pulgas Bay Division Pipeline No. 1
24	Crystal Springs Reservoir Outfall	Canada Road near Pulgas Temple
25	Harry Tracy WTP Effluent - Sunset Supply	Harry Tracy Water Treatment Plant
26	Harry Tracy WTP Effluent - San Andreas Supply	Harry Tracy Water Treatment Plant
27	Crystal Springs - San Andreas Pipeline	Crystal Springs Pump Station
28	Crystal Springs Pump Station - Sunset Supply	Crystal Springs Pump Station
29	Crystal Springs Pump Station - Crystal Springs No. 2 Supply	Crystal Springs Pump Station
30	Crystal Springs Balancing Reservoir	Canada Road near Pulgas Temple
31	Santa Clara Valley WD Intertie	Milpitas Boulevard in Milpitas
B	San Joaquin Pipeline No. 4 (Planned)	To be determined
C	East Bay MUD Intertie (Planned)	To be determined
D & E	Bay Division Pipeline No. 5 (Planned)	To be determined



Locations of System Input and In-Line Meters

Table 1
Base Usage (mgd) and Allocation Rates

(1) Usage	(2) Definition	(3) 2004-05	(4) 2005-06	(5) 2006-07	(6) 2007-08	(7) 2008-09	(8) 2009-10
1. Gross S.F. Co. line	B.1	79.5	78.3	75.7			
2. Daly City portion	B.2	0.2	0.2	0.2			
3. Net S.F.	(1-2)	79.3	78.1	75.5			
4. Other suburban raw water	B.4	0.4	0.5	0.7			
5. Other suburban treated water	B.5	4.1	3.4	3.9			
6. Total other suburban	(4+5)	4.5	3.9	4.6			
7. Total City usage	(3+6)	83.8	82.0	80.1			
8. Total wholesale usage	B.8	167.4	164.4	175.8			
9. Total system usage	(7+8)	251.2	246.4	255.9			
10. Wholesale alloc. rate	(8/9)	66.63%	66.72%	68.70%			
11. City alloc. rate	(100%-10)	33.37%	33.28%	31.30%			
12a. HHWPD input (Oakdale)	B.12	194.7	202.6	227.3			
12b. Deliveries to LLNL	B.12	-0.4	-0.9	-0.9			
12c. HH to San Ant. Res.	B.12	-3.8	-1.8	-11.6			
12d. Sunol Valley WTP	B.12	28.5	29.4	17.6			
12e. Harry Tracy WTP	B.12	45.2	40.4	41.2			
12f. Raw water deliveries	B.12	0.4	0.4	0.7			
12g. Deliveries to Coastside Co. WD	B.12	1.8	1.6	2.1			
12h. Crys. Sprs. Bal. Res.	B.12	0.0	0.0	0.0			
12i. Spill to CS Res.	B.12	-19.9	-42.6	-37.1			
12j. Terminal Reservoirs	B.12	0.0	0.0	0.0			
12k. Other sources	B.12	0.0	1.9	3.8			
13. Total system input	B.13	246.5	231.0	243.1			
14. Jt. sys. loss red. fact.	(9/13)	1.0000	1.0000	1.0000			
15. Daly City red. factor	(3/1)	0.9975	0.9974	0.9974			
16. Total suburban	(6+8)	171.9	168.3	180.4			
17. Suburban red. factor	(8/16)	0.9736	0.9768	0.9745			
18. HHWPD Deliveries above Oakdale	B.18						
19. HH Reduction Factor	B.19	99.56%					

Table 2
Locations of SFPUC County-Line Meters and In-City Terminal Reservoirs

County-Line Meters

Meter	Pipeline	Location
1	Sunset	Lake Merced Pump Station
2	Sutro	Lake Merced Pump Station
3	Lake Merced Outfall	Lake Merced Pump Station
4	San Andreas No. 2	Junipero Serra (Hwy. 280) South of Belle Ave.
5	Crystal Springs No. 1	PG&E Martin Service Center Yard
6	Crystal Springs No. 2	Tamasco Ct. South of Sunnydale Ave.
A	San Andreas No. 3 (Planned)	To be determined

In-City Terminal Reservoirs

Meter	Reservoir	Location
7	Sunset Reservoir	26th Avenue and Ortega
8	University Mound Reservoir	University Avenue and Bacon
9	Merced Manor Reservoir	23rd Avenue and Ocean

Table 3
Locations of SFPUC System Input and In-Line Meters

Meter	Pipeline	Location
10	San Joaquin Pipeline No. 1	Albers Road, South of Oakdale in Stanislaus County
11	San Joaquin Pipeline No. 2	Same as San Joaquin Pipeline No. 1
12	San Joaquin Pipeline No. 3	Same as San Joaquin Pipeline No. 1
13	San Antonio Pipeline	San Antonio Pump Station
14	Sunol Valley WTP Effluent	San Antonio Pump Station
15	Calaveras Pipeline	Sunol Valley Water Treatment Plant
16	Irvington – Bay Division Pipeline No. 1	Driscoll Road in Fremont
17	Irvington – Bay Division Pipeline No. 2	Same as Irvington Bay Division Pipeline No.1
18	Irvington – Bay Division Pipeline No. 3	Mission Boulevard in Fremont
19	Irvington – Bay Division Pipeline No. 4	Same as Irvington Bay Division Pipeline No.3
20	Pulgas – Bay Division Pipeline No. 1	Hassler Road at Pulgas Valve Lot
21	Pulgas – Bay Division Pipeline No. 2	Same as Pulgas Bay Division Pipeline No. 1
22	Pulgas – Bay Division Pipeline No. 3	Same as Pulgas Bay Division Pipeline No. 1
23	Pulgas – Bay Division Pipeline No. 4	Same as Pulgas Bay Division Pipeline No. 1
24	Crystal Springs Reservoir Outfall	Canada Road near Pulgas Temple
25	Harry Tracy WTP Effluent – Sunset Supply	Harry Tracy Water Treatment Plant
26	Harry Tracy WTP Effluent – San Andreas Supply	Harry Tracy Water Treatment Plant
27	Crystal Springs – San Andreas Pipeline	Crystal Springs Pump Station
28	Crystal Springs Pump Station – Sunset Supply	Crystal Springs Pump Station
29	Crystal Springs Pump Station – Crystal Springs No. 2 Supply	Crystal Springs Pump Station
30	Crystal Springs Balancing Reservoir	Canada Road near Pulgas Temple
31	Santa Clara Valley WD Intertie	Milpitas Boulevard in Milpitas
B	San Joaquin Pipeline No. 4 (Planned)	To be determined
C	East Bay MUD Intertie (Planned)	To be determined
D&E	Bay Division Pipeline No. 5 (Planned)	To be determined

TABLE 4
SFPUC COUNTY-LINE METERS, IN-CITY TERMINAL RESERVOIRS, AND ASSOCIATED METERING EQUIPMENT

County-Line Meter	Meter Type	Location
1. Sunset	60" Venturi	Lake Merced Pump Station
Associated Metering Equipment:	• Rosemount D/P transmitter • Honeywell recorder • SCADA	
2. Sutro	36" Venturi	Lake Merced Pump Station
Associated Metering Equipment:	• Rosemount D/P transmitter • Honeywell recorder • SCADA	
3. Lake Merced Outfall	16" Mag. Meter	Lake Merced Pump Station
Associated Metering Equipment:	• Honeywell recorder • SCADA	
4. San Andreas No. 2	36" Venturi	Junipero Serra (Hwy. 280) south of Belle Avenue
Associated Metering Equipment:	• Yokogawa D/P transmitter • NLS display • AGM electronics • Honeywell recorder • SCADA	
5. Crystal Springs No. 1	44" Venturi	PG&E Martin Service Center Yard
Associated Metering Equipment:	• Yokogawa D/P transmitter • NLS display • AGM electronics • Honeywell recorder • SCADA	
6. Crystal Springs No. 2	60" Venturi	Tamasco Ct. south of Sunnydale Avenue
Associated Metering Equipment:	• Yokogawa D/P transmitter • NLS display • AGM electronics • SCADA	
In-City Terminal Reservoirs		
1. Sunset	Pressure Transducer	26th Avenue and Ortega
Associated Metering Equipment:	• Honeywell recorder • SCADA	
2. Merced-Manor	Pressure Transducer	23rd Avenue and Ocean
Associated Metering Equipment:	• Honeywell recorder • SCADA	
3. University Mound	Pressure Transducer	University Avenue and Bacon
Associated Metering Equipment:	• Honeywell recorder • SCADA	

TABLE 5
METER CALIBRATION AND MAINTENANCE FREQUENCY

METER/ EQUIPMENT	FREQUENCY			WORK TO BE PERFORMED (See Work Codes Listed Below)					
	Quarterly	Semi-Annual	Annual	CA	CL	FL	IN	LU	PT
Venturi Meters			X	X		X (1)	X (1)		X
Magnetic Meters		X		X (2)	X (2)		X (2)		
Yokagowa D/P Transmitters	X			X	X	X	X		
Rosemount D/P Transmitters	X			X	X	X	X		
Honeywell Recorders	X			X	X		X		
Water Level Sensors (Pressure Transducers)	X			X	X		X		
SCADA Electronics	X			X					
AGM Electronics	X			X					
NLS Digital Displays	X			X					
Electrostatic 24V DC Power Supplies			X				X (3)		
ASCO Solenoids			X		X		X (4)	X	

WORK CODES:
CA = CALIBRATE; CL = CLEAN; FL = FLUSH; IN = INSPECT; LU = LUBRICATE; PT = PITOT TUBE TEST.

NOTES:
(1) Inspection and flushing requirements for Venturi meters refer to the pressure tubing from the meter to the differential pressure transmitter.

(2) May calibrate using clamp-on meter where conditions allow. Inspection and cleaning requirements for magnetic meters refer to the sensors or probes that are inserted through the pipe wall.

(3) Adjust voltage if necessary.

(4) Replace rubber ware as needed.

ATTACHMENT K-1

WHOLESALE CUSTOMERS' SHARE OF NET BOOK VALUE OF EXISTING ASSETS

PRELIMINARY - TO BE SUBSTITUTED WITH FINAL 6/30/09 VALUES

(Section 5.03)

	Notes	Projected Value		
		Water	Hetch Hetchy	Total
Regional System Net Plant as of 6/30/08 (Actual)	1	$ 435,639,907	$ 66,135,724	
Less: Projected Depreciation on Regional Assets	2	$ (32,526,143)	$ (3,598,189)	
Plus: Projected FY 2008-09 Capital Additions	3	$ 62,771,153	$ -	
Projected Regional System Net Plant as of 6/30/09		$ 465,884,917	$ 62,537,535	
Plus: Projected Construction Work in Progress (CWIP) as of 6/30/09	4	$ 16,928,503	$ 5,807,023	
Projected Regional System Net Plant and CWIP as of 6/30/09		$ 482,813,420	$ 68,344,558	$ 551,157,978
Allocation Factor:	5	70.1%	64.2%	
Wholesale Share of Projected Regional System Net Plant as of 6/30/09		$ 326,585,327	$ 40,149,098	$ 366,734,424
Plus: Wholesale Share of Projected CWIP as of 6/30/09	6	$ 11,866,881	$ 3,728,109	$ 15,594,989
Wholesale Share of Projected Net Plant and CWIP as 6/30/09		$ 338,452,207	$ 43,877,206	$ 382,329,414
Interest Rate:		5.13%	5.13%	
Term (Yrs):		25	25	
Monthly Principal & Interest		$ 2,004,277	$ 259,836	$ 2,264,113
Annual Wholesale Revenue Requirement Amount		$ 24,051,326	$ 3,118,033	$ 27,169,359

Notes

1 FAACS 120A Report as of 6/30/08

2 SFPUC Estimate

3 SFPUC Estimate based on projects and amounts as follows:

	Water Assets
CUW358 Sunset Reservoir (North Basin)	$ 57,382,744
CUW 365 Cross Connection Controls	$ 3,679,415
CUW 394 Watershed Land Acqusition	$ 1,708,994
Total Additions	$ 62,771,153

4 CWIP based on balance as 6/30/08 plus YTD expenditures (see Attachment K-2)

5 Fixed allocation factors based on dollar weighted 5-year average of J-Table allocation factors (2003-04 through 2007-08)

6 Wholesale share CWIP based on balance as 6/30/08 plus YTD expenditures (see Attachment K-2)

ATTACHMENT K-2

WHOLESALE CUSTOMERS' SHARE OF THE BOOK VALUE OF REVENUE FUNDED CAPITAL EXPENDITURES

PRELIMINARY - TO BE SUBSTITUTED WITH FINAL 6/30/09 VALUES

(Section 5.03)

[1] Project No.	[2] Project Description	[3] Rate Class	[4] CWIP as of 6/30/08	[5] FY 2008-09 Expenditures	[6] Reduction for 02A Funding	[7] CWIP as 6/30/09	[8] Water Related CWIP	[9] Wholesale Share	
A. Water Enterprise									
1. Regional Projects									
CUW352	Alameda Creek Fishery	Joint	$ 2,007,607	$ 224,582	$ 2,232,189	$ -		$ -	
CUW353	Seismic Upgrade @ Hayward Fault	Joint	$ 3,129,234	$ 1,967,625	$ 5,096,859	$ -		$ -	
CUW354	LOWER CRYSTAL SPRINGS DAM-REV-SFWD	Joint	$ 7,046,944	$ 1,086,262	$ 8,133,206	$ -		$ -	
CUW355	STANDBY POWER FACILITIES	Joint	$ 3,715,276	$ 6,596,849	$ 10,312,125	$ -		$ -	
CUW357	Adit Leak Repairs	Joint	$ 783	$ 1,129	$ 1,912	$ -		$ -	
CUW359	Irvington Tunnel	Joint	$ 21,391,129	$ 5,176,713	$ 26,567,842	$ -		$ -	
CUW359		Joint	$ 7,837,176	$ -	$ 7,837,176	$ -		$ -	
CUW361	Pulgas Balancing Reservoir	Joint	$ 368,057	$ 1,383,959	$ 1,752,016	$ -		$ -	
CUW361		Joint	$ 1,255,545	$ -	$ 1,255,545	$ -		$ -	
CUW361		Joint	$ 1,248,002	$ -	$ 1,248,002	$ -		$ -	
CUW361		Joint	$ 570,179	$ -	$ 570,179	$ -		$ -	
CUW361		Joint	$ 712,921	$ -	$ 712,921	$ -		$ -	
CUW363	SCADA Phase II	Joint	$ 1,335,371	$ 1,738,045	$ 3,073,416	$ -		$ -	
CUW363		Joint	$ 1,062,050	$ -	$ 1,062,050	$ -		$ -	
CUW365	Cross Connection Control	Joint	$ 3,635,172	$ 547,801	$ 4,182,973	$ -		$ -	Capitalized in FY 2008-09
CUW367	HTWTP LT Impr	Joint	$ 8,011,348	$ 2,479,731	$ 10,491,079	$ -		$ -	
CUW368	BDPL Hydraulic Capacity	Joint	$ 23,640,601	$ -	$ 23,640,601	$ -		$ -	
CUW368		Joint	$ 17,556,905	$ 4,200,442	$ 21,757,347	$ -		$ -	
CUW368		Joint	$ 2,579,847	$ -	$ 2,579,847	$ -		$ -	
CUW370	Pipeline Readiness	Joint	$ 5,320,934	$ 328,070	$ 5,649,004	$ -		$ -	
CUW371	CSPS and Pipeline	Joint	$ 11,420,770	$ 3,872,779	$ 15,293,549	$ -		$ -	
CUW372	University Mound (N)	Joint	$ 4,624,981	$ 1,068,147	$ 5,693,128	$ -		$ -	
CUW373	SJPL	Joint	$ 19,479,341	$ 6,023,849	$ 25,503,190	$ -		$ -	
CUW373		Joint	$ 7,199,051	$ -	$ 7,199,051	$ -		$ -	
CUW374	Calaveras Dam	Joint	$ 31,171,669	$ 4,314,430	$ 35,486,099	$ -		$ -	
CUW374		Joint	$ 2,366,343	$ -	$ 2,366,343	$ -		$ -	
CUW378	CSPL #2	Joint	$ 7,453,098	$ 913,369	$ 8,366,467	$ -		$ -	
CUW379	SAPL #3	Joint	$ 5,728,934	$ 588,346	$ 6,317,280	$ -		$ -	
CUW380	BDPL #3&4 Crossovers	Joint	$ 3,855,357	$ 1,083,888	$ 4,939,245	$ -		$ -	
CUW381	SVWTP Expansion	Joint	$ 5,450,995	$ -	$ 5,450,995	$ -		$ -	
CUW381		Joint	$ 53,222	$ 3,090,520	$ 3,143,742	$ -		$ -	
CUW381		Joint	$ 97,373	$ -	$ 97,373	$ -		$ -	
CUW382	SVWTP Treated Water Reservoir	Joint	$ 5,799,505	$ 575	$ 5,800,080	$ -		$ -	
CUW384	Tesla	Joint	$ 6,102,621	$ 7,444,942	$ 13,547,563	$ -		$ -	
CUW386	SAPS X-CONNECT & PUMP IMP 96A UEB	Joint	$ 1,374,491	$ 971,625	$ 2,346,116	$ -		$ -	
CUW388	PEIR	Joint	$ 896,476	$ 1,641,717	$ 2,538,193	$ -		$ -	
CUW388		Joint	$ 1,331,676	$ -	$ 1,331,676	$ -		$ -	
CUW390	Desalination Pilot	Joint	$ 175,165	$ -	$ 175,165	$ -		$ -	
CUW391	Baden/San Pedro Valve Lots	Joint	$ 3,964,642	$ 948,589	$ 4,913,231	$ -		$ -	
CUW392	Program Management	Joint	$ 2,452,297	$ 5,081,444	$ 7,533,741	$ -		$ -	
CUW393	BDPL #4 Condition Assessment	Joint	$ 25,071	$ 294,634	$ 319,705	$ -		$ -	
CUW394	Watershed Enviroment Improvement	Joint	$ 142,924	$ 96,027	$ 238,951	$ -		$ -	Capitalized in FY 2008-09
CUW101	SAN ANDREAS PLANT EXPANSION #1	Joint	$ 162	$ 96,027		$ 96,209		$ 67,443	
CUW111	LOWER CRYSTAL SPRINGS DAM-REV-SFWD	Joint	$ 40,436	$ -		$ 40,436		$ 28,346	
CUW151	Baden PS	Joint	$ 921	$ 26,760		$ 27,681		$ 19,404	
CUW161	Water Treatment Facilities	Joint	$ 75,801	$ 605		$ 76,406		$ 53,561	
CUW178	SAPS X-CONNECT & PUMP IMP 96A UEB	Joint	$ 104,902	$ -		$ 104,902		$ 73,536	
CUW202	Replace PCCP	Joint	$ 50,808	$ -		$ 50,808		$ 35,616	
CUW202		Joint	$ 285,003	$ 64,256		$ 349,259		$ 244,831	
CUW202		Joint	$ 2,365	$ -		$ 2,365		$ 1,658	
CUW127	SCADA	Joint	$ 50,029	$ 2,481,274		$ 2,531,303		$ 1,774,443	
CUW356	New Crystal Springs Bypass Tunnel	Joint	$ 13,992,264	$ 5,560,862	$ 16,028,397	$ 3,524,729		$ 2,470,835	
CUW358	Sunset (N)	Joint	$ 52,494,764	$ 4,887,980	$ 55,806,081	$ 1,576,663		$ 1,105,241	Capitalized in FY 2008-09
CUW387	Tesla Portal Disinfection	Joint	$ 2,377,262	$ (1,996)	$ 1,223,945	$ 1,151,321		$ 807,078	
CUW135	New Lines and Bypass Valves	Joint	$ 45,413	$ -		$ 45,413		$ 31,835	
CUW135		Joint	$ 153,983	$ 620,156		$ 774,139		$ 542,671	
CUW135		Joint	$ 8,860	$ -		$ 8,860		$ 6,211	
CUW143	HH Water Treatment Plan	Joint	$ 5,656	$ -		$ 5,656		$ 3,965	
CUW143		Joint	$ 709,972	$ 8,817		$ 718,789		$ 503,871	
CUW143		Joint	$ 96,292	$ -		$ 96,292		$ 67,501	
CUW186	SVWTP IMPROVEMENT PROJECT-CPB-SFWD	Joint	$ 3,604	$ -		$ 3,604		$ 2,526	
CUW206	Tesla Portal/Thomas Shaft Emergency Disinfection	Joint	$ 4,365	$ -		$ 4,365		$ 3,060	
CUW206		Joint	$ 283,620	$ 5,665		$ 289,285		$ 202,749	
CUW206		Joint	$ 227,004	$ -		$ 227,004		$ 159,130	
CUW231	Millbrae Labs	Joint	$ 81,856	$ 34,685		$ 116,541		$ 81,695	
CUW236	TELSA/SIVH WQ MONITORING IMPR	Joint	$ 152,963	$ -		$ 152,963		$ 107,227	
CUW366	HTWTP ST Improvements	Joint	$ 16,523	$ -		$ 16,523		$ 12,583	
CUW366		Joint	$ 1,398,798	$ 5,732,626	$ 7,131,424	$ -		$ -	
CUW366		Joint	$ 1,452,901	$ -	$ 1,452,901	$ -		$ -	
CUW120	WATER QUALITY PLANNING STUDY	Joint	$ 577	$ -		$ 577		$ 404	
CUW164	WATER VULNERABILITY STUDY-UEB	Joint	$ 479	$ -		$ 479		$ 336	
CUW181	STANDBY POWER FACILITIES	Joint	$ 5,905	$ -		$ 5,905		$ 4,139	
CUW210	Millbrae Administrative Bldg Remodel	Joint	$ 7,803	$ 321,553		$ 329,356		$ 230,879	
CUW220	Calaveras Dam Evaluation	Joint	$ 308,971	$ -		$ 308,971		$ 216,589	
CUW227	Watershed facilities and Fencing	Joint	$ 190,552	$ 206,448		$ 397,000		$ 278,297	
CUW228	Watershed Roads	Joint	$ 358,434	$ 85,337		$ 443,771		$ 311,083	
CUW232	Crystal Springs Dam Discharge	Joint	$ 363,823	$ -		$ 363,823		$ 255,040	
CUW242	Demolition of Unsafe Structures	Joint	$ 311,548	$ 22,741		$ 334,289		$ 234,337	
CUW242		Joint	$ 315	$ -		$ 315		$ 221	
CUW261	Regional R&R - Storage	Joint	$ 275,694	$ 277,958		$ 553,652		$ 388,110	
CUW262	Regional R&R - Treatement	Joint	$ 1,236,895	$ 409,282		$ 1,646,177		$ 1,153,970	
CUW262		Joint	$ 277,383	$ -		$ 277,383		$ 194,445	

ATTACHMENT K-2

WHOLESALE CUSTOMERS' SHARE OF THE BOOK VALUE OF REVENUE FUNDED CAPITAL EXPENDITURES

PRELIMINARY - TO BE SUBSTITUTED WITH FINAL 6/30/09 VALUES

(Section 5.03)

[1] Project No.	[2] Project Description	[3] Rate Class	[4] CWIP as of 6/30/08	[5] FY 2008-09 Expenditures	[6] Reduction for 02A Funding	[7] CWIP as 6/30/09	[8] Water Related CWIP	[9] Wholesale Share
CUW263	Regional R&R - Transmission	Joint	$ 768,422	$ 797,659		$ 1,566,081		$ 1,097,823
CUW263		Joint	$ 1,224,094	$ -		$ 1,224,094		$ 858,090
CUW360	PLANNING - WSTD Sunol Quarry Reservoirs	Joint	$ 2,513	$ -		$ 2,513		$ 1,762
CUW934	BOA/BAW/13/12/SFWD-CONT PROJ-OPER FD	Joint	$ 59,479	$ (2,210)	$ 998,005	$ (940,736)		$ (659,456)
	TOTAL REGIONAL WATER PROJECTS		$ 313,100,517	$ 84,802,574	$379,397,925	$ 18,505,166		$ 12,972,121
	Less Projects to be Capitalized in FY 2008-09					$ 1,576,663		$ 1,105,241
	ADJUSTED TOTAL REGIONAL WATER PROJECTS					$ 16,928,503		$ 11,866,881
2	Wholesale Direct							
	None							
B.	Hetch Hetchy Water & Power							
CUH700	Priest Reservoir By-pass	Joint	-	47,164		$ 47,164	$ 21,224	$ 13,626
CUH762	SJPL Repairs	Water	53,616	255,011		$ 308,627	$ 308,627	$ 198,139
CUH766	HH Security Improvements	Joint	164,478	261,601		$ 426,079	$ 191,736	$ 123,094
CUH767	Power Transformers	Power	-	-		$ -	$ -	$ -
CUH803	Street Lights	Power	-	40,506		$ 40,506	$ -	$ -
CUH804	HH Roads	Joint	-	341,240		$ 341,240	$ 153,558	$ 98,584
CUH829	HH SCADA	Joint	-	-		$ -	$ -	$ -
CUH842	Moccasin Cottages Renovations	Joint	-	-		$ -	$ -	$ -
CUH846	New Moccasin Penstock	Power	543,073	-		$ 543,073	$ -	$ -
CUH851	Turbine Generator Renovations	Power	111,755	926,254		$ 1,038,009	$ -	$ -
CUH868	Moccasin Energy Absorber	Power	-	-		$ -	$ -	$ -
CUH876	Moccasin Phone System	Joint	-	15,677		$ 15,677	$ 7,055	$ 4,529
CUH878	O'Shaugnessy Discharge/Tuolumne River Channel Impr.	Joint	31,953	168,076		$ 200,029	$ 90,013	$ 57,788
CUH891	Metering Must Load	Power	18	4,361		$ 4,379	$ -	$ -
CUH893	Cherry/Eleanor Pump Upgrade	Power	-	17,012		$ 17,012	$ -	$ -
CUH896	Street Lights	Power	9,294	568,794		$ 578,088	$ -	$ -
CUH899	Canyon Tunnel Penstock	Power	6,210	21,804		$ 28,014	$ -	$ -
CUH915	UG Assessment/Hunters Point	Power	961,755	1,668,663		$ 2,630,418	$ -	$ -
CUH926	Pipe Purchase	Water	-	13,667		$ 13,667	$ 13,667	$ 8,774
CUH931	Microwave Replacement	Joint	3,157,491	156,270		$ 3,313,761	$ 1,491,192	$ 957,346
CUH932	HH SCADA	Joint	-	-		$ -	$ -	$ -
CUH825	Distribution System	Power	446,419	109,797		$ 556,216	$ -	$ -
CUH941	HHP SCADA Security & Control, East/O'Shaugnessy	Joint	1,433,974	246,948		$ 1,680,922	$ 756,415	$ 485,618
CUH942	O'Shaugnessy Dam Discharge Needle Valves	Joint	-	-		$ -	$ -	$ -
CUH943	Renewable Energy	Power	-	-		$ -	$ -	$ -
CUH945	SJPL Crossovers	Water	-	-		$ -	$ -	$ -
CUH946	Facility Maintenance	Joint	-	239		$ 239	$ 108	$ 69
CUH947	Sustainable Energy Account	Power	441,226	1,838,396		$ 2,279,622	$ -	$ -
CUH948	Facility Maintenance - Transmission Lines	Power	70,631	101,295		$ 171,926	$ -	$ -
CUH949	POW Maintenance	Power	-	-		$ -	$ -	$ -
CUH950	HPH/KPH/MPH	Power	1,236,853	1,167,621		$ 2,404,474	$ -	$ -
CUH955	Solar Monitoring	Power	222	-		$ 222	$ -	$ -
CUH956	Facility Maintenance - Gate Valves	Water	275,213	-		$ 275,213	$ 275,213	$ 176,687
CUH957	Moccasin Corrosion Control	Joint	48,023	110,986		$ 159,009	$ 71,554	$ 45,938
CUH958	Generation Metering	Power	-	18,811		$ 18,811	$ -	$ -
CUH959	Moccasin Reservoir Water Quality	Water	109,379	-		$ 109,379	$ 109,379	$ 70,221
CUH960	Solar Power Project	Power	6,480	(5,333)		$ 1,147	$ -	$ -
CUH961	MECA Solar	Power	-	26,369		$ 26,369	$ -	$ -
CUH962	SF Electrical Reliability	Power	9,672,565	2,653		$ 9,675,218	$ -	$ -
CUH964	Watershed Land Purchase	Water	-	75,756		$ 75,756	$ 75,756	$ 48,635
CUH966	MECA - Demand Reduction	Power	-	-		$ -	$ -	$ -
CUH969	SFIA SCADA	Power	-	-		$ -	$ -	$ -
CUH971	Newark - CCSF Transmission Project	Power	235,120	54,602		$ 289,722	$ -	$ -
CUH972	Load Metering	Power	145,039	1,274		$ 146,313	$ -	$ -
CUH973	Distribution Assessment	Power	-	-		$ -	$ -	$ -
CUH975	Hetch Hetchy Water R&R	Power	-	130,100		$ 130,100	$ -	$ -
CUH975	Hetch Hetchy Water R&R	Water	52,613	516,524		$ 569,137	$ 569,137	$ 365,386
CUH975	Hetch Hetchy Water R&R	Joint	999,854	887,864		$ 1,887,718	$ 849,473	$ 545,362
CUH976	KPH Rewind	Power	1,053,295	1,417,914		$ 2,471,209	$ -	$ -
CUH977	Facilities Maintenance - Water	Joint	770,839	1,049,878		$ 1,820,717	$ 819,323	$ 526,005
CUH978	Community Choice Aggregation	Power	5,571	101,075		$ 106,646	$ -	$ -
CUH979	Hunters Point Distribution	Power	1,926,977	532,011		$ 2,458,988	$ -	$ -
CUH981	Shore Power for Cruise Ships	Power	2,690	-		$ 2,690	$ -	$ -
CUH986	SEA - Energy Efficiency	Power	15,262	-		$ 15,262	$ -	$ -
CUW687	525 Golden Gate	Joint	-	4,105		$ 4,105	$ 1,847	$ 1,186
CUH004	Auto Maintenance	Joint	-	3,882		$ 3,882	$ 1,747	$ 1,122
PUH501	SF Environment Energy/Green Power	Power	-	66,107		$ 66,107	$ -	$ -
PYEADS	Youth Employment	Joint	-	-		$ -	$ -	$ -
	TOTAL HHWP PROJECTS		23,987,858	12,964,974		36,952,862	5,807,023	$ 3,728,189
C	TOTAL COMBINED WATER AND HHWP		$ 337,088,405	$ 97,767,548	$379,397,925	$ 55,458,028		$ 15,594,990

Notes

1. 6/30/08 CWIP per FAMIS
2. FY 2008-09 Expenditures posted through 3/20/09 per FAMIS
   Wholesale share of CWIP 70.1% (see Note 5 Attachment K-1)
   Water Related HHWP CWIP includes 100% of Water and 45% of Joint
5. Wholesale share of CWIP 64.2% (see Note 5 Attachment K-1)
6. Fund 2A expenditures are funded by Series 2006A bond proceeds, proceeds of commercial paper redeemed from 2006A proceeds and earnings on such proceeds, as applicable.

ATTACHMENT K-3

25 YEAR PAYOFF SCHEDULE FOR EXISITING RATE BASE

WATER ENTERPRISE REGIONAL ASSETS AND ONE DIRECT WHOLESALE ASSET

PRELIMINARY - TO BE SUBSTITUTED WITH FINAL 6/30/09 VALUES

(Section 5.03)

	Water Assets
6/30/09 Wholesale Share of Net Plant & CWIP (Attachment K-1)	338,452,207
Interest Rate:	5.13%
Term:	25
Monthly Principal & Interest Calculation:	2,004,277
Annual Wholesale Revenue Requirement:	24,051,326

Fiscal Yr Ending	Principal	Interest	Annual Payment (Wtr)	Year End Balance
Jun-10	6,848,259	17,203,067	24,051,326	331,603,948
Jun-11	7,207,954	16,843,372	24,051,326	324,395,994
Jun-12	7,586,541	16,464,785	24,051,326	316,809,453
Jun-13	7,985,013	16,066,313	24,051,326	308,824,439
Jun-14	8,404,415	15,646,911	24,051,326	300,420,024
Jun-15	8,845,844	15,205,482	24,051,326	291,574,180
Jun-16	9,310,459	14,740,867	24,051,326	282,263,721
Jun-17	9,799,478	14,251,848	24,051,326	272,464,243
Jun-18	10,314,181	13,737,145	24,051,326	262,150,062
Jun-19	10,855,919	13,195,407	24,051,326	251,294,143
Jun-20	11,426,110	12,625,216	24,051,326	239,868,033
Jun-21	12,026,250	12,025,076	24,051,326	227,841,784
Jun-22	12,657,911	11,393,415	24,051,326	215,183,873
Jun-23	13,322,749	10,728,577	24,051,326	201,861,123
Jun-24	14,022,507	10,028,819	24,051,326	187,838,616
Jun-25	14,759,019	9,292,307	24,051,326	173,079,597
Jun-26	15,534,215	8,517,111	24,051,326	157,545,382
Jun-27	16,350,127	7,701,199	24,051,326	141,195,254
Jun-28	17,208,894	6,842,432	24,051,326	123,986,361
Jun-29	18,112,766	5,938,560	24,051,326	105,873,594
Jun-30	19,064,113	4,987,213	24,051,326	86,809,482
Jun-31	20,065,428	3,985,898	24,051,326	66,744,054
Jun-32	21,119,335	2,931,991	24,051,326	45,624,719
Jun-33	22,228,597	1,822,729	24,051,326	23,396,122
Jun-34	23,396,122	655,204	24,051,326	0
Totals:	338,452,207	262,830,943	601,283,150	

ATTACHMENT K-4

25 YEAR PAYOFF SCHEDULE FOR EXISTING RATE BASE

HETCH HETCHY WATER ASSETS AND WATER-RELATED PORTION OF JOINT ASSETS

PRELIMINARY - TO BE SUBSTITUTED WITH FINAL 6/30/09 VALUES

(Section 5.03)

	Hetch Hetchy
6/30/09 Wholesale Share of Net Plant & CWIP (Attachment K-1)	43,877,206
Interest Rate:	5.13%
Term:	25
Monthly Principal & Interest Calculation:	259,836
Annual Wholesale Revenue Requirement:	3,118,033

Fiscal Yr Ending	Principal	Interest	Annual Payment (HH)	Year End Balance
Jun-10	887,814	2,230,219	3,118,033	42,989,393
Jun-11	934,445	2,183,588	3,118,033	42,054,948
Jun-12	983,525	2,134,507	3,118,033	41,071,423
Jun-13	1,035,183	2,082,849	3,118,033	40,036,239
Jun-14	1,089,555	2,028,478	3,118,033	38,946,685
Jun-15	1,146,782	1,971,250	3,118,033	37,799,903
Jun-16	1,207,015	1,911,017	3,118,033	36,592,887
Jun-17	1,270,412	1,847,621	3,118,033	35,322,475
Jun-18	1,337,138	1,780,894	3,118,033	33,985,337
Jun-19	1,407,370	1,710,663	3,118,033	32,577,967
Jun-20	1,481,290	1,636,743	3,118,033	31,096,678
Jun-21	1,559,092	1,558,940	3,118,033	29,537,585
Jun-22	1,640,981	1,477,051	3,118,033	27,896,604
Jun-23	1,727,172	1,390,861	3,118,033	26,169,432
Jun-24	1,817,889	1,300,144	3,118,033	24,351,544
Jun-25	1,913,371	1,204,662	3,118,033	22,438,173
Jun-26	2,013,868	1,104,165	3,118,033	20,424,305
Jun-27	2,119,643	998,389	3,118,033	18,304,662
Jun-28	2,230,974	887,058	3,118,033	16,073,688
Jun-29	2,348,153	769,880	3,118,033	13,725,535
Jun-30	2,471,486	646,546	3,118,033	11,254,048
Jun-31	2,601,298	516,735	3,118,033	8,652,751
Jun-32	2,737,927	380,106	3,118,033	5,914,824
Jun-33	2,881,733	236,300	3,118,033	3,033,091
Jun-34	3,033,091	84,941	3,118,033	0
	43,877,206	34,073,607	77,950,813	

ATTACHMENT K-5
UNEXPENDED APPROPRIATIONS FOR REVENUE-FUNDED REGIONAL ASSETS
CONSTRUCTION WORK IN PROGRESS AS OF MARCH 30, 2009
(Section 5.04)

Project	Project Title	Fund Type	Subfund	Classification	Appropriation	YTD Expenditures	PTD Expenditures	Encumbrances	Available Balances	Notes
				Water Assets						
CUW257	WATERSHED PROTECTION	5W	AAAACP	REGIONAL	1,448,720	29,653	413,529	141,643	893,548	
CUW250	WATERSHED TRAILS&RECREATION IMPROV	5W	AAAACP	REGIONAL	387,639	9,431	112,989	6,675	268,275	
CUW261	REGIONAL WATER STORAGE RNR -BUDGET	5W	AAAACP	REGIONAL	1,750,000	250,970	526,664	26,687	1,196,648	Annual R&R
CUW242	DEMOLITION UNSAFE STRUCTURES	5W	AAAACP	REGIONAL	1,000,000	22,647	407,820	21,524	570,656	
CUW263	CONVEYANCE/TRANSMISSION - BUDGET	5W	AAAACP	REGIONAL	7,825,000	763,603	3,378,543	125,990	4,320,466	Annual R&R
CUW264	WATERSHED ROADS - BUDGET	5W	AAAACP	REGIONAL	3,000,000	77,074	1,391,500	182,401	1,446,099	Annual R&R
CUW262	TREATMENT FACS/WQ IMPROVE-BUDGET	5W	AAAACP	REGIONAL	4,801,000	399,073	2,704,204	349,016	1,747,780	Annual R&R
CUW158	ALAMEDA CREEK FISH RELEASE	5W	AAAACP	REGIONAL	1,537,398	46,624	1,040,919	152,647	343,832	
CUW231	MILLBRAE LAB CAPITAL IMPROVEMENTS	5W	AAAACP	REGIONAL	770,000	19,119	532,135	0	237,865	
CUW227	WATERSHED FENCES/FACILITES	5W	AAAACP	REGIONAL	3,000,000	206,222	2,223,776	581,926	194,298	
CUW253	FACILITIES SECURITY PROJECT	5W	AAAACP	REGIONAL	5,300,000	73,048	4,146,944	113,124	1,039,931	
CUW210	MILLBRAE ADMIN BLDG INTERIM REMODEL	5W	AAAACP	REGIONAL	2,407,700	284,902	1,935,204	160	472,337	
CUW228	WATERSHED ROADS RECONSTRUCTION	5W	AAAACP	REGIONAL	5,170,000	82,992	4,413,061	18,598	738,340	
CUW202	SAN ANTONIO PIPELINE EMERGENCY REPA	5W	AAAACP	REGIONAL	1,400,000	5,012	1,259,190	61,727	59,083	
CUW148	ENVIRONMENTAL & REGULATORY COMP	5W	AAAACP	REGIONAL	3,241,279	0	3,014,995	184,774	41,510	
CUW135	NEW LINE & BYPASS VALVES	5W	AAAACP	REGIONAL	4,829,680	2,103	4,689,067	0	140,613	
CUW143	HETCH HETCHY WATER TREATMENT PLAN	5W	AAAACP	REGIONAL	18,821,529	0	18,452,053	47,947	321,529	
CUW161	TREATMENT FACILITIES IMPROVEMENTS	5W	AAAACP	REGIONAL	15,028,319	334	14,747,873	0	280,446	
CUW241	FACILITIES MAINT SUPPORT STRUCTURES	5W	AAAACP	REGIONAL	5,000,000	8,390	4,988,882	0	11,118	
CUW392	PROGRAM MANAGEMENT SERVICES - WSIP	5W	AAAACP	LOCAL/REGIONAL	1,837,000	(98,519)	751,659	71,973	1,013,365	
CUW127	INST SCADA SYSTEM	5W	AAAACP	LOCAL/REGIONAL	13,156,681	2,481,274	8,653,641	0	4,503,040	
CUW710	OCIP PROJECT CONTROL	5W	AAAACP	LOCAL/REGIONAL	2,497,881	235,706	2,496,959	0	922	
	TOTAL ALL PROJECTS				104,209,826	4,900,661	82,291,307	2,066,813	19,851,706	
	LOCAL PROJECTS			LOCAL	0	0	0	0	0	
	JOINT LOCAL AND REGIONAL PROJECTS			LOCAL/REGIONAL	17,491,582	2,618,462	11,902,259	71,973	5,517,330	
	REGIONAL PROJECTS			REGIONAL	86,718,264	2,282,199	70,389,048	1,994,840	14,334,376	
	TOTAL ALL PROJECTS				104,209,826	4,900,661	82,291,307	2,066,813	19,851,706	
				Hetchy Hetchy Assets						
CUH975	WATER INFRASTRUCTURE - BUDGET	5T	AAAACP	WATER	9,000,000	1,534,488	2,806,592	3,565,023	2,628,385	
CUH984	WATERSHED PROPERTY PURCHASES	5T	AAAACP	WATER	800,000	75,756	454,756	0	345,244	
CUH957	FAC MAINTENANCE-WATER TRANSPORTAT	5T	AAAACP	WATER	3,400,000	110,985	2,885,394	209,138	305,469	
CUH703	PRIEST RESERVOIR DIVERSION CHANNEL	5T	AAAACP	WATER	21,210,344	47,164	20,156,993	0	1,043,351	
CUH926	PIPELINE PURCHASE REPLACEMENT PIPE	5T	AAAACP	WATER	159,860	13,667	157,489	0	2,371	
CUH762	SAN JOAQUIN PIPELINE REPAIRS	5T	AAAACP	WATER	41,456,205	255,011	41,215,761	134,652	118,792	
CUW667	525 GOLDEN GATE	5T	AAAACP	JOINT	260,600	4,105	26,437	0	234,163	
CUH977	FACILITIES MAINTENANCE - BUDGET	5T	AAAACP	JOINT	9,300,000	1,049,878	3,578,478	803,231	4,918,290	
CUH931	HH MICROWAVE REPLACEMENT	5T	AAAACP	JOINT	4,767,000	156,270	3,313,761	1,227,242	225,997	
CUH941	HH SCADA SECURITY & CONTROL, EAST	5T	AAAACP	JOINT	2,068,180	245,948	1,680,922	256,198	131,060	
CUH604	HETCH-HETCHY ROADS REBUILDING	5T	AAAACP	JOINT	4,175,027	341,240	3,544,483	113,314	517,230	
CUH766	HETCHY FACILITIES SECURITY IMPROV.	5T	AAAACP	JOINT	2,086,692	281,601	1,950,388	62,470	63,836	
CUH876	MOCCASIN PHONE SYSTEM	5T	AAAACP	JOINT	1,610,000	15,677	1,528,780	0	81,220	
CUH878	O'SHAUGENESSY DIS.REPAIRS	5T	AAAACP	JOINT	7,179,009	33,750	7,101,844	9,297	68,068	
CUH810	VARIOUS OLD JOB	5T	AAAACP	JOINT	7,613,636	18,690	7,538,034	1,551	74,044	
CUH945	FAC MAINTENANCE-SUPPORT STRUCTURE	5T	AAAACP	JOINT	2,261,454	239	2,273,485	0	7,969	
CUH949	RIGHT OF WAY MAINTENANCE	5T	AAAACP	JOINT	815,000	0	814,208	166	626	
	TOTAL ALL PROJECTS				118,216,010	4,165,470	101,047,602	6,382,292	10,786,117	
	POWER PROJECTS			POWER	0	0	0	0	0	
	WATER PROJECTS			WATER	76,039,410	2,037,072	67,586,985	3,908,812	4,443,613	
	JOINT PROJECTS			JOINT	42,176,600	2,128,397	33,360,617	2,473,480	6,342,504	
	TOTAL ALL PROJECTS				118,216,010	4,165,470	101,047,602	6,382,292	10,786,117	

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ATTACHMENT L-1
IDENTIFICATION OF WSIP PROJECTS AS REGIONAL/RETAIL
(Section 5.04)

Project Number		Project Description
REGIONAL		
		San Joaquin Region
CUW373	Regional	San Joaquin Pipeline System Rehabilitation
CUW384	Regional	Tesla Advance Disinfection
CUW387	Regional	Tesla Portal Disinfection
		Sunol Valley Region
CUW352	Regional	Alameda Creek Fishery Enhancement
CUW355	Regional	Stand-by Power - Various Locations
CUW359	Regional	New Irvington Tunnel/Alameda Siphon No. 4
CUW370	Regional	Pipeline Readiness Improvements
CUW374	Regional	Calaveras Dam Replacement
CUW381	Regional	SVWTP 40 mgd Addition
CUW382	Regional	SVWTP Finished Water Reservoir
CUW386	Regional	San Antonio Pump Station Upgrade
		Bay Division Region
CUW353	Regional	Seismic Upgrade BDPL 3 & 4
CUW363	Regional	SCADA Phase II/Security Upgrades
CUW368	Regional	BDPL Reliability Upgrades
CUW380	Regional	BDPL 3 & 4 Crossover
CUW389	Regional	EBMUD Intertie
CUW393	Regional	BDPL 4 Slipline
		Peninsula Region
CUW354	Regional	Lower Crystal Springs Dam Improvement
CUW356	Regional	Crystal Springs Bypass Tunnel
CUW357	Regional	Adit Leak Repairs
CUW361	Regional	Pulgas Balancing Reservoir Rehabilitation and Improvements
CUW365	Regional	Cross Connection Control
CUW366	Regional	HTWTP Short Term Improvemetns
CUW367	Regional	HTWTP Long Term Improvements
CUW369	Regional	Capuchino Valve Lot Improvements
CUW371	Regional	Crystal Springs/San Andreas Transmission
CUW378	Regional	Crystal Springs Pipleine 2 Replacement
CUW379	Regional	San Andreas Pipeline 3 Installation
CUW390	Regional	Desalination
CUW391	Regional	Baden & San Pedro Valve Lots Improvements

ATTACHMENT L-1
IDENTIFICATION OF WSIP PROJECTS AS REGIONAL/RETAIL
(Section 5.04)

Project Number		Project Description
		San Francisco Region
CUW358	Regional	Sunset Reservoir Upgrades - North Basin
CUW372	Regional	University Mound Reservoir Upgrades - North Basin
		System-Wide
CUW388	Regional	PEIR
CUW392	Regional	Program Management Services
CUW394	Regional	Watershed Land Acquisition
RETAIL		
		Reservoirs
CUW307	Local	Summit Reservoir Rehabilitation
CUW310	Local	New Northwest Reservoir
CUW319	Local	Hunters Point Reservoir Rehabilitation
CUW334	Local	Stanford Heights Reservoir Rehabilitation
CUW335	Local	Potrero Heights Reservoir Rehabilitation
CUW337	Local	Sutro Reservoir Rehabilitation
		Pump Stations/Tanks
CUW306	Local	Crocker Amazon Pump Station Upgrade
CUW309	Local	Lake Merced Pump Station Upgrade
CUW314	Local	La Grande Tank Upgrade
CUW318	Local	Forest Hill Tank Rehabilitation
CUW320	Local	Forest Hill Pump Station Upgrade
CUW321	Local	Forest Knoll Pump Station Upgrade
CUW322	Local	Lincoln Park Pump Station Upgrade
CUW323	Local	Alemany Pump Station Upgrade
CUW324	Local	Mount Davidson Pump Station Upgrade
CUW326	Local	Palo Alto Pump Station Upgrade
CUW326	Local	Skiview-AquaVista Pump Station Upgrade
CUW327	Local	Summit Pump Station Upgrade
CUW328	Local	McLaren #1 Tank Rehabilitation
CUW329	Local	Potrero Heights Tank Seismic Upgrade
CUW330	Local	Forest Knoll Tank Seismic Upgrade
CUW331	Local	Lincoln Park Tank Seismic Upgrade
CUW332	Local	McLaren #2 Tank Rehabilitation
CUW333	Local	Mount Davidson Tank Seismic Upgrade
CUW338	Local	La Grande Pump Station Upgrade
CUW339	Local	Potrero Heights Pump Station Upgrade
CUW340	Local	Vista Francisco Pump Station Upgrade

ATTACHMENT L-1
IDENTIFICATION OF WSIP PROJECTS AS REGIONAL/RETAIL
(Section 5.04)

Project Number		Project Description
		Pipelines/Valves
CUW304	Local	North University Mound System Upgrade
CUW308	Local	Motorize Key Valves
CUW311	Local	Sunset Circulation Improvements
CUW312	Local	Lincoln Way Transmission Line
CUW313	Local	Noe Valley Transmission Main, Phase 2
CUW315	Local	East/West Transmission Main
CUW316	Local	Fulton @ Sixthe Ave Main Replacement
		Water Supply/Water Quality
CUW301	Local	Groundwater
CUW302	Local	Recycled Water
CUW364	Local	Lawrence-Livermore National Laboratory Water Quality Improvements
		Miscellaneous
CUW303	Local	Vehicle Service Facility Upgrade
CUW305	Local	Fire Protection at CCD

03/13/06

$507,815,000
PUBLIC UTILITIES COMMISSION
OF THE CITY AND COUNTY OF SAN FRANCISCO
SAN FRANCISCO WATER REVENUE BONDS, 2006 SERIES A

$110,065,000
PUBLIC UTILITIES COMMISSION
OF THE CITY AND COUNTY OF SAN FRANCISCO
SAN FRANCISCO WATER REVENUE BONDS, 2006 REFUNDING SERIES B

CERTIFICATE REGARDING USE OF PROCEEDS

The undersigned hereby states and certifies as follows:

(i) The undersigned is the General Manager of the Public Utilities Commission of the City and County of San Francisco (the "Commission"), and is authorized to execute this certificate on behalf of the Commission and is knowledgeable with respect to the matters set forth herein.

(ii) On the date hereof, the Commission is issuing the two series of bonds captioned above (the "2006 Series A Bonds," the "2006 Refunding Series B Bonds" and, together, the "Bonds") pursuant to an Amended and Restated Indenture dated as of August 1, 2002 and the First Supplemental Indenture dated as of March 1, 2006 (collectively, the "Indenture"), both by and between the Commission and U.S. Bank National Association, as trustee (the "Trustee").

(iii) The Trustee will transfer and deposit the proceeds of the 2006 Series A Bonds received by the Trustee on the date hereof as follows:

(1) $48,212,528.32 will be deposited in the 2006 Series A Capitalized Interest Account established within the Interest Fund;

(2) $15,958,031.25 will be deposited in the 2006 Series A Reserve Account of the Bond Reserve Fund;

(3) $623,906.09 will be deposited in the 2006 Series A Costs of Issuance Fund;

(4) $120,622,352.19 will be deposited in the 2006 Series A Refunding Fund and transferred pursuant to Irrevocable Refunding Instructions of the Commission dated the date hereof; and

(5) the remaining $338,600,816.86 will be transferred to the Treasurer for deposit to the 2006 Series A Project Fund.

(iv) The proceeds of the 2006 Series A Bonds transferred pursuant to the Irrevocable Refunding Instructions of the Commission will be used to defease and refund the Commission's Commercial Paper Notes (Water Series) on a current basis. The Notes were issued to finance a portion of the facilities described in Exhibit A hereto.

(v) The proceeds of the Bonds deposited in the 2006 Series A Project Fund will be used to finance a portion of the facilities described in Exhibit A hereto.

(vi) The Trustee will transfer and deposit the proceeds of the 2006 Refunding Series B Bonds received by the Trustee on the date hereof as follows:

(1) $192,498.04 will be deposited in the 2006 Refunding Series B Costs of Issuance Fund; and

(2) $111,178,241.95 will be deposited in the 2006 Refunding Series B Refunding Fund.

(vii) The proceeds of the Bonds deposited in the 2006 Refunding Series B Refunding Fund, together with amounts on deposit in the funds and accounts established under the Indenture for the Commission's San Francisco Water Revenue Bonds, 1996 Series A (the "1996 Series A Bonds") and its San Francisco Water Revenue Bonds, 2001 Series A (the "2001 Series A Bonds"), will be used to refund on an advance basis a portion of the outstanding 1996 Series A Bonds and a portion of the outstanding 2001 Series A Bonds. The portion of the 1996 Series A Bonds being refunded were issued to finance the facilities (the "1996 Project") described in Exhibit B hereto, and the portion of the 2001 Series A Bonds being refunded were used to finance the facilities (the "2001 Project") described in Exhibit B hereto.

(viii) Exhibit C hereto attached describes (A) each use to be made by any person of the Project, the 1996 Project and the 2001 Project other than use by the Commission and other non-federal governmental units and other than use by members of the public generally, and (B) payments (if any) directly or indirectly in respect of such use which are to be made after the date hereof;

(ix) Other than as set forth in Exhibit A and Exhibit B, no portion of the proceeds of the Bonds will be used, directly or indirectly, to make or finance a loan to any person (other than a State or local government unit) or to acquire property which will be sold or leased to any person (other than a State or local government unit) on an installment a sale basis except as referenced in Exhibit C.

(x) The Commission expects to use the Project for the purposes referenced and discussed in Exhibit A, Exhibit B, Exhibit C and Exhibit D or for other governmental purposes of the Commission during the entire term of the Bonds.

(xi) Set forth on Exhibit D is the Commission's methodology for determining governmental use and private use with respect to the water enterprise.

(xii) To the best knowledge of the undersigned, the above statements are reasonable and there are no other facts, estimates or circumstances, other than those set forth herein, that would materially affect the statements made herein.

Capitalized terms used but not defined herein have the meanings set forth in the Indenture.

IN WITNESS WHEREOF, I have hereunto set my name this 15th day of March, 2006.

PUBLIC UTILITIES COMMISSION OF THE
CITY AND COUNTY OF SAN FRANCISCO

By: _____
General Manager

ATTACHMENT L-2 (CONTINUED)
WATER ENTERPRISE REVENUE BOND 2006 SERIES A
SUMMARY OF SOURCES AND USES OF FUNDS
(Section 5.04)

Source: Closing Documents (Certificate Regarding Use of Proceeds)

Proceeds		
Principal	507,815,000.00	
Plus Premium	19,109,138.35	
Minus Underwriter's Discount	(932,940.06)	
Minus Insurance	(1,973,563.58)	
Net Proceeds	524,017,634.71	
Use of Proceeds		
Capitalized Interest Fund	48,212,528.32	
Bond Reserve Fund	15,958,031.25	
Insurance Fund	623,906.09	
Series A Refunding Fund	120,622,352.19	459,223,169.05
Series A Project Fund	338,600,816.86	
Total Uses	524,017,634.71	

	Commercial Paper	Project Fund	Total
Hetch Hetchy			
Tesla Portal Disinfection	251,262.58	1,147,302.42	1,398,565.00
Advance Disinfection	429,714.76	5,611,554.24	6,041,269.00
SJPL	4,737,937.28	17,784,667.72	22,522,605.00
Total Hetch Hetchy	5,418,914.62	24,543,524.38	29,962,439.00
SF Regional			
University Mound - North	55,728.10	5,964,279.90	6,020,008.00
Sunset - North	7,525,896.84	28,782,094.16	36,307,991.00
Groundwater	3,400,973.67	2,963,110.33	6,364,084.00
Recycled Water	1,548,036.76	11,316,958.24	12,864,995.00
Total SF Regional	12,530,635.37	49,026,442.63	61,557,078.00
SF Local	45,405,787.71	106,407,313.30	151,813,101.01
Sunol Valley Subregional			
Calaveras Dam	9,065,945.51	15,993,818.49	25,059,764.00
Stand-by Power	556,398.67	1,207,319.33	1,763,718.00
Pipeline Readiness	649,566.31	4,942,205.69	5,591,772.00
SAPS Upgrade	213,423.44	1,748,134.56	1,961,558.00
SVWTP Finished Water Res	3,317,203.82	7,838,383.18	11,155,587.00
Irvington Tunnel	4,084,139.65	18,247,176.35	22,331,316.00
Alameda Creek Fishery	656,765.00	1,327,119.00	1,983,884.00
SVWTP 40 mgd Addition	25,378.75	3,474,585.25	3,499,964.00
Total Sunol Valley Subregional	18,568,821.15	54,778,741.85	73,347,563.00

ATTACHMENT L-2 (CONTINUED)
WATER ENTERPRISE REVENUE BOND 2006 SERIES A
SUMMARY OF SOURCES AND USES OF FUNDS
(Section 5.04)

Miscellaneous				
PEIR	3,204,177.44	5,103,872.56	8,308,050.00	
PPPCMS Services	2,964,786.31	10,358,811.69	13,323,598.00	
Watershed Land Acquisition	-	502,660.00	502,660.00	
Total Miscellaneous	6,168,963.75	15,965,344.25	22,134,308.00	
LLNL	133,156.60	282,702.40	415,859.00	
Bay Division Subregional				
Seismic Upgrade BDPL 3 & 4	4,758,306.54	16,481,539.46	21,239,846.00	
BDPL Reliability	4,360,664.44	40,874,800.56	45,235,465.00	
BDPL 3 & 4 Crossover	802,494.94	493,817.06	1,296,312.00	
SCADA Phase II	65,497.37	1,247,963.63	1,313,461.00	
EBMUD Intertie	6,668,906.37	4,075,015.63	10,743,922.00	
BDPL 4 Slipline	-	1,219,251.00	1,219,251.00	
Total Bay Division Subregional	16,655,869.66	64,392,387.34	81,048,257.00	
Peninsula Subregional				
Capuchino Valve Lot	162,584.69	753,779.31	916,364.00	
CS/SA Transimission	2,288,853.10	3,448,975.90	5,737,829.00	
Adit Leak Repair	255,334.99	1,650,368.01	1,905,703.00	
HTWTP Short Term	2,874,763.69	3,582,860.31	6,457,624.00	
Cross Connection Control	1,150,559.48	324,549.52	1,475,109.00	
CS Bypass Tunnel	2,873,475.22	15,532,584.78	18,406,060.00	
LCS Dam Improvement	931,587.07	3,278,932.93	4,210,520.00	
Pulgas Balancing Reservoir	1,218,341.39	2,706,284.61	3,924,626.00	
HTWTP Long Term	1,107,185.77	2,549,793.23	3,656,979.00	
Baden & San Pedro Valve Lots	60,203.48	2,963,540.52	3,023,744.00	
Total Peninsula Subregional	12,922,888.88	36,791,669.12	49,714,558.00	
San Francisco Subregional				
CSPL 2 Replacement	1,269,111.95	5,019,824.05	6,288,936.00	
SAPL 3	1,492,584.40	1,942,479.60	3,435,064.00	
Desalination	55,618.10	596,473.90	652,092.00	
Total San Francisco Subregional	2,817,314.45	7,558,777.55	10,376,092.00	
Grand Total	120,622,352.19	359,746,902.82	480,369,255.01	
Regional			328,140,295.00	68.31%
Local			152,228,960.01	31.69%
			480,369,255.01	

This certificate is for illustration only. It was prepared in 2006 and shown groundwater and recycled water projects as regional instead of local. In addition, it does not reflect expenditures for the portions of regional assets which in rate base as of June 30, 2008 nor what is expected to be added to rate base through June 30, 2009. For these reasons, the percentages shown for regional and local projects are not accurate.

ATTACHMENT L-3
WATER ENTERPRISE REVENUE BOND 2006 SERIES A
ANNUAL REPORT ON EXPENDITURES OF AND EARNINGS ON PROCEEDS
AS OF JUNE 30, 2009
(Section 5.04 A)

Project Number		Project Description	Net Financing Proceeds[1]	Appropriated Interest Earnings[2]	Adjusted Project Funding	Expenditures Thru 6/30/09[3]	Remaining Balance
REGIONAL PROGRAM							
		San Joaquin Region					
CUW373	Regional	San Joaquin Pipeline System Rehabilitation	1,398,965				
CUW364	Regional	Tesla Advance Disinfection	6,041,269				
CUW367	Regional	Tesla Portal Disinfection	22,522,605				
		Total San Joaquin Region	29,962,439				
		Sunol Valley Region					
CUW352	Regional	Alameda Creek Fishery Enhancement	1,983,884				
CUW355	Regional	Stand-by Power - Various Locations	1,763,716				
CUW359	Regional	New Irvington Tunnel/Alameda Siphon No. 4	22,331,316				
CUW370	Regional	Pipeline Readiness Improvements	5,591,772				
CUW374	Regional	Calaveras Dam Replacement	25,059,764				
CUW381	Regional	SVWTP 40 mgd Addition	3,499,964				
CUW382	Regional	SVWTP Finished Water Reservoir	11,155,587				
CUW386	Regional	San Antonio Pump Station Upgrade	1,961,558				
		Total Sunol Valley Region	73,347,563				
		Bay Division Region					
CUW353	Regional	Seismic Upgrade BDPL 3 & 4	21,234,846				
CUW363	Regional	SCADA Phase II/Security Upgrades	1,313,461				
CUW365	Regional	BDPL Reliability Upgrades	45,235,465				
CUW380	Regional	BDPL 3 & 4 Crossover	21,239,846				
CUW389	Regional	EBMUD Intertie	10,743,922				
CUW393	Regional	BDPL 4 Stipline	1,219,251				
		Total Bay Division Region	100,986,791				
		Peninsula Region					
CUW354	Regional	Lower Crystal Springs Dam Improvement	4,210,520				
CUW366	Regional	Crystal Springs Bypass Tunnel	18,495,050				
CUW357	Regional	Adit Leak Repairs	11,953,703				
CUW361	Regional	Pulgas Balancing Reservoir Rehabilitation and Improvements	3,331,326				
CUW385	Regional	Cross Connection Control	1,175,109				
CUW356	Regional	HTWTP Short Term Improvemetns	6,457,624				
CUW367	Regional	HTWTP Long Term Improvements	3,656,979				
CUW369	Regional	Capuchino Valve Lot Improvements	916,364				
CUW371	Regional	Crystal Springs/San Andreas Transmission	5,737,829				
CUW378	Regional	Crystal Springs Pipeline 2 Replacement	6,288,936				
CUW379	Regional	San Andreas Pipeline 3 Installation	3,435,064				
CUW390	Regional	Desalination	652,092				
CUW391	Regional	Baden & San Pedro Valve Lots Improvements	3,023,744				
		Total Peninsula Region	60,090,650				
		San Francisco Region					
CUW358	Regional	Sunset Reservoir Upgrades - North Basin	6,020,008				
CUW372	Regional	University Mound Reservoir Upgrades - North Basin	36,307,991				
		Total San Francisco Region	42,327,999				
		System-Wide					
CUW388	Regional	PEIR	8,308,050				
CUW392	Regional	Program Management Services	13,323,598				
CUW394	Regional	Watershed Land Acquisition	502,660				
		Total System-Wide	22,134,308				
		Total Regional Program	328,849,750				
LOCAL PROGRAM							
		Reservoirs					
CUW307	Local	Summit Reservoir Rehabilitation					
CUW310	Local	New Northwest Reservoir					
CUW319	Local	Hunters Point Reservoir Rehabilitation					
CUW334	Local	Stanford Heights Reservoir Rehabilitation					
CUW335	Local	Potrero Heights Reservoir Rehabilitation					
CUW337	Local	Sutro Reservoir Rehabilitation					
		Total Reservoirs					
		Pump Stations/Tanks					
CUW306	Local	Crocker Amazon Pump Station Upgrade					
CUW309	Local	Lake Merced Pump Station Upgrade					
CUW314	Local	La Grande Tank Upgrade					
CUW318	Local	Forest Hill Tank Rehabilitation					
CUW320	Local	Forest Hill Pump Station Upgrade					
CUW321	Local	Forest Knoll Pump Station Upgrade					
CUW322	Local	Lincoln Park Pump Station Upgrade					
CUW323	Local	Alameny Pump Station Upgrade					
CUW324	Local	Mount Davidson Pump Station Upgrade					

ILLUSTRATIVE ONLY DRAFT

WATER ENTERPRISE REVENUE BOND 2009 SERIES A
ANNUAL REPORT ON EXPENDITURES OF AND EARNINGS ON PROCEEDS
AS OF JUNE 30, 2009
(Section 5.04 A)

Project Number		Project Description	Net Financing Proceeds[1]	Appropriated Interest Earnings[2]	Adjusted Project Funding	Expenditures Thru 6/30/09[3]	Remaining Balance
CUW326	Local	Palo Alto Pump Station Upgrade					
CUW326	Local	Skyview-AquaVista Pump Station Upgrade					
CUW327	Local	Summit Pump Station Upgrade					
CUW328	Local	McLaren #1 Tank Rehabilitation					
CUW329	Local	Potrero Heights Tank Seismic Upgrade					
CUW330	Local	Forest Knoll Tank Seismic Upgrade					
CUW331	Local	Lincoln Park Tank Seismic Upgrade					
CUW332	Local	McLaren #2 Tank Rehabilitation					
CUW333	Local	Mount Davidson Tank Seismic Upgrade					
CUW338	Local	La Grande Pump Station Upgrade					
CUW339	Local	Potrero Heights Pump Station Upgrade					
CUW340	Local	Vista Francisco Pump Station Upgrade					
		Total Pump Stations/Tanks					
		Pipelines/Valves					
CUW304	Local	North University Mound System Upgrade					
CUW308	Local	Motorize Key Valves					
CUW311	Local	Sunset Circulation Improvements					
CUW312	Local	Lincoln Way Transmission Line					
CUW313	Local	Noe Valley Transmission Main, Phase 2					
CUW315	Local	East/West Transmission Main					
CUW316	Local	Fulton @ Sixth Ave Main Replacement					
		Total Pipelines/Valves					
		Water Supply/Water Quality					
CUW301	Local	Groundwater					
CUW302	Local	Recycled Water					
CUW304	Local	Lawrence-Livermore National Laboratory Water Quality Improvements					
		Total Water Supply/Water Quality					
		Miscellaneous					
CUW303	Local	Vehicle Service Facility Upgrade					
CUW305	Local	Fire Protection at CCO					
		Total Miscellaneous					
		Total Local Program					
		Grand Total Regional and Local Programs					
		Unappropriated Interest Earnings					
		Percent of Net Proceeds[4]					
		Percent of Net Proceeds and Earnings[4]					

[1]Net financing proceeds available on date of issue (i.e. deposit to project fund)
[2]Cumulative net of arbitrage rebate liability
[3]Cumulative
[4]If financing sources Substantially Expended, proceed allocations are then fixed

ILLUSTRATION ONLY DRAFT

REVENUE-FUNDED CAPITAL ADDITIONS (Section 5.04.B)
Subfund: 5W CPF WCF - Wholesale Customer Capital Fund (Water)

Projected FAMIS as of July 1, 2009 (Day 1 of New Budget Year)

Based on Proportionate Annual Water Deliveries of ... 68.7%

Project	Title	A: FY 2009-10 Approved Budget* - Total Regional	B: FY 2009-10 Approved Budget - WHOLESALE SHARE	C: Total Appropriation - All Years^	D: All Years Actual Expenditures^	E: Fiscal Year 2009-10 Actual Expenditures^	F: Encumbered But Not Expended^	G=C-D-F: Appropriated, Unencumbered Balance^	H: Projected Expended & Encumbered through 6/30/2010	I=G-H: Projected Surplus / (Shortfall)
			Wholesale Customer Capital Fund (5W CPF WCF)							
CUW262	Regional Water RnR - Treatment Facilities	$ 1,000,000	$ 687,000	$ 687,000	$ -	$ -	$ -	$ 687,000	$ 229,000	$ 458,000
CUW263	Regional Water RnR - Conveyance/Transmission Systems	$ 7,000,000	$ 4,809,000	$ 4,809,000	$ -	$ -	$ -	$ 4,809,000	$ 1,603,000	$ 3,206,000
CUW264	Regional Water - Watersheds / ROW Management	$ 500,000	$ 343,500	$ 343,500	$ -	$ -	$ -	$ 343,500	$ 114,000	$ 229,500
FUW100	Regional Water - Facilities Maintenance	$ 3,700,000	$ 2,541,900	$ 2,541,900	$ -	$ -	$ -	$ 2,541,900	$ 847,000	$ 1,694,900
CUW261	Regional Water - Storage									
	Regional Total	$ 12,200,000	$ 8,381,400	$ 8,381,400	$ -	$ -	$ -	$ 8,381,400	$ 2,793,000	$ 5,588,400

Source: * SFPUC Commission Approved Budget, February 2009, Same Format
^ FAMIS - City's Official Financial System of Record

Ties to Budget Hearing Materials

REVENUE-FUNDED CAPITAL ADDITIONS (Section 5.04.B)
Subfund: 5W CPF WCF - Wholesale Customer Capital Fund (Water)

Projected FAMIS as of June 30, 2010 (Last Day of Budget Year)

Based on Proportionate Annual Water Deliveries of ... 68.7%

Project	Title	A: FY 2009-10 Approved Budget* - Total Regional	B: FY 2009-10 Approved Budget - WHOLESALE SHARE	C: Total Appropriation - All Years^	D: All Years Actual Expenditures^	E: Fiscal Year 2009-10 Actual Expenditures^	F: Encumbered But Not Expended^	G=C-D-F: Appropriated, Unencumbered Balance^	H: Projected Expended & Encumbered through 6/30/2011	I=G-H: Projected Surplus / (Shortfall)
			Wholesale Customer Capital Fund (5W CPF WCF)							
CUW262	Regional Water RnR - Treatment Facilities	$ 1,000,000	$ 687,000	$ 687,000	$ 235,000	$ 235,000	$ -	$ 452,000	$ 409,000	$ 43,000
CUW263	Regional Water RnR - Conveyance/Transmission Systems	$ 7,000,000	$ 4,809,000	$ 4,809,000	$ 1,395,000	$ 1,395,000	$ 25,000	$ 3,389,000	$ 1,589,000	$ 1,800,000
CUW264	Regional Water - Watersheds / ROW Management	$ 500,000	$ 343,500	$ 343,500	$ 115,000	$ 115,000	$ 50,000	$ 178,500	$ 35,500	$ 143,000
FUW100	Regional Water - Facilities Maintenance	$ 3,700,000	$ 2,541,900	$ 2,541,900	$ 850,000	$ 850,000	$ 123,000	$ 1,568,900	$ 768,900	$ 800,000
CUW261	Regional Water - Storage	$ -	$ -							
	Regional Total	$ 12,200,000	$ 8,381,400	$ 8,381,400	$ 2,595,000	$ 2,595,000	$ 198,000	$ 5,588,400	$ 2,802,400	$ 2,786,000

Source: * SFPUC Commission Approved Budget, February 2009, Same Format
^ FAMIS - City's Official Financial System of Record

Ties to Budget Hearing Materials
Shown on Attachment N-2, Schedule 3

Shown On Attachment N-2, Schedule 3
Revenue Capital - Actual Expenditures

Shown on Attachement N-2, Schedule 3
Continuing Appropriation
Needed for Mulit-Year
Revenue Funded Capital

REVENUE-FUNDED CAPTIAL ADDITIONS (Section 5.04.B)
Subfund: 5T CPF WCF - Wholesale Customer Capital Fund (Hetch Hetchy)

Projected FAMIS as of June 30, 2009 (Day 1 of New Budget Year)

Based on Proportionate Annual Water Deliveries of ... 68.1%

Project	Title	A: FY 2009-10 Approved Budget* - Total Regional		B: FY 2009-10 Approved Budget - WHOLESALE SHARE (Wholesale Customer Capital Fund (SW CPF WCF))	C: Total Appropriation - All Years^	D: All Years Actual Expenditures^	E: Fiscal Year 2009-10 Actual Expenditures^	F: Encumbered But Not Expended^	G=C-D-F: Appropriated, Unencumbered Balance^	H: Projected Expended & Encumbered through - 6/30/2010	I=G-H: Projected Surplus / (Shortfall)
CUH931	HH Microwave Replacement	$ 4,000,000	J	$ 1,224,900	$ 1,224,900	$ -	$ -	$ -	$ 1,224,900	$ 408,000	$ 816,900
CUH977	HH Water R&R - Facilities Maintenance	$ 3,500,000	J	$ 1,071,788	$ 1,071,788	$ -	$ -	$ -	$ 1,071,788	$ 357,000	$ 714,788
CUH947	SEA - Go Solar Incentive Project	$ 4,000,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH971	Alternative Transmission Studies	$ 1,000,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH975	HH Water R&R - Power Infrastructure	$ 16,700,000	P	$ -	$ -					$ -	
CUH978	Hunters Point Municipal Power	$ -	P	$ -	$ -					$ -	
CUH953	Civic Center Sustainability District	$ 1,090,000	P	$ -	$ -					$ -	
CUH988	General Fund Dept - Energy Efficiency	$ 7,365,156	P	$ -	$ -					$ -	
	Renewable/Generation	$ 3,501,307	P	$ -	$ -					$ -	
	Treasure Island Improvement Project	$ 2,700,000	P	$ -	$ -					$ -	
	Enterprise Fund Dept - Energy Efficiency	$ 325,722	P	$ -	$ -					$ -	
CUH975	HH Water R&R - Water Infrastructure	$ 6,000,000	W	$ 4,083,000	$ 4,083,000					$ 1,361,000	
	Tuolumne River Watershed Protection	$ 2,000,000	W	$ 1,361,000	$ 1,361,000					$ 454,000	
	Regional Total	$ 52,182,187		$ 7,740,688	$ 7,740,688	$ -	$ -	$ -	$ 2,296,688	$ 2,580,000	$ 1,531,688

Source: * SFPUC Commission Approved Budget, February 2009, Same Format
^ FAMIS - City's Official Financial System of Record

Ties to Budget Hearing Materials

REVENUE-FUNDED CAPTIAL ADDITIONS (Section 5.04.B)
Subfund: 5T CPF WCF - Wholesale Customer Capital Fund (Hetch Hetchy)

Projected FAMIS as of June 30, 2010 (Last Day of Budget Year)

Based on Proportionate Annual Water Deliveries of ... 68.1%

Project	Title	FY 2009-10 Approved Budget* - Total Regional		FY 2009-10 Approved Budget - WHOLESALE SHARE (Wholesale Customer Capital Fund (SW CPF WCF))	Total Appropriation - All Years^	All Years Actual Expenditures^	Fiscal Year 2009-10 Actual Expenditures^	Encumbered But Not Expended^	Appropriated, Unencumbered Balance^	Projected Expended & Encumbered through 6/30/2011	Projected Surplus / (Shortfall)
CUH931	HH Microwave Replacement	$ 4,000,000	J	$ 1,224,900	$ 1,224,900	$ 1,224,900	$ 1,224,900	$ -	$ -	$ -	$ -
CUH977	HH Water R&R - Facilities Maintenance	$ 3,500,000	J	$ 1,071,788	$ 1,071,788	$ 1,071,788	$ 1,071,788	$ -	$ (1)	$ (1)	$ -
CUH947	SEA - Go Solar Incentive Project	$ 4,000,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH971	Alternative Transmission Studies	$ 1,000,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH975	HH Water R&R - Power Infrastructure	$ 16,700,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH978	Hunters Point Municipal Power	$ -	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH953	Civic Center Sustainability District	$ 1,090,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH988	General Fund Dept - Energy Efficiency	$ 7,365,156	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Renewable/Generation	$ 3,501,307	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Treasure Island Improvement Project	$ 2,700,000	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Enterprise Fund Dept - Energy Efficiency	$ 325,722	P	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CUH975	HH Water R&R - Water Infrastructure	$ 6,000,000	W	$ 4,083,000	$ 4,083,000	$ 4,083,000	$ 4,083,000	$ -	$ -	$ -	$ -
	Tuolumne River Watershed Protection	$ 2,000,000	W	$ 1,361,000	$ 1,361,000	$ 1,361,000	$ 1,361,000	$ -	$ -	$ -	$ -
	Regional Total	$ 52,182,187		$ 7,740,688	$ 7,740,688	$ 7,740,688	$ 7,740,688	$ -	$ (1)	$ (1)	$ -

Source: * SFPUC Commission Approved Budget, February 2009, Same Format
^ FAMIS - City's Official Financial System of Record

Ties to Budget Hearing Materials
Shown on Attachment N-2, Schedule 6

Shown On Attachment N-2, Schedule 6
Revenue Capital - Actual Expenditures

Show on Attachment N-2, Schedule 5
Continuing Appropriation
Needed for Multi-Year
Revenue Funded Capital

ATTACHMENT M-2

REVENUE FUNDED CAPITAL
ANNUAL REPORTING REQUIREMENTS
(Section 5.04B)

Part A. Updated Actual Information Through Most Recent Fiscal Year (Due in November)

Each year, the SFPUC will provide a report on the status of the regional revenue funded projects with the following information:

Project-level information (through close-out)

1 Scope of project
2 Current cost estimate/budget.
3 Expected milestone dates (ie, design, environmental, construction period, close-out, etc.)
4 Contract status
5 Reasons for status changes from prior report.
6 Other information relevant to whether project is on time/on budget.
7 For most recently completed fiscal year and estimated for current year:
8 Total expenditures (capital and operating); amounts paid from other sources.
9 Amount of encumbered and unencumbered appropriations
10 Application of any unused appropriations

Wholesale Capital Fund

11 Beginning balance, deposits, capital expenditures (by project), earnings, ending balance.
12 Components of ending balance; wholesale portion of:
13 Appropriated and encumbered
14 Appropriated but unencumbered

Part B. Proposed Appropriations for Upcoming Year (Due in March)

15 Project information, to the extent not provided in Part A
16 Expected funding needs for regional projects
17 Unused or excess appropropriations carried over.
18 Proposed appropriation for upcoming fiscal year.

ATTACHMENT M-3
WHOLESALE REVENUE-FUNDED CAPITAL FUND - BALANCING ACCOUNT ADJUSTMENT
** EXAMPLE REPORTING FORMAT **
(Section 6.08)

	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)
	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
a. Beginning balance	$0	$5,671,414	$8,960,834	$9,669,194	$10,420,781	$11,217,991	$5,498,801	$6,198,022	$6,944,933	$7,742,299	$8,593,037
b. Transfer to Balancing Account	$0					($6,467,533)					($2,574,995)
Year 1											
c. Budgeted appropriation	$8,381,400					$10,697,026					$13,652,417
d. Encumbrance/Expenditure	($2,793,800)	($2,793,800)	($2,793,800)			($3,565,675)	($3,565,675)	($3,565,675)			($4,550,806)
Year 2											
e. Budgeted appropriation		$8,800,470					$11,231,878				
f. Encumbrance/Expenditure		($2,933,490)	($2,933,490)	($2,933,490)			($3,743,959)	($3,743,959)	($3,743,959)		
Year 3											
g. Budgeted appropriation			$9,240,494					$11,793,471			
h. Encumbrance/Expenditure			($3,080,165)	($3,080,165)	($3,080,165)			($3,931,157)	($3,931,157)	($3,931,157)	
Year 4											
i. Budgeted appropriation				$9,702,518					$12,383,145		
j. Encumbrance/Expenditure				($3,234,173)	($3,234,173)	($3,234,173)			($4,127,715)	($4,127,715)	($4,127,715)
Year 5											
k. Budgeted appropriation					$10,187,544					$13,002,302	
l. Encumbrance/Expenditure					($3,395,881)	($3,395,881)	($3,395,881)			($4,334,101)	($4,334,101)
m. Subtotal	$5,587,600	$8,744,594	$9,393,873	$10,123,885	$10,898,206	$5,251,755	$6,025,163	$6,750,702	$7,525,246	$8,351,628	$6,657,838
n. Interest earnings (e.g., 3%)	$83,814	$216,240	$275,321	$296,896	$319,785	$247,046	$172,859	$194,231	$217,053	$241,409	$228,763
o. Ending fund balance (unencumbered, unexpende	$5,671,414	$8,960,834	$9,669,194	$10,420,781	$11,217,991	$5,498,801	$6,198,022	$6,944,933	$7,742,299	$8,593,037	$6,886,601
p. Five Year Cumulative Appropriations w/ Interest					$47,504,581					$60,180,421	
q. 10% of Cumulative Appropriations w/ interest					$4,750,458					$6,018,042	
r. Ending fund balance					$11,217,991					$8,593,037	
s. Excess balance transferred to Balancing Account*					($6,467,533)					($2,574,995)	

*Test: Any balance in excess of 10% of the cumulative five-year appropriation total is credited to the balancing account.

BALANCING ACCOUNT / RATE SETTING CALCULATION
REFERENCE SECTION 6.03.A.3.a

	FY 2007-08	FY 2008-09	FY 2009-10
Step 1:			
A. Balancing Account as of June 30, 2007	$12,882,000		
B. Interest on Balancing Account at Pooled Investment Rate for Fiscal Year	$554,000		
C. Wholesale Revenues for Fiscal Year	($113,932,000)		
D. Wholesale Revenue Requirement for Fiscal Year	$119,224,000		
E. Settlement Credits or Other Adjustments	$2,448,614		
F. 1984 Agreement Balancing Account Credits	$0		
G. Balancing Account as of June 30, 2008	$21,176,614		
Step 2:			
A. Balancing Account as of June 30, 2008		$21,176,614	
B. Interest on Balancing Account at Pooled Investment Rate for Fiscal Year		$529,000	
C. Wholesale Revenues for Fiscal Year		-$123,604,000	
D. Wholesale Revenue Requirement for Fiscal Year		$120,582,000	
E. Settlement Credits or Other Adjustments		$21,000	
F. 1984 Agreement Balancing Account Credits		$0	
G. Balancing Account as of June 30, 2009		$18,684,614	
Step 3:			
A. Balancing Account as of June 30, 2009			$0
B. Interest on Balancing Account at Pooled Investment Rate for Fiscal Year			$0
C. Wholesale Revenues for Fiscal Year			-$127,486,900
D. Wholesale Revenue Requirement for Fiscal Year			$140,994,733
E. Settlement Credits or Other Adjustments			$21,000
F. 1984 Agreement Balancing Account Credits			$1,997,220
G. Balancing Account as of June 30, 2010			$15,527,053
H. Net Change in Wholesale Revenue Coverage			$4,488,233
I. Total Revenue Deficiency or Surplus			$20,015,286
J. Projected Water Sales in Ccf	84,621,240	83,205,600	85,920,000
K. Deficiency or (Surplus) $/Ccf			$0.23
L. Deficiency or (Surplus) Ccf as a Percentage of Revenues			15.7%

Note: Dollar amounts are for illustrative purposes only. The Parties have not agreed on the amount of the balancing account as of June 30, 2007, revenue requirement for FY 2007-08, settlement credits for FY 2007-08, and the amount of the balancing account as of June 30, 2009.

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BALANCING ACCOUNT / RATE SETTING CALCULATION
METHOD OF CALCULATION
REFERENCE SECTION 6.03.A.3.a

N = The year for which rates are being set

N-1 = The current year

N-2 = The most recently completed year for which actual results are available

Calculation Method:

Step 1 Determine the actual revenue differential for year N-2
- A. Enter the beginning amount of the Balancing Account
- B. Calculate the interest earned at the Pooled Investment Account Rate for (A)
- C. Enter the actual Wholesale revenues billed
- D. Enter the Wholesale Revenue Requirement
- E. Enter settlement credits or adjustments, if any
- F. Enter carry-over 1984 Agreement credits owed the City, if any
- G. Calculate the ending amount of the Balancing Account

Step 2 Determine the projected revenue differential for year N-1
- A. Enter the beginning amount of the Balancing Account; this is the same amount as G in Step 1
- B. Calculate the interest earned at the Pooled Investment Account Rate for (A)
- C. Enter the actual Wholesale revenues billed
- D. Enter the Wholesale Revenue Requirement
- E. Enter settlement credits or adjustments, if any
- F. Enter carry-over 1984 Agreement credits owed the City, if any
- G. Calculate the ending amount of the Balancing Account

Step 3 Determine the projected revenue differential for year N
- A. Enter the beginning amount of the Balancing Account; this is the same amount as G in Step 2
- B. Calculate the interest earned at the Pooled Investment Account Rate for (A)
- C. Enter the actual Wholesale revenues billed
- D. Enter the Wholesale Revenue Requirement
- E. Enter settlement credits or adjustments, if any
- F. Enter carry-over 1984 Agreement credits owed the City, if any
- G. Calculate the ending amount of the Balancing Account
- H. Enter the net change in the Wholesale Revenue Coverage, if applicable
- I. Calculate the total revenue deficiency or surplus (G) + (H)
- J. Enter the projected water sales to Wholesale Customers in Ccf
- K. Calculate the required increase in the commodity portion of the rate by dividing (I) by (J)
- L. Calculate the required increase in revenues by dividing (I) by (C)

WHOLESALE REVENUE REQUIREMENT SCHEDULES
CALCULATION OF WHOLESALE REVENUE REQUIREMENT
FISCAL YEAR 2009-10
REFERENCE ARTICLE 5

ATTACHMENT N-2
SCHEDULE 1

EXPENSE CATEGORY	CONTRACT REFERENCE	SCHEDULE REFERENCE	TOTAL	DIRECT RETAIL	DIRECT WHOLESALE	REGIONAL	JOINT EXPENSE ALLOCATION FACTOR	WHOLESALE SHARE
OPERATING AND MAINTENANCE EXPENSE								
SOURCE OF SUPPLY	5.05 (A)	SCH 8.1	$ 14,943,953	$ 1,251,062	$ -	$ 13,692,891	ANNUAL USE[1]	$ 9,394,568
PUMPING	5.05 (B)	SCH 8.1	$ 4,342,682	$ 3,854,000	$ -	$ 488,682	ANNUAL USE[1]	$ 334,210
TREATMENT	5.05 (C)	SCH 8.1	$ 30,445,053	$ -	$ -	$ 30,445,053	ANNUAL USE[1]	$ 20,821,372
TRANSMISSION & DISTRIBUTION	5.05 (D)	SCH 8.1	$ 53,416,232	$ 30,163,286	$ -	$ 23,252,946	ANNUAL USE[1]	$ 15,902,890
CUSTOMER ACCOUNTS[2]	5.05 (E)	SCH 8.1	$ 7,552,213	$ 7,401,169	$ 151,044	$ -	2%	$ 151,044
TOTAL O&M			$ 110,700,133	$ 42,669,517	$ 151,044	$ 67,879,572		46,573,883
COMPOSITE % (WHOLESALE SHARE / TOTAL O&M)	5.06 (C)							42.07%
ADMINISTRATIVE AND GENERAL EXPENSES:								
COWCAP	5.06 (A)	SCH 8.1	$ 1,239,009	$ -	$ -	$ 1,239,009	COMPOSITE O&M	$ 520,857
SERVICES OF SFPUC BUREAUS	5.06 (B)	SCH 7	$ 22,465,291	$ 8,178,424	$ -	$ 14,286,867	ANNUAL USE[1]	$ 9,770,788
OTHER A&G	5.06 (C)	SCH 8.1	$ 12,972,477	$ 4,309,891	$ -	$ 8,662,586	COMPOSITE O&M	$ 3,770,749
COMPLIANCE AUDIT	5.06 (D)	SCH 8.1	$ 200,000	$ -	$ -	$ 200,000	50%	$ 100,000
TOTAL A&G			$ 36,876,777	$ 12,188,315	$ -	$ 24,687,462		$ 14,162,394
PROPERTY TAXES	5.07	SCH 8.1	$ 1,417,293	$ -	$ -	$ 1,417,293	ANNUAL USE[1]	$ 969,287
CAPITAL COST RECOVERY								
PRE-2009 ASSETS	5.03	SCH K						$ 24,051,326
DEBT SERVICE ON NEW ASSETS	5.04 (A)	SCH 2						$ 17,952,931
REVENUE FUNDED ASSETS - APPROPRIATED TO WHOLESALE CAPITAL FUND	5.04 (B)	SCH 3						$ 8,381,400
TOTAL CAPITAL COST RECOVERY								$ 50,385,657
WHOLESALE SHARE HETCH HETCHY WATER & POWER	5.04	SCH 4						$ 28,903,512
WHOLESALE REVENUE REQUIREMENT								$ 140,994,733
WHOLESALE REVENUE COVERAGE[3]								$ 4,488,233

[1] Proportional Annual Use (88.39%)
[2] Water Enterprise Share of Customer Accounts Expenses (62% of Total Customer Accounts Expenses)
[3] 25% of Wholesale Share of Debt Service

ILLUSTRATION ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
WATER ENTERPRISE CAPITAL COST RECOVERY - ANNUAL DEBT SERVICE
FISCAL YEAR 2009-10
REFERENCE SECTION 5.04.A

ATTACHMENT N-2
SCHEDULE 2

	2006 BOND ISSUE SERIES A	2008 BOND ISSUE ALL SERIES	2009 BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	TOTAL ALL OUTSTANDING BONDS
USE OF BOND PROCEEDS								
RETAIL PROJECTS	31.61%	22.95%	19.42%	XX.XX%	XX.XX%	XX.XX%	XX.XX%	
REGIONAL PROJECTS	68.39%	77.05%	80.58%	YY.YY%	YY.YY%	YY.YY%	YY.YY%	
PRINCIPAL PAYMENT	$ 8,765,000	-	-	-		-	-	$ 8,765,000
RETAIL PROJECTS	$ 2,770,617	-	-			-	-	$ 2,770,617
REGIONAL PROJECTS	$ 5,994,384	-	-			-	-	$ 5,994,384
INTEREST PAYMENT (GROSS)	$ 23,353,388	$ 5,561,386	$ 56,181,932	-		-	-	$ 85,096,706
RETAIL PROJECTS	$ 7,382,006	$ 1,276,338	$ 10,910,531	-		-	-	$ 19,568,875
REGIONAL PROJECTS	$ 15,971,382	$ 4,285,048	$ 45,271,401	-		-	-	$ 65,527,831
INTEREST PAYMENT (CAPITALIZED)	-	-	$ 56,181,932					
RETAIL PROJECTS	-	-	$ 10,910,531					
REGIONAL PROJECTS	-	-	$ 45,271,401					
INTEREST PAYMENT (NET)	$ 23,353,388	$ 5,561,386	-					
RETAIL PROJECTS	$ 7,382,006	$ 1,276,338	-					
REGIONAL PROJECTS	$ 15,971,382	$ 4,285,048	-					
TOTAL PRINCIPAL AND INTEREST PAYMENT	32,118,388	5,561,386	-	-	-	-	-	$ 37,679,774
RETAIL PROJECTS	10,152,623	1,276,338	-	-	-	-	-	$ 11,428,961
REGIONAL PROJECTS	21,965,766	4,285,048	-	-	-	-	-	$ 26,250,813
PROPORTIONAL ANNUAL USE	68.39%	68.39%	68.39%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	
WHOLESALE SHARE	$ 15,022,387	$ 2,930,544	-	-	-	-	-	$ 17,952,931 (TO SCHEDULE 1)

Note: Allocation of bond proceeds shown are for illustrative purposes only. Regional projects will not include bond proceeds used to construct or acquire assets capitalized prior to 7/1/09. Regional projects also will not include in-city groundwater or in-city recycled water projects.

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WHOLESALE REVENUE REQUIREMENT SCHEDULES
WATER ENTERPRISE CAPITAL COST RECOVERY - REVENUE FUNDED CAPITAL PROJECTS
FISCAL YEAR 2009-10
REFERENCE SECTION 5.04.B

ATTACHMENT N-2
SCHEDULE 3

		PROJECT APPROPRIATION	CLASSIFICATION	ALLOCATION FACTOR	WHOLESALE SHARE	TOTAL APPROPRIATION ALL YEARS	ALL YEARS ACTUAL EXPENDITURES	FY 2009-10 ACTUAL EXPENDITURES	ENCUMBERED, NOT EXPENDED	APPROPRIATED, UNENCUMBERED BALANCE
CUH983	Treasure Island Improvement Project	3,800,000	RETAIL	0.0%	$ -	$ -	$ -	$ -	$ -	$ -
CUW253	Facilities Security	500,000	RETAIL	0.0%	$ -	$ -	$ -	$ -	$ -	$ -
CUW260	Local Water R&R	22,347,520	RETAIL	0.0%	$ -	$ -	$ -	$ -	$ -	$ -
CUW686	Automated Meter Reading System	35,001,000	RETAIL	0.0%	$ -	$ -	$ -	$ -	$ -	$ -
	Total Local	62,648,520			$ -	$ -	$ -	$ -	$ -	$ -
CUW202	Replace Prestressed Concrete Cylr Pipe	-	REGIONAL	68.7%	$ -	$ -	$ -	$ -	$ -	$ -
CUW261	Regional Water R&R - Storage	-	REGIONAL	68.7%	$ -	$ -	$ -	$ -	$ -	$ -
CUW262	Regional Water R&R -Treatment Facilities	1,000,000	REGIONAL	68.7%	$ 687,000	$ 687,000	$ 235,000	$ 235,000	$ -	$ 452,000
CUW263	Regional Water R&R Conveyance/Transmission	7,000,000	REGIONAL	68.7%	$ 4,809,000	$ 4,809,000	$ 1,395,000	$ 1,395,000	$ 25,000	$ 3,389,000
CUW264	Regional Watersheds/ROW Management	500,000	REGIONAL	68.7%	$ 343,500	$ 343,500	$ 115,000	$ 115,000	$ 50,000	$ 178,500
FUW100	Regional Facilities Maintenance	3,700,000	REGIONAL	68.7%	$ 2,541,900	$ 2,541,900	$ 850,000	$ 850,000	$ 123,000	$ 1,568,900
	Total Regional	12,200,000			$ 8,381,400	$ 8,381,400	$ 2,595,000	$ 2,595,000	$ 198,000	$ 5,588,400
	TOTAL ALL PROJECTS	74,848,520			$ 8,381,400	$ 8,381,400	$ 2,595,000	$ 2,595,000 (TO SCHEDULE 1)	$ 198,000 (TO SCHEDULE 1)	$ 5,588,400 (TO SCHEDULE 1)

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WHOLESALE REVENUE REQUIREMENT SCHEDULES
CALCULATION OF WHOLESALE SHARE OF HETCH HETCHY WATER & POWER
FISCAL YEAR 2009-10
REFERENCE ARTICLE 5

ATTACHMENT N-2
SCHEDULE 4

EXPENSE CATEGORY	CONTRACT REFERENCE	SCHEDULE REFERENCE	TOTAL	POWER SPECIFIC	WATER SPECIFIC	JOINT	JOINT ALLOCATION PERCENTAGE	WATER-RELATED TOTAL	WHOLESALE ALLOCATION FACTOR	WHOLESALE SHARE
OPERATION AND MAINTENANCE										
OPERATION	5.08 B 1	SCH 8.2	$ 44,612,220	$ 31,653,085	$ 9,557,851	$ 3,200,384	45%	$ 10,998,038	ADJUSTED PROPORTIONAL ANNUAL USE	$ 7,484,165
MAINTENANCE	5.08 B 1	SCH 8.2	$ 16,868,612	$ 5,046,039	$ 3,238,622	$ 8,581,951	45%	$ 7,100,500	ADJUSTED PROPORTIONAL ANNUAL USE	$ 4,831,890
TOTAL OPERATION AND MAINTENANCE			$ 61,480,832	$ 36,902,004	$ 12,796,483	$ 11,782,345		$ 18,098,538		$ 12,316,055
ADMINISTRATIVE AND GENERAL										$ -
CCWCAP	5.08 B 2	SCH 8.2	$ 1,139,579	$ -	$ -	$ 1,139,579	45%	$ 512,811	ADJUSTED PROPORTIONAL ANNUAL USE	$ 348,969
SERVICES OF SFPUC BUREAUS	5.08 B 2	SCH 7	$ 8,255,307	$ 5,376,656	$ 2,879,651	$ -	45%	$ 2,879,651	ADJUSTED PROPORTIONAL ANNUAL USE	$ 1,959,503
OTHER A&G	5.08 B 2	SCH 8.2	$ 25,581,481	$ 14,913,071	$ 36,070	$ 10,632,340	45%	$ 4,820,623	ADJUSTED PROPORTIONAL ANNUAL USE	$ 3,280,434
CUSTOMER ACCOUNTS	5.08 B 2	SCH 8.2	$ 347,403	$ 347,403	$ -	$ -	45%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -
TOTAL ADMINISTRATIVE AND GENERAL			$ 35,323,770	$ 20,636,130	$ 2,915,721	$ 11,771,919		$ 8,213,085		$ 5,589,504
PROPERTY TAXES	5.08 B 3	SCH 8.2	$ 452,000	$ -	$ -	$ 456,305	45%	$ 205,337	ADJUSTED PROPORTIONAL ANNUAL USE	$ 139,732
CAPITAL COST RECOVERY										
PRE-2009 ASSETS	5.09 B 1	ATT K-4								$ 3,118,033
DEBT SERVICE ON NEW ASSETS	5.09 B 2	SCH 5								$ -
REVENUE FUNDED ASSETS-APPROPRIATIONS TO WHOLESALE CAPITAL FUND	5.09 B 3	SCH 6								$ 7,740,686
TOTAL CAPITAL COST RECOVERY										$ 10,858,721
WHOLESALE SHARE OF HETCH HETCHY WATER & POWER										$ 28,903,312 (TO SCHEDULE 1)
WHOLESALE REVENUE COVERAGE[1]										$ -

[1]Adjusted Proportional Annual Use (68.39% X 99.50% = 68.05%)
[2]25% of Wholesale Share of Debt Service

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WHOLESALE REVENUE REQUIREMENT SCHEDULES
HETCH HETCHY CAPITAL COST RECOVERY - ANNUAL DEBT SERVICE
FISCAL YEAR 2009-10
REFERENCE SECTION 5.09.B.1

ATTACHMENT N-2
SCHEDULE 5

	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	XXXX BOND ISSUE ALL SERIES	TOTAL ALL OUTSTANDING BONDS
USE OF BOND PROCEEDS								
POWER PROJECTS	XX.XX%	XX.XX%	XX.XX%	XX.XX%	XX.XX%	XX.XX%	XX.XX%	
WATER PROJECTS	YY.YY%	YY.YY%	YY.YY%	YY.YY%	YY.YY%	YY.YY%	YY.YY%	
JOINT PROJECTS	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	ZZ.ZZ%	
PRINCIPAL PAYMENT	-	-	-	-	-	-	-	-
POWER SHARE	-	-	-	-	-	-	-	-
WATER SHARE	-	-	-	-	-	-	-	-
JOINT SHARE	-	-	-	-	-	-	-	-
INTEREST PAYMENT (NET)	-	-	-	-	-	-	-	-
POWER SHARE	-	-	-	-	-	-	-	-
WATER SHARE	-	-	-	-	-	-	-	-
JOINT SHARE								
TOTAL PRINCIPAL AND INTEREST PAYMENT	-	-	-	-	-	-	-	-
POWER SHARE	-	-	-	-	-	-	-	-
WATER SHARE	-	-	-	-	-	-	-	-
JOINT SHARE								
WATER RELATED PRINCIPAL AND INTEREST PAYMENT[1]								
ADJUSTED PROPORTIONAL ANNUAL USE	68.05%	68.05%	68.05%	68.05%	68.05%	68.05%	68.05%	
WHOLESALE SHARE	-	-	-	-	-	-	-	-

(TO SCHEDULE 4)

[1] Water Related = 100% of Water Share + 45% of Joint Share

ILLUSTRATION ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
HETCH HETCHY CAPITAL COST RECOVERY - REVENUE FUNDED CAPITAL PROJECTS
FISCAL YEAR 2009-10
REFERENCE SECTION 5.04.8

ATTACHMENT N 2
SCHEDULE 5

		PROJECT APPROPRIATION	CLASSIFICATION	WATER RELATED PERCENTAGE	WATER RELATED SHARE	ALLOCATION FACTOR	WHOLESALE SHARE	TOTAL APPROPRIATION ALL YEARS	ALL YEARS ACTUAL EXPENDITURES	FY 2009-10 ACTUAL EXPENDITURES	ENCUMBERED, NOT EXPENDED -	APPROPRIATED, UNENCUMBERED BALANCE
CUH931	HH Microwave Replacement	$ 4,000,000	JOINT	45%	$ 1,800,000	ADJUSTED PROPORTIONAL ANNUAL USE	$ 1,224,900	$ 1,224,900	$ 1,224,900	$ 1,224,900	$ -	$
CUH977	HH Water R&R - Facilities Maintenance	$ 3,500,000	JOINT	45%	$ 1,575,000	ADJUSTED PROPORTIONAL ANNUAL USE	$ 1,071,788	$ 1,071,788	$ 1,071,788	$ 1,071,788	$ -	$
	Total Joint	$ 7,500,000			$ 3,375,000		$ 2,296,688	$ 2,296,688	$ 2,296,688	$ 2,296,688	$ -	$
CUH947	SEA - Go Solar Incentive Project	$ 4,000,000	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
CUH971	Alternative Transmission Studies	$ 1,000,000	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
CUH976	HH Water R&R - Power Infrastructure	$ 16,700,000	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
CUH979	Hunters Point Municipal Power	$ -	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
CUH983	Civic Center Sustainability District	$ 1,090,000	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
CUH985	General Fund Dept - Energy Efficiency	$ 7,365,158	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
	Renewable/Generation	$ 3,501,337	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
	Treasure Island Improvement Project	$ 2,700,000	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
	Enterprise Fund Dept - Energy Efficiency	$ 325,722	POWER	0%	$ -	ADJUSTED PROPORTIONAL ANNUAL USE	$ -					
	Total Power	$ 36,682,187			$ -		$ -					
CUH975	HH Water R&R - Water Infrastructure	$ 6,000,000	WATER	100%	$ 6,000,000	ADJUSTED PROPORTIONAL ANNUAL USE	$ 4,063,000	$ 4,063,000	$ 4,063,000	$ 4,063,000	$ -	$
	Tuolumne River Watershed Protection	$ 2,000,000	WATER	100%	$ 2,000,000	ADJUSTED PROPORTIONAL ANNUAL USE	$ 1,381,000	$ 1,381,000	$ 1,381,000	$ 1,381,000	$ -	$
	Total Water	$ 8,000,000			$ 8,000,000		$ 5,444,000	$ 5,444,000	$ 5,444,000	$ 5,444,000	$ -	$
	TOTAL ALL WATER RELATED PROJECTS	$ 96,364,374			$ 11,375,000		$ 7,740,688	$ 7,740,688	$ 7,740,688	$ 7,740,688 (TO SCHEDULE 4)	$ - (TO SCHEDULE 4)	$ - (TO SCHEDULE 4)

PLEASE REVIEW ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
SERVICES OF SFPUC BUREAUS - ALLOCATION TO ENTERPRISES
FISCAL YEAR 2009-10
REFERENCE SECTION 5.05.B

ATTACHMENT N-2
SCHEDULE 7

		EXPENDITURE $	ADJUSTMENTS	ADJUSTED EXPENDITURE $	HETCH HETCHY POWER	HETCH HETCHY WATER	WATER RETAIL	WATER REGIONAL	WASTEWATER	TOTAL
ALLOCATION FACTORS (SCHEDULE N-7.1)					11.13%	5.96%	16.94%	29.59%	36.37%	
PUC01	General Manager	$ 7,609,114	$ -	$ 7,609,114	$ 847,160	$ 453,820	$ 1,288,884	$ 2,251,548	$ 2,767,682	$ 7,609,114
PUC1101	BizServ-Administration	$ 4,081,981	$ -	$ 4,081,981	$ 454,478	$ 243,485	$ 691,434	$ 1,207,864	$ 1,484,749	$ 4,081,981
PUC1102	Finance	$ 8,817,687	$ -	$ 8,817,687	$ 981,739	$ 525,902	$ 1,493,600	$ 2,609,166	$ 3,207,280	$ 8,817,687
PUC1103	ITS[1]	$ 18,248,158	$ (1,835,357)	$ 16,212,801	$ 1,805,093	$ 966,959	$ 2,748,235	$ 4,797,391	$ 5,897,123	$ 16,212,801
PUC1106	Human Resources	$ 7,678,483	$ -	$ 7,678,483	$ 854,903	$ 457,955	$ 1,300,653	$ 2,272,074	$ 2,792,914	$ 7,678,483
PUC1108	Customer Services	$ 12,262,428	$ (12,262,428)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
PUC12	External Affairs	$ 3,882,455	$ -	$ 3,882,455	$ 432,263	$ 231,556	$ 657,537	$ 1,148,824	$ 1,412,175	$ 3,882,455
	TOTAL	$ 34,752,000	$ (12,731,000)	$ 48,282,521	$ 5,375,656 (TO SCHEDULE 4)	$ 2,879,651 (TO SCHEDULE 4)	$ 8,178,424 (TO SCHEDULE 1)	$ 14,286,867 (TO SCHEDULE 1)	$ 17,561,923	$ 48,282,521

[1]Adjustment for Transfer of SCADA Expenditures to T&D Joint ($1,730,000)

ILLUSTRATION ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
SERVICES OF SFPUC BUREAUS - ANNUAL SALARIES
FISCAL YEAR 2009-10
REFERENCE SECTION 5.05.8

ATTACHMENT N-2
SCHEDULE 7.1

DEPARTMENT/DIVISION	ALLOCATION FACTOR	GROUP CODE	SALARIES	PERCENTAGE	
HETCH HETCHY					
POWER		1	$ 6,677,939	6.27%	
WATER		2	$ 1,775,910	1.67%	
JOINT			$ 9,428,450		
WATER SHARE	45%	2	$ 4,242,803	3.98%	
POWER SHARE	55%	1	$ 5,185,648	4.87%	
WATER					
ADMINISTRATION (WTR01)			$ 1,009,246		
RETAIL SHARE	33.4%	3	$ 336,415	0.32%	
REGIONAL SHARE	33.3%	4	$ 336,415	0.32%	
HETCH HETCHY WATER SHARE	33.3%	2	$ 336,415	0.32%	
COD (WTR03)		3	$ 17,356,922	16.29%	
WATER QUALITY (WTR04)		4	$ 7,292,599	6.83%	
WATER SUPPLY & TREATMENT (WTR05)		4	$ 18,154,689	17.05%	
NATURAL RESOURCES (WTR06)		4	$ 4,682,073	4.39%	
WATER RESOURCE PLANNING			$ 1,419,760		
WATER CONSERVATION		3	$ 355,703	0.33%	
RETAIL WATER RESOURCE PLANNING		3	$ -		
REGIONAL SHARE (NET SALARIES)		4	$ 1,064,057	1.00%	
WASTEWATER		5	$ 38,757,578	36.37%	
SALARIES BY GROUP CODE					
HETCH HETCHY - POWER		1	$ 11,863,587	11.13%	(TO SCHEDULE 7)
HETCH HETCHY - WATER		2	$ 6,355,129	5.96%	(TO SCHEDULE 7)
WATER - RETAIL		3	$ 18,049,040	16.94%	(TO SCHEDULE 7)
WATER- REGIONAL		4	$ 31,529,823	29.59%	(TO SCHEDULE 7)
WASTEWATER		5	$ 38,757,578	36.37%	(TO SCHEDULE 7)
TOTAL SALARIES			$ 106,555,156	100.00%	

ADMINISTRATION ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
CALCULATION OF THE WHOLESALE REVENUE REQUIREMENT
FISCAL YEAR 2009-10
WATER ENTERPRISE SUMMARY OF OPERATING EXPENSES

ATTACHMENT N-2
SCHEDULE 8.1

	Retail	Wholesale	Regional	Total
Operating Expenses				
Transmission & Distributions	$ 30,163,286	$ -	$ 23,252,946	$ 53,416,232
Adjustments to Transmission & Distribution	$ -	$ -	$ -	$ -
Adjusted Transmission & Distribution	$ 30,163,286	$ -	$ 23,252,946	$ 53,416,232
Source of Supply	$ 1,251,062	$ -	$ 13,692,891	$ 14,943,953
Adjustments to Source of Supply	$ -	$ -	$ -	$ -
Adjusted Source of Supply	$ 1,251,062	$ -	$ 13,692,891	$ 14,943,953
Pumping	$ 3,854,000	$ -	$ 488,682	$ 4,342,682
Adjustments to Pumping	$ -	$ -	$ -	$ -
Adjusted Pumping	$ 3,854,000	$ -	$ 488,682	$ 4,342,682
Treatment	$ -	$ -	$ 30,445,053	$ 30,445,053
Adjustments to Treatment	$ -	$ -	$ -	$ -
Adjusted Treatment	$ -	$ -	$ 30,445,053	$ 30,445,053
Customer Accounts	$ 7,401,169	$ 151,044	$ -	$ 7,552,213
Adjustments to Customer Accounts	$ -	$ -	$ -	$ -
Adjusted Customer Accounts	$ 7,401,169	$ 151,044	$ -	$ 7,552,213
Total Adjusted Operating Expense	$ 42,669,517	$ 151,044	$ 67,879,572	$ 110,700,133
General & Administrative Expense				
COWCAP	$ -	$ -	$ 1,238,009	$ 1,238,009
Services of SFPUC Bureaus	$ 8,178,424	$ -	$ 14,286,867	$ 22,465,291
Other General & Administrative	$ 4,009,891	$ -	$ 8,962,586	$ 12,972,477
Adjustments to General & Administrative	$ -	$ -	$ -	$ -
Adjusted General & Administrative	$ 4,009,891	$ -	$ 8,962,586	$ 12,972,477
Compliance Audit	$ 100,000	$ 100,000	$ -	$ 200,000
Total General & Administrative	$ 12,288,315	$ 100,000	$ 24,487,462	$ 36,875,777
Property Taxes	$ -	$ -	$ 1,417,293	$ 1,417,293
Total	$ 54,957,832	$ 251,044	$ 93,784,327	$ 148,993,203

Source: FAMIS/EIS
Note: All adjustments to be separately identified above

ILLUSTRATION ONLY DRAFT

WHOLESALE REVENUE REQUIREMENT SCHEDULES
CALCULATION OF THE WHOLESALE REVENUE REQUIREMENT
FISCAL YEAR 2009-10
HETCHY-HETCHY WATER & POWER SUMMARY OF OPERATING EXPENSES

ATTACHMENT N-2
SCHEDULE 8.2

	Power	Water	Joint	Total
Operating Expenses				
Purchased Power & Wheeling	$ 28,953,676			$ 28,953,676
Adjustments to Purchased Power & Wheeling	$ -			$ -
Adjusted Purchased Power & Wheeling	$ 28,953,676			$ 28,953,676
Operations				
Hydraulic Generation	$ 2,900,291	$ -	$ 3,200,394	$ 6,100,685
Transmission & Distribution	$ -	$ -	$ -	$ -
Water Quality Expense	$ -	$ 9,557,862	$ -	$ 9,557,862
Adjustments to Operations	$ -	$ -	$ -	$ -
Adjusted Operations	$ 2,900,291	$ 9,557,862	$ 3,200,394	$ 15,658,547
Maintenance				
Hydraulic Generation	$ 1,840,096	$ 3,238,622	$ 8,581,952	$ 13,660,670
Transmission & Distribution	$ 3,359,385	$ -	$ -	$ 3,359,385
Water Quality Expense	$ -	$ -	$ -	$ -
Adjustments to Maintenance	$ (151,442)	$ -	$ -	$ (151,442)
Adjusted Maintenance	$ 5,048,039	$ 3,238,622	$ 8,581,952	$ 16,868,613
Total Adjusted Operating Expense	$ 36,902,006	$ 12,796,484	$ 11,782,346	$ 61,480,836
General & Administrative Expense				
COWCAP	$ -	$ -	$ 1,139,579	$ 1,139,579
Services of SFPUC Bureaus	$ 5,375,656	$ 2,879,651	$ -	$ 8,255,307
Customer Accounts	$ 347,403	$ -	$ -	$ 347,403
Adjustments to Customer Accounts	$ -	$ -	$ -	$ -
Adjusted Customer Accounts	$ 347,403	$ -	$ -	$ 347,403
Other General & Administrative	$ 14,913,071	$ 36,070	$ 10,632,340	$ 25,581,481
Adjustments to General & Administrative	$ -	$ -	$ -	$ -
Adjusted General & Administrative	$ 14,913,071	$ 36,070	$ 10,632,340	$ 25,581,481
Total General & Administrative	$ 20,636,130	$ 2,915,721	$ 11,771,919	$ 35,323,770
Property Taxes	$ -	$ -	$ 452,000	$ 452,000
Total	$ 57,538,136	$ 15,712,205	$ 24,006,265	$ 97,256,606

Source: FAMIS/EIS
Note: All adjustments to be separately identified above

ILLUSTRATION ONLY DRAFT

SCHEDULE OF PROJECTED WATER SALES, WHOLESALE REVENUE REQUIREMENTS, AND WHOLESALE RATES
CONTRACT REFERENCE: ARTICLE 6.03.A.3

ATTACHMENT N-3

	FISCAL YEAR				
	N	N+1	N+2	N+3	N+4
OPERATION AND MAINTENANCE EXPENSES					
SOURCE OF SUPPLY	$ 9,364,568	$ -	$ -	$ -	$ -
PUMPING	$ 334,210	$ -	$ -	$ -	$ -
TREATMENT	$ 20,821,372	$ -	$ -	$ -	$ -
TRANSMISSION & DISTRIBUTION	$ 15,902,690	$ -	$ -	$ -	$ -
CUSTOMER ACCOUNTS	$ 151,044	$ -	$ -	$ -	$ -
TOTAL OPERATION AND MAINTENANCE EXPENSES	$ 46,573,884	$ -	$ -	$ -	$ -
ADMINISTRATIVE AND GENERAL EXPENSES					
COWCAP	$ 520,857	$ -	$ -	$ -	$ -
SF PUBLIC UTILITIES COMMISSION	$ 9,779,788	$ -	$ -	$ -	$ -
OTHER A&G	$ 3,779,749	$ -	$ -	$ -	$ -
COMPLIANCE AUDIT	$ 100,000	$ -	$ -	$ -	$ -
TOTAL ADMINISTRATIVE AND GENERAL EXPENSES	$ 14,162,394	$ -	$ -	$ -	$ -
PROPERTY TAXES	$ 959,287	$ -	$ -	$ -	$ -
CAPITAL COST RECOVERY					
PRE 2009 ASSETS	$ 24,051,926	$ -	$ -	$ -	$ -
DEBT SERVICE ON NEW ASSETS	$ 17,952,931	$ -	$ -	$ -	$ -
REVENUE FUNDED CAPITAL	$ 8,381,400	$ -	$ -	$ -	$ -
TOTAL CAPITAL COST RECOVERY	$ 50,385,657	$ -	$ -	$ -	$ -
WHOLESALE SHARE HHW&P	$ 28,903,512	$ -	$ -	$ -	$ -
WHOLESALE REVENUE REQUIREMENT	$ 140,994,734	$ -	$ -	$ -	$ -
BALANCING ACCOUNT AS OF JUNE 30	$ -	$ -	$ -	$ -	$ -
INTEREST ON BALANCING ACCOUNT	$ -	$ -	$ -	$ -	$ -
WHOLESALE REVENUES AT EXSITING RATE	$ (127,485,900)	$ -	$ -	$ -	$ -
WHOLESALE EXCESS USE CHARGES	$ -	$ -	$ -	$ -	$ -
SETTLEMENT CREDITS AND OTHER ADJUSTMENTS	$ 21,000	$ -	$ -	$ -	$ -
1984 AGREEMENT BALANCING ACCOUNT CREDITS	$ 1,997,220	$ -	$ -	$ -	$ -
WHOLESALE DEBIT SERVICE COVERAGE RESERVE	$ 4,488,233	$ -	$ -	$ -	$ -
WHOLESALE DEFICIENCY OR CREDIT	$ 20,015,287	$ -	$ -	$ -	$ -
PERCENT WHOLESALE DEFICIENCY OR CREDIT OF REVENUES AND EXCESS USE CHARGES	15.7%				
PROJECTED WATER SALES (CCF)	85,920,000	0	0	0	0
WHOLESALE DEFICIENCY OR CREDIT ($/CCF)	0.23	0	0	0	0
PROJECTED WHOLESALE RATE (UNIT COST ($/CCF)	1.66	0	0	0	0
PROJECTED SERVICE CHARGE REVENUES	$ 4,620,300				
PROJECTED VOLUME CHARGE REVENUES	$ 142,627,200				
TOTAL WHOLESALE REVENUES	$ 147,247,500				

ILLUSTRATION ONLY DRAFT

ATTACHMENT O
STATEMENT OF WHOLESALE REVENUE REQUIREMENT/ CHANGES IN BALANCING ACCOUNT
YEAR ENDED JUNE 30
(Section 7.02.B)

	FY 2008-09 Allocation to Wholesale Customers	FY 2009-10 Allocation to Wholesale Customers	Difference
Wholesale Revenue Requirement Calculation:			
Operating and maintenance (O&M) expense:			
San Francisco Water Enterprise:			
Source of supply	$ 9,133,025	$ 9,364,568	$ 231,543
Pumping	$ 325,946	$ 334,210	$ 8,264
Purification	$ 20,437,460	$ 20,821,372	$ 383,912
Transmission and distribution	$ 9,350,279	$ 15,902,690	$ 6,552,411
Customer Accounts	$ 224,255	$ 151,044	$ (73,211)
Total SFWE operating and maintenance	$ 39,470,965	$ 46,573,884	$ 7,102,919
Hetch Hetchy Water and Power (HHWP):			
Operating expenses	$ 10,359,786	$ 7,484,165	$ (2,875,621)
Maintenance expenses	$ 4,526,240	$ 4,831,890	$ 305,650
Total HHWP operating and maintenance	$ 14,886,026	$ 12,316,055	$ (2,569,971)
Administrative and general (A&G) expenses:			
COWCAP			
SFWE	$ 512,436	$ 520,855	$ 8,419
HHWP	$ 162,304	$ 348,968	$ 186,664
SF Public Utilities Commission:			
SFWE	$ 7,461,835	$ 9,770,788	$ 2,308,953
HHWP	$ 2,357,622	$ 1,959,603	$ (398,019)
Other A&G – SFWE	$ 8,234,799	$ 3,770,749	$ (4,464,050)
Other A&G – HHWP	$ -	$ 3,280,434	$ 3,280,434
Compliance audit	$ 95,338	$ 100,000	$ 4,662
Total administrative and general expenses	$ 18,824,396	$ 19,751,399	$ 927,003
Property taxes (outside city only):			
SFWE	$ 964,040	$ 969,287	$ 5,247
HHWP	$ 120,923	$ 139,732	$ 18,809
Total property taxes	$ 1,084,963	$ 1,109,019	$ 24,056
Capital Cost Recovery			
Pre-2009 Assets			
SFWE		$ 24,051,326	
HHWP		$ 3,118,033	
Debt Service on New Assets			
SFWE		$ 17,952,931	
HHWP		$ -	
Revenue Funded Assets			
SFWE		$ 8,381,400	
HHWP		$ 7,740,688	
Total Capital Cost Recovery	$ 46,378,941	$ 61,244,378	$14,865,437
Total Wholesale Revenue Requirement	$ 120,645,291	$ 140,994,735	$20,349,444
Balancing Account July 1	$ 21,176,614	$ -	
Interest on adjusted beginning balance	$ 529,415	$ -	
Wholesale revenues billed	$ (123,604,000)	$ (147,247,500)	
Excess use charges billed	$ -	$ -	
Wholesale Revenue Coverage Reserve	$ -	$ 4,488,233	
Other adjustments	$ -	$ -	
Settlement adjustments	$ 21,006	$ 21,006	
1984 Agreement Balancing Account Credits	$ -	$ 1,997,220	
Balancing Account June 30	$ 18,768,326	$ 253,694	

ILLUSTRATION ONLY DRAFT

Attachment P

REPRESENTATION LETTER

Certification Pursuant to Water Sales Agreement (the Agreement) between the City and County of San Francisco (San Francisco) and certain wholesale customers in the counties of San Mateo, Santa Clara, and Alameda (the Wholesale Customers) effective July 1, 2009.

Each of the undersigned certifies that:

1. I have reviewed San Francisco Water Department and Hetch Hetchy Water & Power Department Report on the Calculation of the Wholesale Revenue Requirement and Statement of Changes in the Balancing Account (the Statement) for the year ended June 30, 200X;

Based on my knowledge, this report and Statement do not contain any untrue statements of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by the report;

Based on my knowledge, the Statement and other financial information included in the report, fairly presents in all material respects the proper costs incurred and allocated to the Wholesale Customers in accordance with the provisions of the Agreement.

The below certifying officers and I are responsible for establishing and maintaining internal control over financial reporting and have:

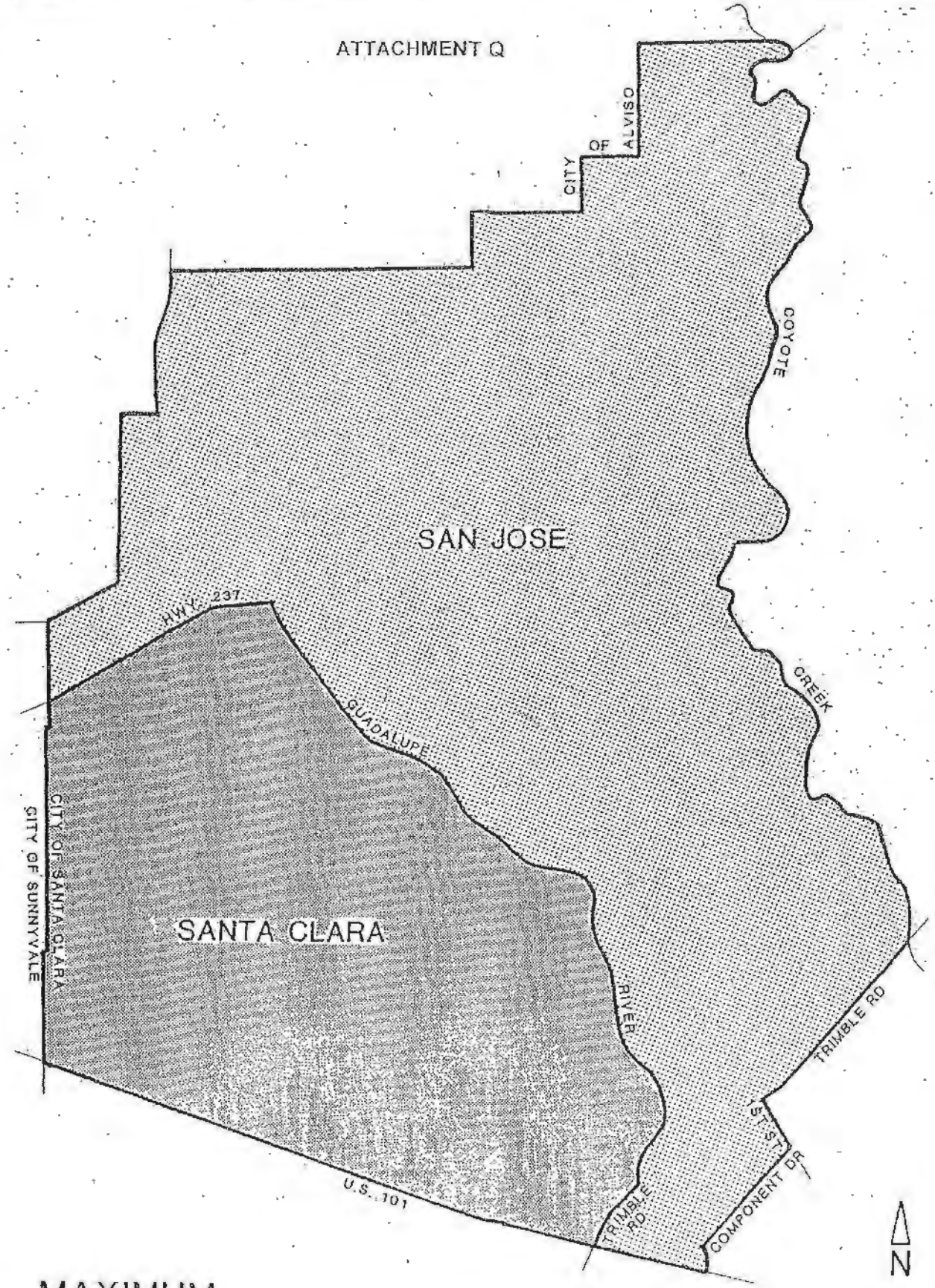
Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting for purposes of the preparation of the Statement.

Evaluated the effectiveness of the allocation procedures to ensure compliance with the terms of the Agreement.

The Statement fully complies with the contractual requirements of the Agreement and fairly presents, in all material respects, the allocation of costs to the Wholesale Customers in accordance with the Agreement.

General Manager, SFPUC	Date
Assistant General Manager & Chief Financial Officer, SFPUC	Date
Finance Director, SFPUC	Date
Accounting Manager, SFPUC	Date
Financial Planning Manager, SFPUC	Date
Senior Rates Administrator, SFPUC	Date

ATTACHMENT Q



MAXIMUM
SERVICE AREAS

APPENDIX C

South Bay Water Recycling Contract

AGREEMENT
FOR
OPERATION AND MAINTENANCE
OF
RECYCLED WATER DISTRIBUTION FACILITIES
BETWEEN CITY OF SAN JOSE
AND
CITY OF SANTA CLARA

This agreement ("Agreement ") is made and entered into on this 19th day of August, 1997 ("Effective Date"), between the City of San Jose, as Administering Agency of the Publicly Owned Treatment Works (POTW) now called the San Jose/Santa Clara Water Pollution Control Plant (WPCP) hereinafter referred to as the "Wholesaler" and the City of Santa Clara, a chartered municipal corporation of the State of California, hereinafter referred to as "City". Wholesaler and City may be referred to herein individually as a "Party" or collectively as the "Parties" or "Parties to this Agreement."

RECITALS

WHEREAS:

A. Wholesaler and City are Parties to an agreement entitled a Sewage Treatment Plant Agreement dated May 6. 1959, Master Agreements for Wastewater Treatment dated on or about March 1, 1983, First Amendments to Master Agreement for Wastewater Treatment"), dated on or about December 17, 1985, and a Second Amendment to Master Agreement for Wastewater Treatment dated on or about November 21, 1995 (collectively "Prior Agreement"), defining rights and responsibilities concerning a Publicly Owned Treatment Works (POTW) now called the San Jose/Santa Clara Water Pollution Control Plant (WPCP); and

B. Wholesaler has certain authority as the Administering Agency under the Prior Agreement and as such is entitled to all powers common both to the City of San Jose and the City of Santa Clara; and

C. On October 20, 1993 , the San Francisco Bay Regional Water Quality Control Board re-issued and revised the WPCP regulatory permit to authorize development of a 21 million gallon per day (mg) nonpotable recycling project ("Project"); and

D. The entities that discharge wastewater through the WPCP, including Wholesaler and City are supporting the development and construction of the Project, and have previously agreed to share in the capital and operation and maintenance costs of the Project;and

E. Wholesaler and City are parties to an agreement entitled "South Bay Water Recycling Program Wholesaler - Retailer Agreement for Supply of Recycled Water between the City of San Jose and the City of Santa Clara " dated June 13, 1995 ("Retailer Agreement"); and

F. Wholesaler and City are parties to an agreement entitled "Agreement for Engineering, Construction and Construction Services by and between the City of Santa Clara and the City of San Jose for Implementation of Portions of the South Bay Water Recycling Program," dated May 24, 1995 ("Construction Agreement"); and

G. Wholesaler and City are parties to an agreement entitled "Agreement for Sale of Recycled Water Distribution System between the City of San Jose and City of Santa Clara", dated February 6, 1996 ("Sale Agreement"); and

H. Wholesaler and City desire for City to perform the necessary operation and maintenance services on the facilities of the recycled water distribution system which are located within City's boundaries.

AGREEMENT PROVISIONS

For and in consideration of the mutual promises and covenants herein contained, the Parties hereto agree as follows:

ARTICLE A. INTRODUCTORY PROVISIONS

1. **Term** - The initial term of this Agreement shall commence on approval of the O & M Manual by City, as set forth in Article B, Section 1 below, and shall continue through June 30, 1998.

2. **Renewal** - This Agreement shall be automatically renewed annually, upon submission and approval by the Parties of City's annual O & M Workplan, as set forth in Article D, Section 2 below. This Agreement shall automatically terminate at the end of the last Fiscal Year (June 30th) for which a City O & M Workplan is approved, if City's O & M Workplan for the following Fiscal Year has not been approved by both Parties.

3. **Termination** - This Agreement may be terminated for convenience by either Party upon six months written advance notice to the other Party. This Agreement may be terminated at any other time as mutually agreed to by the Parties. This Agreement may be terminated by either Party in the event of default by the other Party, pursuant to Article F, Section 9 below.

ARTICLE B. SCOPE OF SERVICES TO BE PROVIDED BY CITY

1. **Performance Standards** - City shall operate and maintain all recycled water pipelines and fixed equipment, including valves, pumps, reservoirs, sampling points, Wholesaler-owned meters, and related appurtenances, located within City and originating from the WPCP and terminating at the downstream side of curb stop or water valve at customer retail meter ("Distribution Facilities") in a professional manner and in compliance with applicable permits, laws, regulations, and the O & M Manual, so as to continue the availability of recycled water to the City's customers, within the system protocols, including possible flow reductions. "O&M Manual" shall mean the Operations and Maintenance Manual, which will include guidelines for operating and maintaining the Distribution Facilities, and is to be prepared and updated from time to time by Wholesaler and reviewed and approved by City prior to performance of services by City.

2. **Staffing** - City shall be responsible for providing emergency on-call services 7 days per week, 24 hours per day with personnel trained in the routine and/or repetitive repair and replacement activities necessary to maintain the Distribution Facilities in good operating condition, including all activities required or recommended by any equipment manufacturer; all activities required to ensure compliance with regulatory requirements, except as specifically assigned to Wholesaler under this Agreement; and all activities approved by Wholesaler and City to maximize the useful life of the Distribution Facilities.

3. **Service Area** - Boundaries of area for O & M services to be provided under this Agreement are set forth in EXHIBIT A which is attached hereto and incorporated by reference herein.

4. **Response Procedure** - City shall respond effectively to field problems and complaints in a manner consistent with the City's established response procedures for City's potable water service.

5. **Basic Services** - City shall provide the following as "Basic Services":

   a. Operation and Maintenance of Distribution Facilities, in accordance with the Performance Standards set forth in Article B, Section 1 above, including but not limited to provision of all chemicals. contract services and replacement parts; and other consumables used directly for operation and maintenance activities and disposal of all waste matter, including construction spoils, waste chemicals and lubricants, contaminated water, etc. generated as a result of operation and maintenance activities.

   b. Security and inspection of Distribution Facilities.

   c. Ongoing data entry for a computerized maintenance management system, on hardware and software provided by the Wholesaler.

   d. Locating mains and services, including underground service alert locating and marking.

   e. Coordinate work with Wholesaler and other operation and maintenance service providers.

f. Maintain operation and maintenance records, including time and cost accounts.

g. Maintain inventory of capital equipment involving Wholesaler funds.

h. Maintain as-built drawings of Distribution Facilities and periodically provide updated drawings to Wholesaler.

i. Monitoring and enforcement activities relating to customer use of recycled water, during the hours of the standard workshift for City's potable water system, including: any routine inspections required under Title 22 of the California Administrative Code; reconnaissance and policing to prevent overspray and cross connections and to protect aesthetics; and review and inspection of customer facility plan and specifications.

6. **Emergency Services** - City shall provide such non-routine and/or non-repetitive activities required for operational continuity, safety and performance generally due to a failure, or to avert a failure of, the Distribution Facilities, caused by an event which occurs beyond the control of City. ("Emergency Repair and Replacement Services");provided, however, that City shall not be required to incur costs to perform Emergency Repair and Replacement Services beyond the amount contained in City's approved O & M Workplan. City shall give immediate verbal notice to Wholesaler of any emergency situation that occurs between 8:00 a.m. - 4:30 p.m. weekdays, and shall call the Wholesaler's Emergency Operator, after hours, weekends, and holidays, with follow-up written confirmation by personal delivery or fax on the same day verbal notice is given, or on the next business day if verbal notice is not given during business hours. City shall only perform Emergency Repair and Replacement Activities prior to notifying Wholesaler, when necessary to protect health, safety or property or for the continued delivery of recycled water to the Retailer's customer(s). City shall provide Wholesaler with a written report detailing any Emergency Repair and Replacement Services by the end of the next business day following commencement of such Emergency Repair and Replacement Services.

7. **Supplemental Services** - City shall provide, the following as "Supplemental Services", upon request by Wholesaler and agreement by

the Parties as to the compensation to be paid for such Supplemental Service through inclusion in the O & M Workplan :

a. Recycled water sampling and analysis.

b. Supervision and inspection of work done by Wholesaler's contractor.

c. Written cost estimates for capital improvements.

d. Operation and maintenance of ground water monitoring well(s) that are part of the SBWRP.

e. Periodic test and inspection of on-site facilities.

f. Cathodic protection testing and maintenance.

g. Customer retrofit plans and new plan review and approval, and inspections.

8. **Coordination of Services** - City shall at all times maintain communication with Wholesaler and other O & M service providers. City shall notify Wholesaler at least 48 hours in advance of any planned operations and miantenance activity which will sustantially reduce the delivery of recycled water.

ARTICLE C. WHOLESALER RESPONSIBILITIES

1. **Operational and Administrative Responsibilities** - Wholesaler shall be responsible for operation and maintenance of all Project facilities except Distribution Facilities, including coordination of operations and maintenance distribution facilities located outside City by other service providers, in a professional manner and in compliance with applicable permits, laws, regulations, and the O & M Manual, so as to continue the availability of recycled water to the City's customers, within the system protocols, including possible flow reductions.; coordination with Treatment Plant Advisory Committee and San Jose City Council; except as specifically delegated to City herein, regulatory compliance, including compliance with Water Reclamation Blanket Permit; emergency

operations management; and dispatch functions, when necessitated by abnormal operating conditions of the Distribution Facilities.

2. **External Payments** -. Wholesaler shall be responsible for the supply of power to Distribution Facilities and shall directly pay all gas and electric bills incurred in operation of Distribution Facilities. Wholesaler shall also be responsible for payment of all costs and fees imposed by state or county regulatory agencies related to testing, sampling, plan review, inspection, monitoring and permit compliance, and for direct payment to any subcontractors that are contracted directly by the Wholesaler.

3. **Notice of Service Reduction** - Wholesaler shall notify City at least forty eight (48) hours in advance of any Wholesaler planned operations and maintenance activity which will substantially reduce delivery of recycled water.

ARTICLE D. COMPENSATION

1. For the purpose of determining compensation under this Article D, the following definitions shall apply:

   (a) "Administrative Overhead" shall mean costs incurred by City to provide administrative support for work performed pursuant to this Agreement. Administrative Overhead may include office supplies and equipment such as computers and printers, and photocopying services.

   (b) "Direct Labor" shall mean wages paid by City to a City employee for work performed pursuant to this Agreement, based on hours worked, exclusive of retirement and other benefits.

   (c) "Direct Labor Overhead" shall mean compensation paid by City to a City employee, for work performed pursuant to this Agreement, other than wages, including but not limited to paid holidays, vacation and sick leave pay, retirement, life insurance, and medical insurance.

(d) "Direct Supplies" shall mean all chemicals and other consumables used directly for O & M activities.

2. **Annual Workplan** - On or before March 1 of each year during the term of this Agreement, City shall submit a written annual workplan ("O & M Workplan") to Wholesaler for approval. The O & M Workplan shall describe the resources that City plans to utilize during the succeeding fiscal year for the performance of work required under this Agreement, including any Supplemental Services that City anticipates providing. The O & M Workplan shall include City's budgetary estimate for Basic Services to be performed by City pursuant to this Agreement in the succeeding fiscal year. In addition, the O & M Workplan shall include a budgetary contingency for Emergency Repair and Replacement Services to be performed by City pursuant to this Agreement in the succeeding fiscal year, and a budgetary estimate for any Supplemental Services which City proposes to perform in the succeeding fiscal year. City's budgetary estimates shall be prepared using a format and level of detail to be agreed upon by the parties which will allow the budgetary estimates to be incorporated into the annual WPCP operating budget. The O & M Workplan, shall be considered and approved by Wholesaler as part of the annual WPCP operating budget process. Any modifications made during the budget process by Wholesaler to the budgetary estimates provided in the O & M Workplan shall be subject to approval by both parties.

3. **Mid-Year Plan Adjustments**- In the event that City or Wholesaler should determine that mid-year amendment of City's O & M Workplan is necessary to add Supplemental Services not included in City's approved O & M Workplan, or to increase the funding for Emergency Repair and Replacement Services, either City or Wholesaler may propose a mid-year Workplan adjustment, which shall be considered as part of the mid-year WPCP operating budget adjustment process.

4. **Compensation for Basic and Supplemental Services** - Compensation for Basic Services and Supplemental Services payments shall be based on City's O & M Workplan, as approved by Wholesaler, for such services.

5. **Compensation for Emergency Repair and Replacement Services** - Wholesaler shall pay City for Emergency Repair and Replacement Services, based on the actual cost incurred by City to perform Emergency Repair and Replacement Services, including City's Direct Labor Cost, Direct Labor Overhead, Direct Supplies, and Administrative Overhead, up to total amount set forth in City's approved Workplan for such Emergency Repair and Replacement Services.

6. **Payment** - Payment for Basic Services, Supplemental Services, and Emergency Repair and Replacement Services for the current fiscal year (July 1 through June 30) shall be made in two equal installments, September 1 and January 1. The City shall present invoices at least thirty (30) days prior to the date payment is due. The invoices shall indicate separately the compensation for Basic Services and Supplemental Services. Wholesaler shall make payment to City in the amount of the invoice by the due date or within forty five (45) days of receipt of the invoice, whichever is later . The format of the invoice shall be as mutually agreed upon by both Parties

7. **Payment Adjustment** - At the time that the January 1 invoice is submitted, as indicated in Article D.3. above, City shall provide Wholesaler with a statement regarding the amount actually expended by City for provision of Basic Services, Supplemental Services and Emergency Repair and Replacement Services in accordance with this Agreement during the preceding fiscal year. The statement shall itemize the amounts expended by City for Direct Labor, Direct Labor Overhead, Direct Supplies and Administrative Overhead in the preceding fiscal year. Administrative Overhead shall not exceed sixteen percent (16%) of Direct Labor. In the event that the total of City's expenditures for Direct Labor, Direct Labor Overhead, Direct Supplies and Administrative Overhead are less than the sum of all payments made by Wholesaler to City pursuant to this Agreement during the preceding fiscal year, Wholesaler shall be entitled to a credit on the next payment to be made to City under this Agreement, in the amount of the excess of total payments over costs.

8. **Audits and Access** - Wholesaler shall have the right to conduct an audit and evaluation of the City's operations and maintenance performance, including operations, activities, and records. City agrees to fully cooperate with any such audit. Wholesaler may employ consultants at the Wholesaler's expense to assist City in the audit. City shall give Wholesaler access to the Distribution Facilities and its records at all reasonable times with reasonable notice.

ARTICLE F. GENERAL PROVISIONS

1. **Ownership** - Wholesaler shall be the sole owner of the Distribution Facilities and Wholesaler shall be responsible for any damage or destruction caused by or to the Distribution Facilities, except for damage or destruction caused by City's failure to operate and maintain the Distribution Facilities as required under this Agreement. Customer meters may be owned by City or customer and Wholesaler shall have no responsibility for any damage or destruction caused by or to meters. On-site facilities shall be owned by the recycled water customer.

2. **Use of Streets, Easements and Rights of Way**- Wholesaler shall have a perpetual non-exclusive easement in City streets, easements and rights of way for operation and maintenance of the Distribution Facilities within City limits, without payment of any fee or charge to City, except as set forth in this Agreement. City shall have the perpetual non-exclusive right to use any easements and rights of way acquired by Wholesaler for operation of the Distribution Facilities, to the extent permitted under the terms of the acquisition, for such uses as do not conflict with operation and maintenance of the Distribution Facilities. This provision shall survive the termination of this Agreement.

3. **Relocation of Facilities** - Except for Distribution Facilities located within easements or rights of way owned by Wholesaler, if City determines that modification of City owned or operated improvements which are located in City streets, easements or rights of way prior to the installation of the Distribution Facilites, necessitate the relocation of the Distribution Facilities, Wholesaler shall relocate the Distribution Facilities to a suitable

location at Wholesaler's cost and expense. In the event that Wholesaler modification of Distribution Facilities in Wholesaler owned easements or rights of way necessitate the relocation of the City facilities located in such easements or rights of way, City shall relocate such facilities to a suitable location at City's cost and expense. Each Party shall notify the other Party as soon as the need for a relocation of facilities is identified, Relocation shall occur within eighteen (18) months of receiving written

4. **Licenses and Permits** - Licenses or permits, including encroachment permits, necessary for operation and maintenance of the Distribution Facilities within the O & M Area, may be held in the name of either or both Parties, with the understanding that each Party shall be entitled to exercise any right provided to either of the Parties under the permit or license to the extent necessary to perform its obligations under this Agreement. Any work within the City of Milpitas requires an encroachment permit and construction permit from City. Wholesaler shall be responsible for payment of all costs or fees associated with any such licenses or permits.

5. **Indemnification** - Wholesaler shall hold City, its City Council, officers, agents and employees, free and harmless from any and all costs, liability, damages or health-related claims arising out of any act or omission to act, including any negligent act, by Wholesaler, its officers, agents or employees arising out of the Wholesaler's performance of its obligations under this Agreement. City shall hold Wholesaler, its officers, agents and employees, free and harmless from any and all cost liability, damages or health-related claims arising out of any act or omission to act, including any negligent act, by City, its officers, agents or employees arising out of the City's performance of its obligations under this Agreement. Nothing contained herein shall be construed, however, as a waiver of any immunities or defenses that either party may have under applicable provisions of the California Tort Claims Act (Government code Section 810 et seq.)

6. **Insurance** - Each of the Parties is self insured. Each Party agrees to provide the other with a certificate of self insurance, confirming that its self

insurance program provides coverage equivalent to the insurance requirements set forth in Exhibit B, which is attached hereto and incorporated by reference herein.

7. **Means of Communication** - Wholesaler and City shall conduct communications through the most appropriate means. Wholesaler and City shall maintain means of communication among the following: telephone, facsimile machine, electronic mail, computer network, two-way radio, cellular telephone, and pagers.

8. **Notices** - All notices or other writings in this Agreement provided to be given or made or sent, or which may be given or made or sent, by either Party to the other, shall be deemed to have been given or made or sent when made in writing and deposited in the United States mail, registered, or certified, postage prepaid, and addressed as follows:

Wholesaler:	Director, Environmental Services Department SJ/SC Water Pollution Control Plant 700 Los Esteros Road San Jose, California 95134 telephone number: (408)945-5300 fax number: (408)9945-5442
City:	Director Water and Sewer Utilities City of Santa Clara 1500 Warburton Ave. Santa Clara CA. 95050 telephone number: (408)984-3183 fax number: (408)247-0784

The address to which any notice or other writing may be given or made or sent to either Party may be changed upon written notice given by such Party as above provided.

9. **Reasonable Cooperation** - If any third party claim is made against either or both Parties relating in any way to the receipt, distribution or use of

recycled water hereunder, each Party agrees to provide reasonable cooperation to the other Party under the circumstances in the defense of such claims in any proceeding, including without limitation, arbitration, judicial proceedings or administrative proceedings.

10. **Default** - In addition to all other rights and remedies that either Party may have in the event of a default under this Agreement, the non defaulting Party may provide a written notice of default to the defaulting Party, specifying the nature of the default and demanding that the default be corrected as soon as reasonably practicable. If the default cannot reasonably be corrected within thirty (30) days of the date of the notice, the defaulting party shall be responsible for commencing the correction and providing the non-defaulting party with a schedule for completing the correction within thirty (30) days of the date of the notice . If a material default is not corrected within thirty (30) days of the date of a notice of default, or a schedule for correction is not provided within said thirty (30) day period and correction is not completed within such additional reasonable time as may be set forth in the schedule provided by the defaulting Party, the nondefaulting Party may, at its sole option, in addition to any and all other remedies it may have in law or equity, terminate this Agreement immediately by providing written notice of termination to the defaulting Party; provided, however, City shall be compensated for all services provided and all costs incurred hereunder as of such termination date.

11. **Force Majeure** - The Parties shall be excused from strict performance hereunder, to the extent that performance is impeded or prevented by occurrence of force majeure, which shall be deemed to include, without limitation, act of God, acts of local, federal or state government in either its sovereign or contractual capacity, fire, flood, earthquake, epidemic, war, labor disputes, and any other similar cause beyond the control of the responsible Party .

12. **Dispute Resolution** - Any controversies between Parties regarding the construction or application of this Agreement, and claims arising out of this Agreement or its breach, shall be submitted to mediation within 30

days of the written request of one Party after the service of that request on the other Party. The Parties may agree on one mediator. If they cannot agree on one mediator, the Party demanding mediation shall request that the Superior Court of Santa Clara County appoint a mediator. The mediation meeting shall not exceed one day (eight hours). The Parties may agree to extend the time allowed for mediation under this Agreement. The costs of mediation shall be borne by the Parties equally. Mediation under this section is a condition precedent to filing an action in any court.

13. **Waiver of Rights** - Any waiver at any time by either Party of its rights with respect to a default or any other matter arising in connection with this Agreement shall not be deemed to be a waiver with respect to any other default or matter. None of the covenants or agreements contained in this Agreement can be waived except by the written consent of the waiving Party.

14. **Severability** - If any one or more of the covenants or terms and conditions set forth in this Agreement on the part of either Wholesaler or City, or both of them, to be performed should be contrary to any provision of law or contrary to the policy of law to such extent as to be unenforceable in any court of competent jurisdiction, then such covenant(s), and/or terms and conditions, shall be deemed to be null and void and shall be deemed separable from the remaining covenant(s) and/or terms and conditions and shall in no way affect the validity of this Agreement.

15. **Paragraph Headings** - Paragraph headings in this Agreement are for convenience only and are not to be construed as a part of this Agreement or in any way limiting or amplifying the provisions hereof.

16. **Successors and Assigns** - Subject to the provisions of the succeeding Section 16 hereof, this Agreement and all the covenants, terms and conditions herein contained shall inure to the benefit of and be binding upon the successors and assigns of the Parties.

17. **Assignment** - No assignment or transfer by either Party of this Agreement or any part hereof, or of any rights or obligations hereunder or interest herein, shall be valid unless approved by the other Party, which approval each Party agrees shall not be unreasonably withheld. The foregoing provisions of this Section 16 to the contrary notwithstanding, no consent shall be required on an assignment to a public agency with the power of eminent domain; provided, such public agency expressly assumes the obligations of this Agreement and provided, further, that if said public agency assumes only a portion of the obligations of this Agreement, City shall remain obligated for the remainder of such obligation. The City shall provide written notification to the Wholesaler of such assignment.

18. **Governing Law and Venue-** This Agreement shall be governed, construed and enforced in accordance with the laws of the State of California. In the event that suit shall be brought by either Party to this Agreement, the Parties agree that venue shall be exclusively in the state courts of the County of Santa Clara, or where otherwise appropriate; exclusively in the United States District court, Northern District, San Jose, California.

19. **Integrated Agreement** - There are no understandings or agreements between the parties as to matters covered by this Agreement except as herein expressly stated.

The Parties acknowledge and accept the terms and conditions of this Agreement as evidenced by the following signatures of their duly authorized representatives. It is the intent of the Parties that this Agreement shall become operative on the Effective Date.

CITY OF SAN JOSE, CALIFORNIA

APPROVED AS TO FORM:

MOLLIE J. DENT
Senior Deputy City Attorney

CITY OF SAN JOSE, a municipal corporation

By _____
REGINA V.K. WILLIAMS
City Manager

CITY OF SANTA CLARA, CALIFORNIA

APPROVED AS TO FORM:

ROLAND D. PFEIFER
Assistant City Attorney

ATTEST:

JUDY BOCCIGNONE
City Clerk

CITY OF SANTA CLARA, a municipal corporation

By _____
JENNIFER SPARACINO
City Manager

1500 Warburton Avenue
Santa Clara, CA. 95050

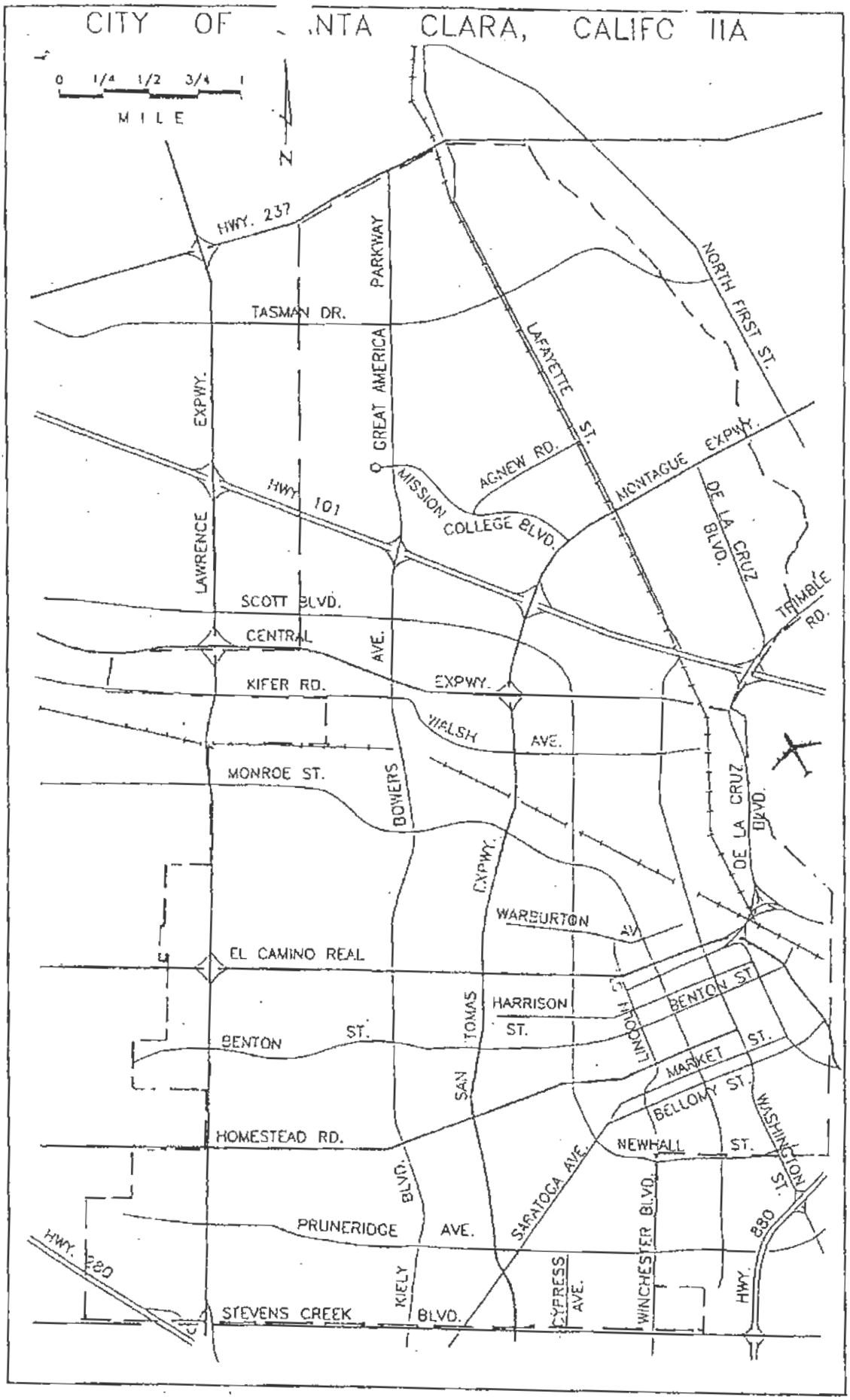
37977_4.DOC

WHOLESALER - CITY AGREEMENT
FOR
OPERATION AND MAINTENANCE
OF
RECYCLED WATER DISTRIBUTION FACILITIES

BETWEEN CITY OF SAN JOSE
AND
CITY OF SANTA CLARA

EXHIBIT A

DISTRIBUTION FACILITIES BOUNDARIES FOR CITY'S O&M AREA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NORTH FIRST ST.
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MONTAGUE EXPWY.
DE LA CRUZ BLVD.
TRIMBLE RD.
LAWRENCE
SCOTT BLVD.
CENTRAL
AVE.
KIFER RD.
EXPWY.
WALSH AVE.
MONROE ST.
BOWERS
DE LA CRUZ BLVD.
EXPWY.
WARBURTON AV.
EL CAMINO REAL
HARRISON ST.
BENTON ST.
BENTON ST.
SAN TOMAS
LINCOLN
MARKET ST.
BELLOMY ST.
WASHINGTON ST.
HOMESTEAD RD.
NEWHALL ST.
BLVD.
SARATOGA AVE.
WINCHESTER BLVD.
880
PRUNERIDGE AVE.
HWY. 280
KIELY BLVD.
CYPRESS AVE.
HWY.
STEVENS CREEK

EXHIBIT A

A-2

APPENDIX D

The proposed Project water demand and impacts were calculated using the following data:

1) 4,000 square feet of office space at 0.140 gpd/square foot = 560.0 gpd
   = 204,400 gpy = 0.6 acre ft/yr
2) 27,000 square feet of retail space at 0.076 gpd/square foot = 2,052.0 gpd
   = 748,980 gpy = 2.3 acre ft/yr [a]
3) 6,000 square feet of amenity space at 0.11 gpd/square foot = 660.0 gpd
   = 240,900 gpy = 0.7 acre ft/yr [b]
4) 50,000 square feet of irrigation at 0.077 gpd/square foot = 3,850 gpd
   = 1,405,250 gpy = 4.3 acre ft/yr [c]
5) 385 multifamily residential units at 121 gpd/unit = 46,585 gpd
   = 17,003,525 gpy = 52.2 acre ft/yr
6) Total = 19,603,055 gpy =60.2 acre ft/yr
7) Average Historical Use: 2005-2010 = 1.7 acre ft/yr
8) Increase Water Demand for Project –
   Total Projected Demand (60.2 acre ft/yr) - Historical Use (1.7 acre ft/yr) = 58.4 acre ft/yr

[a] 0.076 gallons/sf/day is the estimate that is based on information from BKF Engineers and is consistent with the City's existing factor for retail space.

[b] Amenity space demand is calculated using a factor for community centers. Mission Town Center project managers/engineers have verified that amenity space will function similar to community centers.

[c] 0.077 gallons/sf/day is the estimate that is based on information from Department of Water Resources – Water Budget Workbook – Calculation of Maximum Applied Water Allowance (MAWA) based on Model Water Efficiency Landscape Ordinance

APPENDIX E

Project	Address	Number	Units	Use	Water Demand Rate unit/day	Water Demand gallons/year	Water Demand (acre feet/year)	Existing Demand (acre feet/year)	Demand Delta (acre feet/year)	Recycled water available	Anticipated year built	Calendar year soonest	Calendar year latest
3000 Bowers Avenue*	3000 Bowers Avenue	300,000	sq. ft.	Office	54,000.00 gal/day	19,710,000.00	60.5	0.7	143.99	No	1-3 years	2013	2015
		92,925	sq. ft.	Irrigation	75,176.30 gal/day	27,439,358.60	84.2						
2200 Lawson Lane*	2200 Lawson Lane	300,000	sq. ft.	Office	54,000.00 gal/day	19,710,000.00	60.5	5.8	141.09	No	1-3 years	2014	2016
		95,300	sq. ft.	Irrigation	77,097.70 gal/day	28,140,660.50	86.4						
4301, 4401, 4551 Great America Pkwy	4301, 4401, 4551 Great America Pkwy	718,000	sq. ft.	Office	129,240.0 gal/day	47,172,600.00	144.8	1.9	350.6	Yes	1-5 years	2014	2016
		229,239	sq. ft.	Irrigation	185,454.40 gal/day	67,690,838.10	207.7						
3700 El Camino Real	3700 El Camino Real	475	Dwelling units	Residential	142,500.0 gal/day	52,012,500.00	159.6	1.2	286.3	No	2 years	2016	2019
		86,388	sq. ft.	Retail	6,565.5 gal/day	2,396,403.10	7.4						
		133,000	sq. ft.	Irrigation	107,597.0 gal/day	39,272,905.00	120.5						
3333 Scott Blvd.	3333 Scott Blvd.	1,358,647	sq. ft.	Office	190,211 gal/day	69,427,015	213.1	9.5	240.1	Yes	1-3 years	2015	2017
		284,000	sq. ft.	Irrigation	24,140 gal/day	8,811,100	27						

Project	Address	Number	Units	Use	Water Demand Rate unit/day	Water Demand gallons/year	Water Demand (acre feet/year)	Existing Demand (acre feet/year)	Demand Delta (acre feet/year)	Recycled water available	Anticipated year built	Calendar year soonest	Calendar year latest
3515 Monroe St.	3515 Monroe St.	825	Dwelling units	Residential	141,075.0 gal/day	51,492,375.00	158	6.1	179.6	No	1-2 years	2015	2017
		14,929	sq. ft.	Amenity Space	1134.6 gal/day	414,130.50	1.3						
		15,200	sq. ft.	Retail	1,155.20 gal/day	421,648.00	1.3						
		20,000	sq. ft.	Market	4,800.00 gal/day	1,752,000.00	5.4						
		5,000	sq. ft.	Restaurant	5,200.00 gal/day	1,898,000.00	5.8						
		161,483	sq. ft.	Irrigation	12,434.20 gal/day	4,538,479.70	13.9						
Santa Clara Square	2465-2727 Augustine 3333 Bowers	138,000	sq. ft.	Retail	10,488.00 gal/day	3,828,120.00	11.7	46.8	314.1	Yes	1-2 years	2014	2015
		1,862,100	sq. ft.	Office	260,694.00 gal/day	95,153,310.00	292						
		503,900	sq. ft.	Irrigation (Recycled)	38,800.30 gal/day	14,162,109.50	43.5						
		158,000	sq. ft.	Irrigation (Potable)	12,166.00 gal/day	4,440,590.00	13.6						
City Place Parcel 5 (Phase 1)	TBD	258,000	sq. ft.	Office	36,120 gal/day	13,183,800.00	40.5	311.3	(78.3)	Yes	3 years	2019	2019
		87,000	sq. ft.	Retail	6,612 gal/day	2,413,380.00	7.4						
		280,000	sq. ft.	Hotel	134,400 gal/day	49,056,000.00	150.5						
		87,100	sq. ft.	Irrigation	87,100 gal/day	2,447,945.50	7.5						
		200	Dwelling units	Residential	24,200 gal/day	8,833,000.00	27.1						

City Place – Scheme A (only one scheme will be developed)

Project	Address	Number	Units	Use	Water Demand Rate unit/day	Water Demand gallons/year	Water Demand (acre feet/year)	Existing Demand (acre feet/year)	Demand Delta (acre feet/year)	Recycled water available	Anticipated year built	Calendar year soonest	Calendar year latest
City Place Parcel 4 (Phases 2-4)	TBD	1,386,400	sq. ft.	Office	194,096.0 gal/day	70,845,040.0	217.4	0*	775.6	Yes	3-6 years	2020	2023
		1,415,000	sq. ft.	Retail	107,540.0 gal/day	39,252,100.0	120.5						
		298,000	sq. ft.	Hotel	143,040.0 gal/day	52,209,600.0	160.2						
		1,393,900	sq. ft.	Irrigation	107,330.3 gal/day	51,231,400.0	120.2						
		1,160	Dwelling units	Residential	140,360.0 gal/day	51,231,400.0	157.2						
City Place Parcel 3 (Phase 5)	TBD	720,000	sq. ft.	Office	100,800.0 gal/day	36,792,000.0	112.9	0*	192.9	Yes	3 years	2025	2025
		927,800	sq. ft.	Irrigation	71,440.6 gal/day	26,075,819.0	80.0						
City Place Parcel 1 (Phase 6)	TBD	1,200,000	sq. ft.	Office	168,000.0 gal/day	61,320,000.0	11.7	0*	259.9	Yes	3 years	2027	2027
		832,000	sq. ft.	Irrigation	64,064.0 gal/day	23,383,360.0	71.8						
City Place Parcel 2 (Phase 7)	TBD	1,080,000	sq. ft.	Office	151,200.0 gal/day	55,188,000.0	169.4	0*	224.6	Yes	3 years	2029	2029
		640,350	sq. ft.	Irrigation	49,306.95 gal/day	17,997,036.75	55.2						
City Place Parcel 2 (Phase 8)	TBD	1,080,000	sq. ft.	Office	151,200.0 gal/day	55,188,000.0	169.4	0*	224.6	Yes	3 years	2031	2031
		640,350	sq. ft.	Irrigation	49,306.95 gal/day	17,997,036.75	55.2						

* Existing demand accounted for in Phase 1 of City Place project

City Place – Scheme B (only one scheme will be developed)

Project	Address	Number	Units	Use	Water Demand Rate unit/day	Water Demand gallons/year	Water Demand (acre feet/year)	Existing Demand (acre feet/year)	Demand Delta (acre feet/year)	Recycled water available	Anticipated year built	Calendar year soonest	Calendar year latest
City Place Parcel 5 (Phase 1)	TBD	258,000	sq. ft.	Office	36,120 gal/day	13,183,800.00	40.5	311.3	(78.3)	Yes	3 years	2019	2019
		87,000	sq. ft.	Retail	6,612 gal/day	2,413,380.00	7.4						
		280,000	sq. ft.	Hotel	134,400 gal/day	49,056,000.00	150.5						
		87,100	sq. ft.	Irrigation	87,100 gal/day	2,447,945.50	7.5						
		200	Dwelling units	Residential	24,200 gal/day	8,833,000.00	27.1						
City Place Parcel 4 (Phases 2-4)	TBD	2,546,400	sq. ft.	Office	356,496.0 gal/day	130,121,040.0	399.3	0*	800.2	Yes	3-6 years	2020	2023
		1,415,000	sq. ft.	Retail	107,540.0 gal/day	39,252,100.0	120.5						
		298,000	sq. ft.	Hotel	143,040.0 gal/day	52,209,600.0	160.2						
		1,393,900	sq. ft.	Irrigation	107,330.3 gal/day	51,231,400.0	120.2						
City Place Parcel 3 (Phase 5)	TBD	720,000	sq. ft.	Office	100,800.0 gal/day	36,792,000.0	112.9	0*	192.9	Yes	3 years	2025	2025
		927,800	sq. ft.	Irrigation	71,440.6 gal/day	26,075,819.0	80.0						
City Place Parcel 1 (Phase 6)	TBD	1,200,000	sq. ft.	Office	168,000.0 gal/day	61,320,000.0	11.7	0*	259.9	Yes	3 years	2027	2027
		832,000	sq. ft.	Irrigation	64,064.0 gal/day	23,383,360.0	71.8						
City Place Parcel 2 (Phase 7)	TBD	980,000	sq. ft.	Office	137,200.0 gal/day	50,078,000.0	153.7	0*	217.4	Yes	3 years	2029	2029
		100,000	sq. ft.	Retail	7,600.0 gal/day	2,774,000.0	8.5						
		640,350	sq. ft.	Irrigation	49,306.95 gal/day	17,997,036.75	55.2						

Project	Address	Number	Units	Use	Water Demand Rate unit/day	Water Demand gallons/year	Water Demand (acre feet/year)	Existing Demand (acre feet/year)	Demand Delta (acre feet/year)	Recycled water available	Anticipated year built	Calendar year soonest	Calendar year latest
City Place Parcel 2 (Phase 8)	TBD	980,000	sq. ft.	Office	137,200.0 gal/day	50,078,000.0	153.7	0*	217.4	Yes	3 years	2031	2031
		100,000	sq. ft.	Retail	7,600.0 gal/day	2,774,000.0	8.5						
		640,350	sq. ft.	Irrigation	49,306.95 gal/day	17,997,036.75	55.2						
Santa Clara Square Apartments	TBD	4,500	sq. ft.	Office	630.0 gal/day	229,950.0	0.7	119.5	169.6	Yes	3 years	2018	2018
		40,000	sq. ft.	Retail	3,040.0 gal/day	1,109,600.0	3.4						
		38,000	sq. ft.	Amenity	4,180.0 gal/day	1,525,700.0	4.7						
		422,000	sq. ft.	Irrigation	32,494.0 gal/day	11,860,310.0	36.4						
		1,800	Dwelling units	Residential	217,800.0 gal/day	79,497,000.0	244.0						
Mission Town Center	TBD	4,000	sq. ft.	Office	560.0 gal/day	204,400.0	0.6	1.7	58.4	No	2-3 years	2018	2018
		27,000	sq. ft.	Retail	2,052.0 gal/day	748,980.0	2.3						
		6,000	sq. ft.	Amenity	660.0 gal/day	240,900.0	0.7						
		50,000	sq. ft.	Irrigation	3,850.0 gal/day	1,405,250.0	4.3						
		385	Dwelling units	Residential	46,585.0 gal/day	17,003,525.0	52.2						

* Existing demand accounted for in Phase 1 of City Place project

** Water demand for the table has been updated for office space per average daily flow of 0.140 gpd/sf versus the estimated peak water demand at 95% (0.482 mgd)

APPENDIX 4.10

Other Resource Topics

Biological Resource Assessment

Biological Resources Assessment

Mission Town Center Redevelopment Project
Santa Clara, Santa Clara County, California

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May 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

BCC	USFWS Birds of Conservation Concern
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
Inventory	CNPS Inventory of Rare and Endangered Plants
MBTA	Migratory Bird treaty Act of 1918
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
Rank	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
SSC	CDFW Species of Special Concern
SSI	CDFW Special Status Invertebrates
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WBWG	Western Bat Working Group
WRA	WRA, Inc.

EXECUTIVE SUMMARY

The purpose of this report is to provide an analysis of any natural communities and special-status species issues at the proposed Mission Town Center Project Area in Santa Clara, Santa Clara County, California.

On March 04, 2015, WRA, Inc. (WRA) conducted a biological resources assessment within the Mission Town Square Project Area in downtown Santa Clara. WRA observed 17 plant species and 11 wildlife species during the site assessment. No sensitive biological communities were identified during the site assessment. No special-status plant or wildlife species were observed during the site assessment.

The proposed Project has no potential to impact sensitive communities because the Project Area is comprised entirely of developed land, and no sensitive communities exist within the boundaries of the Project Area. Additionally, the proposed Project has no potential to impact special-status plant or wildlife species due primarily to the fully developed urban landscape within the Project Area. The proposed Project does have the potential to impact non-special-status native bird species. However, with the incorporation of the prescribed surveys and avoidance measures described herein, potential impacts to non-special-status native bird species will be reduced to less than significant.

1.0 INTRODUCTION

On March 04, 2015, WRA, Inc. performed an assessment of the biological resources at the Mission Town Square Redevelopment Project (Project) site in Santa Clara, Santa Clara County, California (Project Area; Figure 1). The Project Area is bound by El Camino Real, The Alameda and Benton Street, forming a roughly triangular area of approximately 6.5 acres near downtown Santa Clara. The purpose of the assessment was to gather information necessary to complete a review of biological resources under the California Environmental Quality Act (CEQA). This report describes the results of the site visit, which assessed the Project Area for the (1) potential to support special-status species; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains an evaluation of potential impacts to sensitive biological resources that may occur as a result of the proposed Project, and potential mitigation measures to compensate for those impacts.

A biological resources assessment provides general information on the potential presence of sensitive species and habitats. The biological resource assessment is not an official protocol-level survey for listed species that may be required for project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations such as the Clean Water Act; state regulations such as the Porter-Cologne Act, the California Department of Fish and Wildlife (CDFW) Streambed Alteration Program, and CEQA; or local ordinances or policies such as city or county tree ordinances, Special Habitat Management Areas, and General Plan Elements.

<u>Waters of the United States</u>

The U.S. Army Corps of Engineers (Corps) regulates “Waters of the United States” under Section 404 of the Clean Water Act. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “other waters” and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Figure 1. Project Area Location Map

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ENVIRONMENTAL CONSULTANTS

Mission Town Center
Santa Clara County, California

Map Date: January 2013
Map By: Derek Chan
Base Source: ESRI/National Geographic

Path: L:\Acad 2000 Files\23000\23013-4\GIS\ArcMap\Fig1_LocMap_20150319.mxd

Waters of the State

The term “Waters of the State” is defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes “isolated” wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). “Riparian” is defined as “on, or pertaining to, the banks of a stream.” Riparian vegetation is defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

Essential Fish Habitat

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA). Protection of EFH is mandated through changes implemented in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" [16 USC 1802(10)]. NMFS further defines essential fish habitat as areas that "contain habitat essential to the long-term survival and health of our nation's fisheries" (NMFS 2007). EFH can include the water column, certain bottom types such as sandy or rocky bottoms, vegetation such as eelgrass or kelp, or structurally complex coral or oyster reefs. Under regulatory guidelines issued by NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with NMFS (50 CFR 600.920).

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB). Sensitive plant communities are also identified by CDFW (2010). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

Relevant Local Policies, Ordinances, Regulations

The Project Area is regulated by the City of Santa Clara's General Plan (City of Santa Clara 2010) which outlines conservation goals and policies for the City of Santa Clara. These policies outline the requirements to protect and replace trees in in two sections. Section 5.10.1-P4 protects all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way. Section 5.3.1-P10 requires the provision of opportunities for increased landscaping and trees in the community, including requirements for new development to provide street trees and a minimum 2:1 on- or off-site replacement for trees removed as part of the proposal to help increase the urban forest and minimize the heat island effect. In addition, the Santa Clara City Code (City of Santa Clara 2015) Section 12.35.020 requires a written permit from the superintendent of streets to remove or alter any tree, plant or shrub planted or growing in streets or public places.

2.2 Sensitive Special-Status Species

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. In addition, CDFW Species of Special Concern (SSC), which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC), and CDFW special-status invertebrates (SSI), are all considered special-status species. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a "High Priority" species for conservation by the WBWG are typically considered special-status. In addition to regulations for special-status species, most birds in the United States, including non-status species, are protected by the Federal Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC), i.e., sections 3503, 3503.5 and 3513. Under these laws, destroying active bird nests, eggs, and/or young is illegal.

Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Rank) of 1 and 2 are also considered special-status plant species and must be considered under CEQA. Rank 3 and Rank 4 species

are afforded little or no protection under CEQA, but are included in this analysis for completeness. A description of the CNPS Ranks is provided below in Table 1.

Table 1. Description of CNPS Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

3.0 METHODS

On March 04, 2015, the Project Area was traversed on foot to determine (1) plant communities present within the Project Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2013), except where noted. Because of recent changes in classification for many of the taxa treated by Baldwin et al. and the Jepson Flora Project, relevant synonyms are provided in brackets. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, available reference materials were reviewed including, soil surveys of the Project Area (USDA 2015), the U.S. Geological Survey (USGS) 7.5-minute quadrangle map for San Jose West, the USFWS National Wetland Inventory (USFWS 2015a), and aerial imagery of the Project Area (Google Earth 2015), were examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Project Area. Biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. While not given special protections under CEQA, these communities may provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

<u>Wetlands and Waters</u>

The Project Area was surveyed to determine if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. The assessment was based primarily on the presence of wetland plant indicators, but may also include any observed indicators of wetland hydrology or wetland soils. Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status[1] of OBL, FACW, or FAC as given on the U.S. Army Corps of Engineers National Wetlands Plant List (Lichvar 2012). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, algal mats, and oxidized root channels, or indirect (secondary) indicators, such as a water table within two feet of the soil surface during the dry season. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory 1987) and Field Indicators of Hydric Soils in the United States (NRCS 2010).

[1] OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities, including riparian areas, sensitive plant communities recognized by CDFW. Prior to the site visit, aerial photographs, local soil maps, the *List of Vegetation Alliances* (CDFG 2010), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Project Area. All alliances within the Project Area with a ranking of 1 through 3 were considered sensitive biological communities and mapped. These communities are described in Section 4.1.2 below.

3.2 Special-Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Project Area was evaluated by first determining which special-status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special-status species focused on the San Jose West 7.5 minute USGS quadrangle and five adjoining USGS quadrangles (San Jose East, Calaveras Reservoir, Milpitas, Mountain View and Cupertino) which allowed an examination of occurrences within 5 miles of the Project Area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- California Natural Diversity Database (CNDDB) records (CDFW 2015)
- USFWS county and quadrangle species lists (USFWS 2015)
- CNPS Inventory records (CNPS 2015)
- CDFG publication “California’s Wildlife, Volumes I-III” (Zeiner et al. 1990)
- CDFG publication “California Bird Species of Special Concern” (Shuford and Gardali 2008)
- CDFG publication “Amphibians and Reptile Species of Special Concern in California” (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- Breeding Bird Atlas of Santa Clara County, California (Bousman 2007)

3.2.2 Site Assessment

A site visit was made to the Project Area to search for suitable habitats for special-status species. Habitat conditions observed in the Project Area were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Project Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site

is unsuitable. The species has a moderate probability of being found on the site.

- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special-status species is observed during the site visit, its presence will be recorded and discussed.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. If necessary, recognized experts in individual species biology were contacted to obtain the most up to date information regarding species biology and ecology.

If a special-status species was observed during the site visit, its presence is recorded and discussed below in Section 4.2. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described below in Section 6.0.

4.0 RESULTS

The Project Area is located near the central portion of the City of Santa Clara and ranges in elevation from 65 to 75 feet above sea level. The landscape within the Project Area has been significantly altered from its native state. No native habitat types were observed within the site. The surface of the Project Area has been classified as urban land (USDA 2015) and rendered largely impermeable by the construction of residences, commercial buildings, a self-storage facility and roads. These structures are maintained and subject to frequent human disturbance. The impermeable urban development has been designed to convey waters away from the site and into the municipal storm drain system. Neither the impenetrable surfaces nor the limited areas of penetrable surface within the landscaped areas showed any signs of saturation or inundation.

The only developed surface that was not paved was a segment of gravel road, which occurs at the northern edge of the site. The graveled area serves as a parking lot for the storage facility and is the northern terminus of Sherman Street. No ruderal vegetation or other biological resources were observed in this area. The Project Area is surrounded by residential and commercial development for approximately 5 miles. All of the vegetation observed during the site assessment was landscaped and associated with residential or commercial buildings (see Appendix C for photographs of the Project Area). The following sections present the results of the site visit and a discussion of the biological assessment within the Project Area.

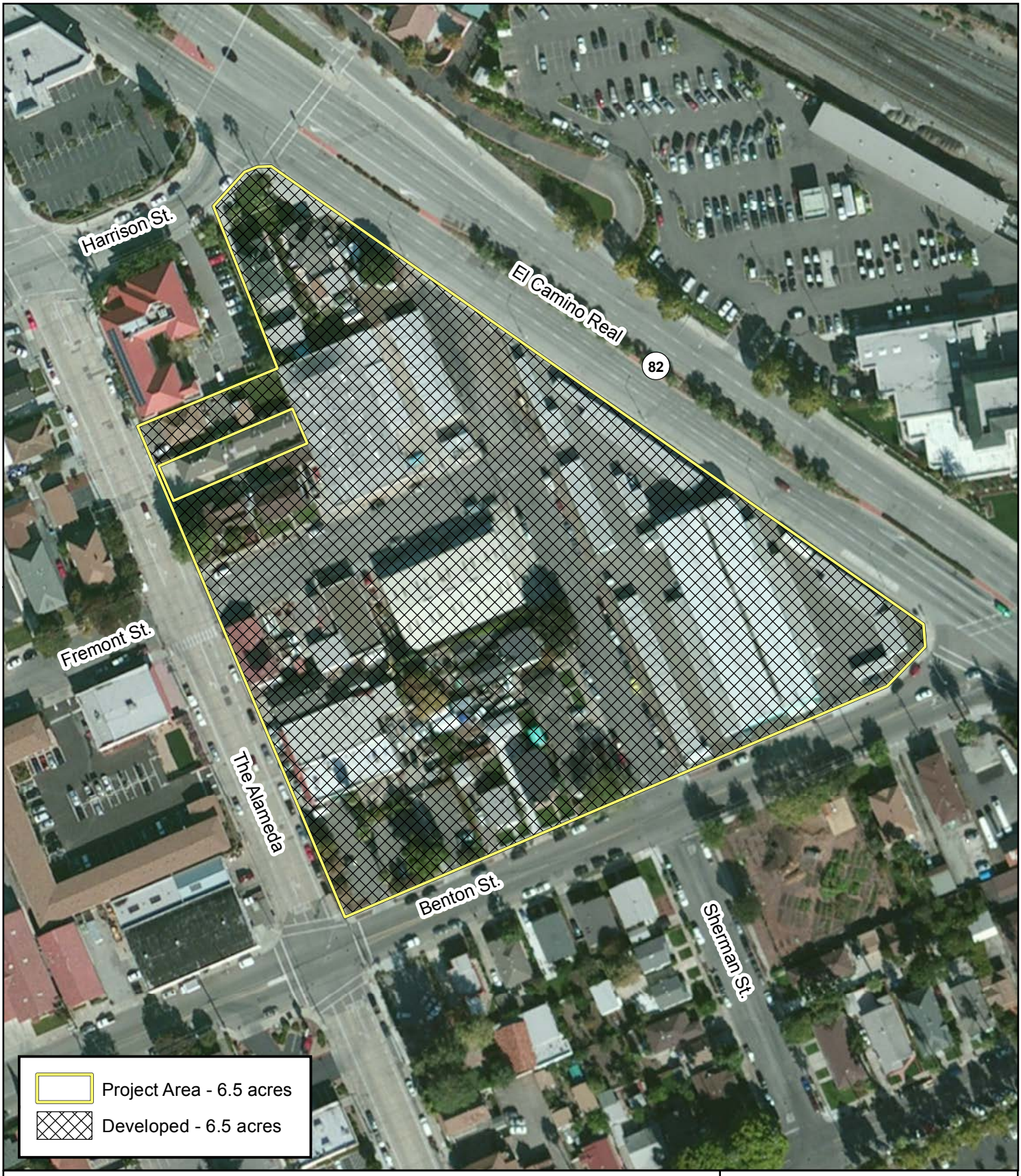

Figure 2. Biological Communities within the Project Area

Mission Town Center
Santa Clara County, California

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ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 4/14/2015
Map Prepared By: dchan
Base Source: ESRI World Imagery (2010)
Data Source(s): WRA

Path: L:\Acad 2000 Files\23000\23013-4\GIS\ArcMap\Fig2_BioComms_20150413.mxd

4.1 Biological Communities

A single community type was observed within the Project Area, and is shown in Figure 2. The entire Project Area is classified as developed land. Soils within the Project Area consist entirely of urban land: newpark complex, and bayshore complex (SoilWeb 2015). No additional soil types were observed or mapped within the Project Area. No additional non-sensitive or sensitive biological communities were observed within the Project Area. A description of this community is provided below.

4.1.1 Non-Sensitive Biological Communities

Although not described in the literature, developed lands are those that have been altered by humans and may contain structures, paved surfaces, landscaped features or other non-natural surfaces. This land cover type is present throughout the entire Project Area and includes paved roads, a gravel road, residential homes, commercial buildings, and a storage unit facility. The only vegetative communities observed within the Project Area also fall within the developed classification as they are comprised of ornamental species planted as landscaping around homes and businesses. Such areas are regularly maintained and have only very limited opportunities for native species to become established. Therefore, these areas are not considered sensitive habitats.

4.1.2 Sensitive Biological Communities

No aquatic or natural vegetated communities exist within the Project Area. No wetlands or other waters subject to jurisdiction by the Corps, RWQCB or CDFW occur within the Project Area. All portions of the Project Area have been converted to developed land. Due to the highly developed state of the Project Area, and lack of aquatic features, no sensitive biological communities exist within the Project Area boundaries.

4.2 Special-Status Species

4.2.1 Plants

A list of plant species observed within the Project Area during the site visit is provided in Appendix A. Appendix B summarizes the potential occurrence for each special-status plant species documented in the vicinity of the Project Area. Special-status plants which have been documented within 5 miles of the Project Area as per CNDDB are shown in Figure 3.

Of the 52 species of special-status plants which have been documented to occur in Santa Clara County (CNPS 2015, CDFW 2015, USFWS 2015), none have a moderate or high potential to occur within the Project Area. No special-status plant species were observed in the Project Area during the site assessment. The Project Area has been entirely converted to urban development. Any areas that can support vegetation are landscaped and regularly maintained to support the ornamental species which are selectively planted in these areas.

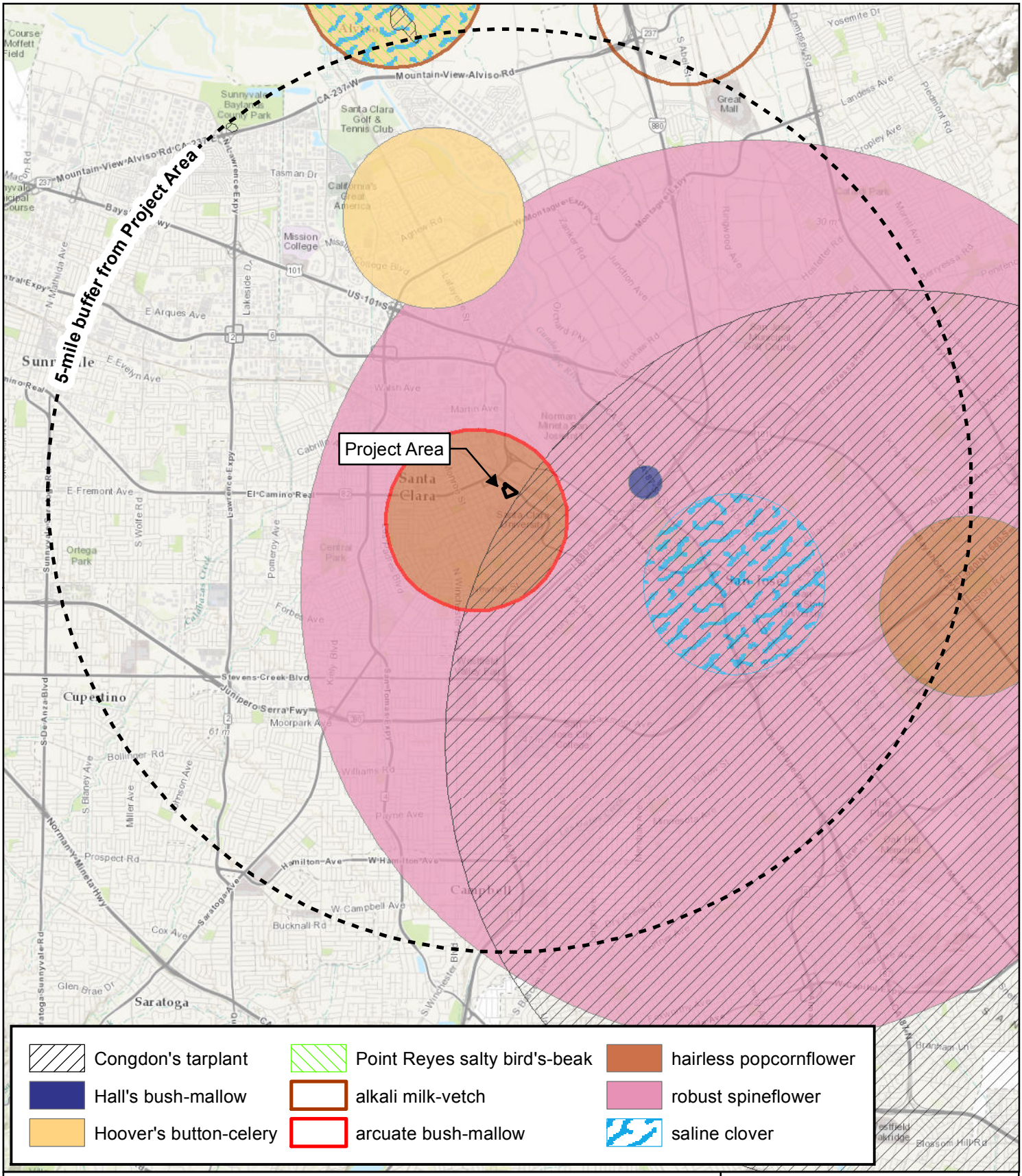

Figure 3. Special-Status Plant Species Occurrences within 5 miles of the Project Area

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Miles

Mission Town Center
Santa Clara County, California

wra
ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 4/9/2015
Map Prepared By: pkobylarz
Base Source:
Data Source(s): WRA

Path: L:\Acad 2000 Files\23000\23013-4\GIS\ArcMap\Fig3_CNDDB_Plants.mxd

There are single respective occurrences of arcuate bush-mallow (*Malacothamnus arcuatus*) and hairless popcorn flower (*Plagiobothrys glaber*) within 0.5 mile of the Project Area. However, the occurrence of acute bushmallow dates from 1961 and the occurrence of hairless popcorn flower dates from 1892. Similarly, a single occurrence of robust spineflower (*Chorizanthe robusta*) occurs approximately 3 miles from the Project Area and dates from 1882. Due to the age of these occurrences they represent a historical presence, rather than potential source populations. Considering the widespread urban development in the surrounding areas and an absence of undeveloped habitat within the Project Area, none of these species have potential to occur within the site. Similarly, all of the remaining 49 species of special-status plants that have been documented near the Project Area have no potential to occur due to one or more of the following:

- Specific edaphic conditions, such as soils derived from serpentine or volcanics, are absent;
- Specific hydrologic conditions, such as brackish tidal action, are absent;
- Common associated plant species and vegetation communities are absent;
- Lack of a viable seed bank due to historic and contemporary soil alterations;
- Non-native species competition;
- Regular disturbance (e.g., mowing, landscape maintenance) of the Project Area; and
- Lack of available, undeveloped habitat.

4.2.2 Wildlife

A list of wildlife species observed within the Project Area during the site visit is provided in Appendix A. Appendix B summarizes the potential occurrence for each special-status wildlife species documented in the vicinity of the Project Area. Special-status wildlife species which have been documented within 5 miles of the Project Area as per CNDDB are shown in Figure 4.

Fifty-five species of special-status wildlife have been documented in the records for Santa Clara County (CDFW 2015, USFWS 2015). No special-status wildlife species were observed in the Project Area during the site assessment. Although Swainson's hawk (*Buteo swainsoni*) and hoary bat (*Lasiurus cinereus*) have both been recorded within 0.5 mile of the Project Area, the dates of these occurrences are 1889 and 1883 respectively. Considering the age of these occurrences, the extent of urban development in the area since that time, a lack of additional local occurrences, and the current urbanized state of the Project Area, these occurrences represent a historical presence rather than potential occurrences in the present day.

Additionally, CNDDB occurrences for American peregrine falcon (*Falco peregrinus anatum*) and California tiger salamander (*Ambystoma californiense*) are shown to overlap with the Project Area; however, the location information for these occurrences have been suppressed for confidentiality, and based on site conditions, there is little to no potential that they occurred within or adjacent to the Project Area. The peregrine falcon requires cliffs or tall, artificial structures such as bridge or crane towers in which to nest, and water birds on which to feed, neither of which is found in or adjacent to the Project Area. California tiger salamander requires small mammal burrows in which to live and forage, and ephemeral aquatic habitat in which to breed, and none of these features are found within or adjacent to the developed Project Area. Therefore, there is little or no potential for these species to occur within the Project Area.

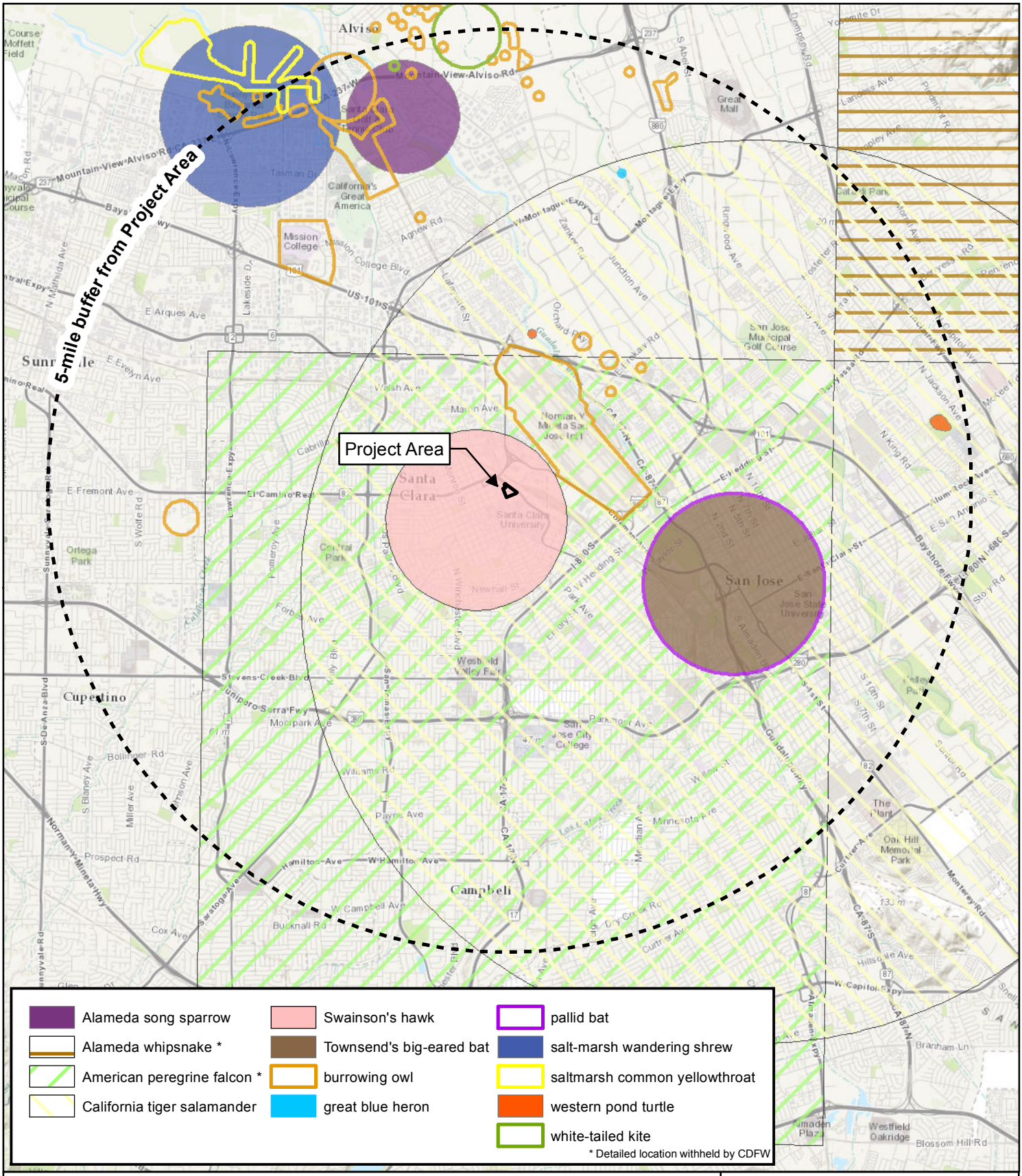

Figure 4. Special-Status Wildlife Species Occurrences within 5 miles of the Project Area

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Miles

Mission Town Center
Santa Clara County, California

wra
ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 4/9/2015
Map Prepared By: pkobylarz
Base Source: ESRI
Data Source(s): WRA, CNDDB

Path: L:\Acad 2000 Files\23000\23013-4\GIS\ArcMap\Fig4_CNDDB_Wildlife.mxd

All of the remaining 53 species of wildlife found in the review of background literature were similarly determined to have no potential, or to be unlikely to occur within the Project Area due to one or more of the following:

- Suitable terrestrial habitat including: grassland, chaparral, forest, or woodland is absent;
- Aquatic habitat including: open water, rivers, creeks, canals, ponds, wetlands, marsh or vernal features are absent;
- Suitable soils required to support host plants are absent;
- Suitable vegetation to provide cavities for nesting or roost sites are absent;
- Non-inhabited buildings for roost sites are absent, and
- Burrows or burrowing mammals are absent.

Though no special-status wildlife species were observed during the site visit, and none have the potential to occur, non-special-status birds protected by baseline federal and state regulations were observed within the site and may nest within the Project Area. As such, these species may be affected by construction activities and mitigation measures for these species are discussed further in Section 6.

5.0 SUMMARY AND RECOMMENDATIONS

As stated in Section 4.1, the entire Project Area is classified as developed land. No sensitive biological communities were observed during the site assessment. Due to the extent of development, and additional factors discussed in Section 4.2.1, none of the 52 species of special-status plants documented in the vicinity of the site have a moderate or high potential to occur within the Project Area. The highly developed nature of the Project Area, and the absence of available habitat features discussed in Section 4.2.2 excludes all 55 species of special-status wildlife from occurring within the Project Area.

While no special-status wildlife species have the potential to occur within the Project Area, bird species protected by the MBTA and CFGC may be impacted by construction during the nesting season, which generally extends from February 1 through August 31. Impacts and mitigation measures are discussed further in Section 6.

6.0 POTENTIAL IMPACTS AND MITIGATION

6.1 Project Description

The Project proposes to demolish the existing structures within the Project Area and construct an infill, mixed-use residential community consisting of 450 residential rental apartment units, approximately 9,000 square feet of conditioned amenities space, and four distinct private open space areas. The proposed Project also includes approximately 27,000 square feet of ground floor retail. The residential portion of the Project would be built at a density of 70 dwelling units per acre and include a mix of one and two bedroom units. The proposed Project would consist of a five-story structure and that would range in height from approximately 65 to 80 feet. Parking would be provided in a six-story parking structure with five levels of above-grade and one level of below-grade parking. The parking structure would be located in the center of the Project site and wrapped by the proposed residential and retail uses. Access to the parking structure would be provided from Benton Street and El Camino Real.

6.2 Significance Threshold Criteria

Pursuant to Appendix G, Section IV of the State CEQA Guidelines, a project would have a significant impact on biological resources if it would:

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 CDFW or USFWS;

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 CDFW or USFWS;

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

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; and/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.

This report utilizes these thresholds in the analysis of impacts and determination of the significance of those impacts. The assessment of impacts under CEQA is based on the change caused by the Project relative to the existing conditions at the proposed Project Site. The existing conditions at the Project Site are described above, based on surveys conducted in 2015. In applying CEQA Appendix G, the terms “substantial” and “substantially” are used as the basis for significance determinations in many of the thresholds, but are not defined qualitatively or quantitatively in CEQA or in technical literature. In some cases, such as direct impacts to special-status species listed under the CESA or ESA, the determination of a substantial impact may be relatively straightforward. In other cases, the determination is less clear, and requires application of best professional judgment based on knowledge of site conditions as well as the ecology and physiology of biological resources present in a given area. Determinations of whether or not Project activities will result in a substantial adverse effect to biological resources are discussed in the following sections for sensitive biological communities, special-status plant species, and special-status wildlife species.

6.3 Potentially Significant Impacts

Impact BIO-1: Migratory Bird Species

Project activities have the potential to impact birds protected by the Migratory Bird Treaty Act and Fish and Game Codes. Potential impacts to these species and their habitats could occur during the removal of vegetation, structures, during grading, or during ground-disturbing activities. These activities could result in the direct removal or destruction of the active nests of

protected, non-special-status bird species. These activities may also create audible, vibratory and/or visual disturbances which cause birds to abandon active nests. Activities that result in the direct removal of active nests or disturbance to breeding birds sufficient to result in the abandonment of active nests would be considered a significant impact under CEQA.

Significance of Impact Before Mitigation: Potentially Significant

6.4 Mitigation Measures

MM BIO-1: Migratory Bird Species

For the protection of birds species protected by the Migratory Bird Treaty Act and Fish and Game Codes, Project activities shall occur during the non-breeding bird season to the extent feasible (September 1 – January 31). However, if vegetation removal, grading, demolition of structures, or initial ground-disturbing activities must occur during the breeding season (February 1 through August 31), a survey for active bird nests shall be conducted by a qualified biologist no more than 14 days prior to the start of these activities. The survey shall be conducted in a sufficient area around the work site to identify the location and status of any nests that could potentially be affected by Project activities.

If active nests of protected species are found within Project impact areas or close enough to these areas to affect breeding success, a work exclusion zone shall be established around each nest by a qualified biologist. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g., due to predation). Appropriate exclusion zone sizes vary dependent upon bird species, nest location, existing visual buffers and ambient sound levels, and other factors; an exclusion zone radius may be as small as 50 feet (for common, disturbance-adapted species) or as large as 250 feet or more for raptors. Exclusion zone size may also be reduced from established levels if supported with nest monitoring by a qualified biologist indicating that work activities outside the reduced radius are not adversely impacting the nest.

Level of Significance after Mitigation: Less than Significant

7.0 CONCULSION

Based on the results of the site assessment, it is not anticipated that the proposed Project will result in impacts to sensitive biological communities, special-status plant species, or special-status wildlife species. There are no aquatic areas, or other sensitive habitats in the Project Area. No special-status plants were observed during the site visit, and none are expected to occur within the Project Area; accordingly, no avoidance measures are required. No special-status wildlife species were observed during the site visit. No special-status wildlife species have the potential to occur within the Project Area. Non-special-status birds protected by baseline federal and state laws do have the potential to occur in the Project Area. Avoidance measures including nesting bird survey and the use of work exclusion zones (if necessary) will be utilized to avoid impacts to these species. Accordingly, all potential impacts to sensitive biological resources will be less than significant following the implementation of the aforementioned measures.

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APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix A. List of observed plant and wildlife species at the Mission Town Center Study Area during the field survey on March 04, 2015.

Scientific Name	Common name
Wildlife	
Corvus brachyrhynchos	American crow
Passer domesticus	house sparrow
Calypte anna	Anna's hummingbird
Haemorhous mexicanus	house finch
Psaltriparus minimus	bushtit
Aphelocoma californica	western scrub-jay
Thryomanes bewickii	Bewick's wren
Junco hyemalis	dark-eyed junco
Pieris rapae	cabbage white
Popillia japonica	japenese beetle
Apis sp.	honey bee
Plants	
Magnolia sp.	magnolia tree
Cupressus sempervirens	Italian cypress
Lagerstroemia sp.	crape myrtle
Syagrus romanzoffiana	queen palm
Washingtonia filifera	California fan palm
Citrus x sinensis	orange tree
Citrus x limon	lemon tree
Sequoia sempervirens	redwood
Persea americana	avocado
Robinia pseudoacacia	black locust tree
Lavandula sp.	lavender
Rosmarinus officinalis	rosemary
Iris sp.	purple iris
Ligustrum lucidum	glossy privet
Hedera helix	English ivy

Scientific Name	Common name
Ilex sp.	holly
rosacea fm.	domestic rose

APPENDIX B

POTENTIAL FOR SPECIAL-STATUS SPECIES TO OCCUR IN THE PROJECT AREA

Appendix B. Potential for special-status plant and wildlife species to occur in the Project Area. List compiled from the California Natural Diversity Database (CDFW 2015), U.S. Fish and Wildlife Service Species Lists (2015), and California Native Plant Society Rare and Endangered Plant Inventory (CNPS 2015) USGS 7.5-minute quadrangle searches for San Jose East, San Jose West, Cupertino, Mountain view, Milpitas, and Calaveras Reservoir for plants and wildlife.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Plants				
robust spineflower *Chorizanthe robusta var. robusta*	FE, Rank 1B.1	Coastal dunes/scrub, sandy terraces and bluffs in loose sand; 1-120 meters. Blooms April-September.	**No Potential.** No suitable coastal habitat for this species occurs within the Project Area.	No further action is recommended for this species.
Contra Costa goldfields *Lasthenia conjugens*	FE, Rank 1B.1	Valley and foothill grassland, vernal pools, cismontane woodland, vernal pools, swales, low depressions, in open grassy areas. 1-445 meters. Blooms March-June.	**No Potential.** The Project Area is entirely developed. There is no suitable vernal pool or wetland habitat in the Project Area.	No further action is recommended for this species.
Metcalf Canyon jewelflower *Streptanthus albidus ssp. albidus*	FE, Rank 1B.1	Valley and foothill grassland, relatively open areas with serpentine soils; 45-800 m elevation. Blooms April- July.	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area.	No further action is recommended for this species.
California seablite *Suaeda californica*	FE, Rank 1B.1	Marshes and swamps (coastal salt). 0 - 15 meters. Blooms July - October.	**No Potential.** No suitable coastal marsh or swamp habitat occurs within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
fountain thistle *Cirsium fontinale var. fontinale*	FE, Rank 1B.1	Chaparral (openings), cismontane woodland, valley and foothill grassland in serpentine seeps. 45 - 175 meters. Blooms May-October.	**No Potential.** No suitable chaparral, woodland, grassland/ seep habitat or serpentine soils occur within the Project Area to support the species.	No further action is recommended for this species.
Marin western flax *Hesperolinon congestum*	FT, Rank 1B.1	Chaparral, valley and foothill grassland in serpentine soils. 5 - 370 meters. Blooms April-July.	**No Potential.** The Project Area is entirely developed. No suitable habitat or serpentine soils, occur within the Project Area to support the species.	No further action is recommended for this species.
San Mateo woolly sunflower *Eriophyllum latilobum*	FE, Rank 1B.1	Cismontane woodland (often serpentinite, on roadcuts). 45 – 150 m. Blooms May-June.	**No Potential.** No suitable serpentine soils or woodland habitat occurs within the Project Area.	No further action is recommended for this species.
Santa Clara Valley dudleya *Dudleya abramsii ssp. setchellii*	FE, Rank 1B.1	Cismontane woodland, valley and foothill grassland/ rocky serpentine outcrops; 60-455 m elevation. Blooms April-June.	**No Potential.** No suitable habitat for this species or serpentine soils occurs within the Project Area.	No further action is recommended for this species.
San Mateo thorn-mint *Acanthomintha duttonii*	FE, SE, Rank 1B.1	Chaparral, valley and foothill grassland in serpentine soils. 50 - 300 meters. Blooms April-June.	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area to support this species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
coyote ceanothus *Ceanothus ferrisae*	FE, rank 1B.1	Occurs in chaparral, and valley grassland. Blooms January - May	**No Potential.** No suitable chaparral or grassland habitat occurs within the Project Area to support the species.	No further action is recommended for this species.
Santa Cruz tarplant *Holocarpha macradenia*	FE, Rank 1B.1	Found in clay, sandy coastal prairie, scrub or valley/foothill grassland	**No Potential.** There are no suitable habitats such as grassland or scrub to support the species.	No further action is recommended for this species.
Contra Costa goldfields *Lasthenia conjugens*	FE, Rank 1B.1	Occurs on mesic substrates in cismontane woodland, alkaline playas, valley and foothill grassland; and vernal pools. Elevations range from sea level to 470 meters. Blooming period from March to June.	**No Potential.** The Project area is entirely developed and does not contain suitable habitat, such as woodland, playas, valley and foothill grassland, or vernal pools.	No further action is recommended for this species.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	Rank 1B.1	Typical habitat includes alkaline valley and foothill grassland. Elevations range from 0 to 230 meters.	**No Potential.** The Project Area is entirely developed and does not contain suitable habitat, such as valley and foothill grassland.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
lesser saltscale *Atriplex minuscula*	Rank 1B.1	Chenopod scrub, playas, valley and foothill grassland on alkaline, sandy soils. 15 - 200 meters. Blooms May-October.	**No Potential.** No suitable scrub, seep, or grassland habitat occurs within the Study Area to support the species.	No further action is recommended for this species.
Loma Prieta hoita *Hoita strobilina*	Rank 1B.1	Chaparral, cismontane woodland, riparian woodland/ usually serpentine; 30-600 m elevation. Blooms May-October.	**No Potential.** The Project area is entirely developed. No suitable habitat or serpentine soils occur within the Project Area to support this species.	No further action is recommended for this species.
Hoover's button-celery *Eryngium aristulatum var. hooveri*	Rank 1B.1	Found in vernal pools at elevations ranging from 3 to 45 meters. Blooming period July to August.	**No Potential.** The Project area is entirely developed. The Project Area does not contain suitable habitat, such as vernal pools.	No further action is recommended for this species.
prostrate vernal pool navarretia *Navarretia prostrata*	Rank 1B.1	Coastal scrub, meadows and seeps, valley and foothill grassland typically in alkaline soils, vernal pools in mesic soils. 15 -1210 meters. Blooms April-July.	**No Potential.** No suitable habitat for this species occurs within the Study Area.	No further action is recommended for this species.
caperfruit tropidocarpum *Tropidocarpum capparideum*	Rank 1B.1	Valley and foothill grassland (alkaline hills). 1 - 455 meters. Blooms March - April.	**No Potential.** No suitable grassland habitat for this species occurs within the Study Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
round-leaved filaree *California macrophylla*	Rank 1B.1	Often found in clay soils associated with cismontane woodland or valley and foothill grassland.	**No Potential.** The Project Area does not contain suitable soils or habitat to support the species.	No further action is recommended for this species.
Tiburon paintbrush *Castilleja affinis ssp. neglecta*	FE, SC, Rank 1B.2	Occurs in valley and foothill grasslands with serpentinite soils.	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area.	No further action is recommended for this species.
San Joaquin spearscale *Atriplex joaquiniana*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland on alkaline soils. 1 – 835 meters. Blooms April-October.	**No Potential.** No suitable scrub, seep, or grassland habitat occurs within the Study Area to support this species.	No further surveys or avoidance measures are recommended.
brittlescale *Atriplex depressa*	Rank 1B.2	Occurs in alkaline clay associated with chenopod scrub, meadows and seeps, playas, valley and foothill grassland or vernal pools	**No Potential.** The Project Area contains no natural habitats that might support the species.	No further action is recommended for this species.
alkali milk-vetch *Astragalus tener var. tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools on alkaline soils. 1 - 60 meters. Blooms March-June.	**No Potential.** No suitable grassland or vernal pool habitat occurs within the Project Area. No soils suitable for this species exist within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	Rank 1B.2	Marshes and swamps (coastal salt). 0 - 10 meters. Blooms June - October.	**No Potential.** No suitable coastal salt marsh or swamp habitat occurs within the Project Area to support this species.	No further action is recommended for this species.
Mt. Hamilton fountain thistle *Cirsium fontinale var. campylon*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/ serpentine seeps; 100-890 meters. Blooms February- October.	**No Potential.** No suitable chaparral, woodland, grassland/ seep habitat or serpentine soils occur within the Project Area.	No further action is recommended for this species.
San Francisco collinsia *Collinsia multicolor*	Rank 1B.2	Closed-cone coniferous forest, Coastal scrub. 30-250 meters. Blooms March-May.	**No Potential.** The Project area is entirely developed. No suitable coniferous forest or coastal scrub habitat occurs within the Project Area to support this species.	No further action is recommended for this species.
western leatherwood *Dirca occidentalis*	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland in mesic soils. 50 - 395 meters. Blooms January-March (April).	**No Potential.** The Project area is entirely developed. There are no forest habitats or woodland to support this species within the Project Area.	No further action is recommended for this species.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie and scrub, valley and foothill grassland/ often serpentine; 3-410 m elevation. Blooms February-April.	**No Potential.** The Project area is entirely developed. No suitable habitat or serpentine soils occur within the Project Area to support this species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
smooth lessingia *Lessingia micradenia var. glabrata*	Rank 1B.2	Chaparral, cismontane woodland/serpentine, often roadsides; 120-420 m elevation. Blooms July-November.	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area to support the species.	No further action is recommended for this species.
arcuate bush mallow *Malcothamnus arcuatus*	Rank 1B.2	Chaparral; 15-355 m elevation. Blooms April-September.	**No Potential.** The Project area is entirely developed. No suitable chaparral habitat occurs within the Project Area to support the species.	No further action is recommended for this species.
Hall's bush mallow *Malcothamnus hallii*	Rank 1B.2	Chaparral, coastal scrub; 10-550 m elevation. Blooms May- September.	**No Potential.** The Project area is entirely developed. No suitable chaparral habitat occurs within the Project Area to support the species.	No further action is recommended for this species.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Found in marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools from sea level to 300 meters in elevation. Blooming period April to June.	**No Potential.** The Project Area is highly developed. The Project Area does not contain suitable habitat such as marshes and swamps; mesic, alkaline valley and foothill grassland; or vernal pools.	No further action is recommended for this species.
woodland woollythreads *Monolopia gracilens*	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), valley and foothill grassland in serpentine soils. 100 - 1200 meters. Blooms March-July (February).	**No Potential.** No suitable woodland or chaparral habitat occur within the Project Area. No serpentine soils occur within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
most beautiful jewelflower *Streptanthus albidus ssp. peramoenus*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland, serpentine soils; 110-1100 m elevation. Blooms April- June.	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area.	No further action is recommended for this species.
Indian Valley bush-mallow *Malacothamnus aboriginum*	Rank 1B.2	Rocky, granitic, often in burned areas in chaparral or cismontane woodland	**No Potential.** No suitable chaparral or woodland habitat and no serpentine soils occur within the Project Area.	No further action is recommended for this species.
chaparral harebell *Campanula exigua*	Rank 1B.2	Grows in rocky, usually serpentinite soils associated with chaparral.	**No Potential.** The Project area does not contain serpentinite soils or chaparral habitat to support the species.	No further action is recommended for this species.
big-scale balsamroot *Balsamorhiza macrolepis*	Rank 1B.2	Usually found in serpentinite soils in chaparral, cismontane woodland or valley and foothill grassland	**No Potential.** The Project Area is entirely developed with no suitable habitats such as chaparral or woodland to support the species.	No further action is recommended for this species.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Occurs in chaparral, cismontane woodland and coastal scrub. Blooms January - April	**No Potential.** No suitable chaparral or woodland habitat occurs within the Project Area to support the species.	No further action is recommended for this species.
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	Rank 2B.2	Occurs in marshes and swamps (assorted shallow freshwater). Blooms May-July	**No Potential.** The Project area has no freshwater habitat that would support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
hairless popcornflower *Plagiobothrys glaber*	Rank 1A	Found in alkaline meadows and seeps and coastal salt marshes and swamps. Elevations range from 15 to 180 meters. Blooming period March to May.	**No Potential.** The Project Area is highly developed and does not contain alkaline meadows, salt marshes or swamp habitat that could support the species.	No further action is recommended for this species.
woolly-headed lessingia *Lessingia hololeuca*	Rank 3	Found in clay or serpentinite soils associated with broadleafed upland forest, coastal scrub, lower montane coniferous forest or valley and foothill grassland. Blooms June-October	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area to support the species.	No further action is recommended for this species.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Occurs in rocky substrate associated with broadleafed upland forest, chaparral, cismontane woodland, or valley and foothill grassland. Blooms March-May	**No Potential.** The Project area is entirely developed. No suitable habitat occurs within the Project Area to support the species.	No further action is recommended for this species.
Brewer's calandrinia *Calandrinia breweri*	Rank 4.2	Occurs in sandy or loamy, disturbed sites and burns. Associated with chaparral and coastal scrub habitat. Blooms March-June	**No Potential.** No chaparral or coastal scrub habitats exist within the Project Area to support the species.	No further action is recommended for this species.
Santa Clara thorn-mint *Acanthomintha lanceolata*	Rank 4.2	Found in chaparral habitats, often with serpentinite soils. May also occur in cismontane woodland and coastal scrub	**No Potential.** None of the natural habitat types which support this species occur within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
clustered lady's-slipper *Cypripedium fasciculatum*	Rank 4.2	Usually found in serpentinite seeps and streambanks associated with lower montane coniferous forest and north coast coniferous forest. Blooms March-August	**No Potential.** No forest habitat exists within the Project area to support the species.	No further action is recommended for this species.
California androsace *Androsace elongata ssp. acuta*	Rank 4.2	Occurs in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland and valley and foothill grassland	**No Potential.** The Project Area is completely developed and has no undeveloped land which might provide habitat for the species.	No further action is recommended for this species.
coast iris *Iris longipetala*	Rank 4.2	Found in mesic areas of coastal prairie and lower montane coniferous forest. Blooms March-May	**No Potential.** The Project area is entirely developed. No suitable habitat occurs within the Project Area to support this species.	No further action is recommended for this species.
serpentine leptosiphon *Leptosiphon ambiguus*	Rank 4.2	Usually occurs serpentinite soils associated with cismontane woodland, coastal scrub as well as valley and foothill grassland. Blooms March - June	**No Potential.** No suitable habitat or serpentine soils occur within the Project Area to support the species.	No further action is recommended for this species.
maple-leaved checkerbloom *Sidalcea malachroides*	Rank 4.2	Often found in disturbed areas of coastal prairie, scrub, north coast coniferous forest or riparian woodland.	**No Potential.** The Project Area is entirely developed and contains nor prairie, forest or other woodland to support the species.	No further action is recommended for this species.
Jepson's woolly sunflower *Eriophyllum jepsonii*	Rank 4.3	Occurs in chaparral, cismontane woodland or coastal scrub. Blooms April-June	**No Potential.** There are no suitable habitats to support the species within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Santa Clara red ribbons *Clarkia concinna ssp. automixa*	Rank 4.3	Found in chaparral or cismontane woodland.	**No Potential.** The Project Area is entirely developed and does not contain suitable habitat to support the species.	No further action is recommended for this species.
Lewis' clarkia *Clarkia lewisii*	Rank 4.3	Typically found in broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland or coastal scrub	**No Potential.** The Project Area contains none of the suitable habitats to support this species.	No further action is recommended for this species.
Mammals				
pallid bat *Antrozous pallidus*	SSC, WBWG High	Occupies a variety of habitats at low elevation including grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rock crevices, tree hollows, mines, caves, and a variety of man-made structures for roosting.	**No Potential.** The Project Area is entirely developed, with landscaped trees which are subject to anthropomorphic disturbances and landscape maintenance. The Project Area provides only poor quality foraging habitat and buildings are considered unsuitable as they are currently maintained.	No further action is recommended for this species.
Townsend's big-eared bat *Corynorhinus townsendii*	SC, SSC, WBWG High	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	**No Potential.** The Project Area is entirely developed, with landscaped trees which are subject to anthropomorphic disturbances and landscape maintenance. The Project Area provides only poor quality foraging habitat and buildings are considered unsuitable as they are currently maintained.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
salt marsh wandering shrew *Sorex vagrans halicoetes*	SSC	Seldom observed; endemic to salt-marshes of the south arm of San Francisco Bay. Typically in medium to high marsh where abundant driftwood is scattered among pickleweed.	**No Potential.** The Project Area does not contain any salt marsh habitat to support the species.	No further action is recommended for this species.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST, RP	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**No Potential.** The Project Area is entirely developed. No burrows or foraging habitat to support the species is present. No occurrences have been recorded within 5 miles (CDFW 2015).	No further action is recommended for this species.
salt marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Occurs in pickleweed and dense vegetation habitats in tidal, muted-tidal, and diked areas.	**No Potential.** The Project Area does not contain any salt marsh habitat to support the species.	No further action is recommended for this species.
Birds				
golden eagle *Aquila chrysaetos*	CFP, BCC	Resident in rolling foothill and mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range.	**No Potential.** The Project Area is entirely developed and does not provide suitable nesting or foraging habitat for the species.	No further action is recommended for this species.
northern harrier *Circus cyaneus*	SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**No Potential.** The Project Area has no suitable grassland nesting sites for this species. No foraging habitat exists within the Project Area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
American peregrine falcon *Falco peregrinus anatum*	CFP, BCC	Largely resident. Requires protected cliffs, ledges or tall manmade structures for nesting. Often associated with coasts, bays, marshes and other open expanses of water. Preys primarily upon waterbirds; forages widely.	**No Potential.** The Project Area is entirely developed and maintained. No suitable foraging habitat or structures for nesting exist within the Project Area.	No further action is recommended for this species.
white-tailed kite *Elanus leucurus*	CFP	Year-long resident of coastal and valley lowlands. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	**No Potential.** Trees and shrubs suitable for nesting are maintained and of poor quality. The land surrounding the Project Area is developed for approximately 5 miles eliminating foraging habitat for the species. However the species has been	No further action is recommended for this species.
Swainson's hawk *Buteo swainsoni*	ST, BCC	Summer resident in California's Central Valley and limited portions of the southern California interior. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa. Preys on arthropods year-round as well as smaller vertebrates during the breeding season.	**No Potential.** The Project Area is entirely developed and does not provide any grassland, agricultural fields or scrub habitat to support nesting or foraging by the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
burrowing owl *Athene cunicularia*	SSC, BCC	Largely resident in the region. Found in grasslands and other open habitats with a sparse to absent shrub/tree canopy. Nests and roosts in old mammal burrows, typically those of ground squirrels. Preys upon insects, and also small mammals, reptiles and birds.	**No Potential.** The Project Area is highly developed; no burrows were observed and no burrowing mammals are likely to be present. No open grassland which might provide nesting or foraging habitat for owls is present. Although two documented occurrences of this species are recorded within 1 mile of the Project Area (CDFW 2015, eBird 2015), the habitat within the Project Area is unsuitable for the species.	No further action is recommended for this species.
tricolored blackbird *Agelaius tricolor*	SSC, BCC, FC, SE	Resident, though disperses somewhat when not breeding. Typically nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Highly colonial; breeding aggregations tend to be large.	**No Potential.** No dense aquatic vegetation required for nesting exists within or adjacent to the Project Area. Additionally, there are no suitable wetlands or grasslands for foraging within or adjacent to the Project Area.	No further action is recommended for this species.
great blue heron *Ardea herodias*		(Rookery) Colonial nester in tall trees, cliffs, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**No Potential.** Suitable rookery sites situated close to water are not found within or adjacent to the Project Area	No further action is recommended for this species.
snowy egret *Egretta thula*		(Rookery) colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	**No Potential.** Suitable rookery sites situated close to water are not found within or adjacent to the Project Area	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
California clapper rail *Rallus longirostris obsoletus*	FE, SE, CFP	Associated with tidal salt marsh and brackish marshes supporting emergent vegetation, upland refugia, and incised tidal channels.	**No Potential.** There is no salt marsh habitat in the Project Area.	No further action is recommended for this species.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	Occurs in tidal salt marsh with dense stands of pickleweed as well as freshwater to brackish marshes.	**No Potential.** There is no salt marsh habitat in the Project Area.	No further action is recommended for this species.
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC, BCC, RP	Federal listing applies only to the Pacific coastal population. Found on sandy beaches, salt pond levees, and shores of large alkali lakes. Requires sandy, gravelly, or friable soils for nesting.	**No Potential.** The Project Area does not contain suitable beaches, salt ponds, or alkali flats to support this species.	No further action is recommended for this species.
California brown pelican *Pelecanus occidentalis californicus*	CFP	(Nesting colony) colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators.	**No Potential.** No marine or coastal habitat is present within or adjacent to the Project Area.	No further action is recommended for this species.
California least tern *Sterna antillarum browni*	FE, SE, CFP	Nests along the coast from San Francisco bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**No Potential.** The Project Area does not contain suitable beaches, alkali flats or any other appropriate nesting habitat.	No further action is recommended for this species.
oak titmouse *Baeolophus inornatus*	BCC	Occurs year-round in woodland and savannah habitats where oaks are present, as well as riparian areas. Nests in tree cavities.	**Unlikely.** The trees within the Project Area are unlikely to provide cavities for nesting. The species may forage in the area.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Nuttall's woodpecker Picoides nuttallii	BCC	Year-round resident in lowland woodlands throughout much of California west of the Sierra Nevada. Typical habitat is dominated by oaks; also occurs in riparian woodland. Nests in tree cavities.	**Unlikely.** Vegetation within the Project Area is composed primarily of small, maintained, ornamental trees which are unlikely to provide cavities for nesting. The species has been observed in the area and may forage within the Project Area, but due to the lack of tree cavities the species is unlikely to nest within the Project Area (eBird 2015).	No further action is recommended for this species.
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Resident of San Francisco bay region fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging, tall grasses, tule patches, willows for nesting.	**No Potential.** The Project Area does not provide suitable salt marsh habitat to support the species.	No further action is recommended for this species.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	**No Potential.** The Project Area lacks intact expanses of grassland habit that are required by this species.	No further action is recommended for this species.
Vaux's swift *Chaetura vauxi*	SSC	Summer resident. Forages high in the air over a variety of habitats but prefers rivers/lakes in forest areas. Requires trees with vertical cavities for nesting.	**No Potential.** Trees within the Project Area do not provide adequate vertical cavities for the species to nest. Typical foraging habitat is not found within the Project Area. The species has been identified within 1.5 miles of the Project Area and may be seen flying over the Project Area (eBird 2015).	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
least bell's vireo *Vireo bellii pusillus*	FE, SE	Summer resident. Breeds in riparian habitat along perennial or intermittent rivers and creeks; prefers a multi-tiered canopy with dense early successional vegetation in the understory. Willows, mulefat and other understory species are typically used for nesting.	**No Potential.** The Project Area does not contain any riparian or aquatic habitat to support the species.	No further action is recommended for this species.
marbled murrelet *Brachyramphus marmoratus*	FT, SE	(Nesting) Feeds near shore; nests inland along the Pacific coast, from Eureka to Oregon border, and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland. Nests often built in Douglas-fir or redwood stands containing platform-like branches.	**No Potential.** The Project Area does not contain any old growth redwood forest to support nesting. The Project Area does not contain any salt water which could support foraging by the species.	No further action is recommended for this species.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE, BCC	Summer resident, breeding in dense riparian forests and jungles, typically with early successional vegetation present. Utilizes densely-foliaged deciduous trees and shrubs. Eats mostly caterpillars. Current breeding distribution within California very restricted.	**No Potential.** The Project area does not contain any riparian forest habitat that would support the species for either nesting or foraging.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Alameda song sparrow *Melospiza melodia pusillula*	BCC, SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits pickleweed marshes; nests low in gumplant bushes (high enough to escape high tides) and in pickleweed.	**No Potential.** The Project Area lacks tidal salt marsh habitat to support nesting or foraging by the species.	No further action is recommended for this species.
Reptiles and Amphibians				
western pond turtle *Actinemys marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
giant garter snake *Thamnophis gigas*	FT, ST, RP	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE, SE, CFP, RP	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	**No Potential.** The Project Area has no freshwater marsh habitat to support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses.	**No Potential.** The Project Area has no grassland or other natural, undeveloped habitat that could support foraging or nesting by the species.	No further action is recommended for this species.
foothill yellow-legged frog *Rana boylii*	SSC	Found in or near rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
California red-legged frog *Rana draytonii*	FT, SSC	Associated with quiet perennial to intermittent ponds, stream pools, and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**No Potential.** The Project Area lacks burrows and has no suitable aquatic or upland habitat to support the species.	No further action is recommended for this species.
blunt-nosed leopard lizard *Gambelia sila*	FE, SE, CFP, RP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	**No Potential.** The Project Area has no desert scrub habitat that could support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
California tiger salamander *Ambystoma californiense*	FT, ST, SSC, RP	Populations in Santa Barbara and Sonoma counties currently listed as endangered. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	**No Potential.** The Project Area lacks burrows and has no suitable aquatic or upland habitat to support the species.	No further action is recommended for this species.
Fishes				
green sturgeon *Acipenser medirostris*	FT, SSC	Anadromous. Spawns in the Sacramento and Klamath River systems. Lingering transients may be found throughout the San Francisco Bay Estuary, particularly juveniles.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
tidewater goby *Eucyclogobius newberryi*	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
delta smelt *Hypomesus transpacificus*	FT, SE, RP	Endemic to the Sacramento-San Joaquin delta area; found in areas where salt and freshwater systems meet. It occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
longfin smelt *Spirinchus thaleichthys*	FC, ST, SSC, RP	Found in open waters of estuaries, mostly in the middle or bottom of the water column. This species prefers salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
chinook salmon – Sacramento River winter-run ESU *Oncorhynchus tshawytscha*	FE, SE, RP	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 degrees C for spawning. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles typically migrate to the ocean soon after emergence from the gravel.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
chinook salmon - Central Valley spring-run ESU *Oncorhynchus tshawytscha*	FT, ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October. Juveniles migrate soon after emergence as young-of-the-year, or remain in freshwater and migrate as yearlings.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
coho salmon - central CA coast ESU *Oncorhynchus kisutch*	FE, SE	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
steelhead - south/central CA coast DPS *Oncorhynchus mykiss irideus*	FT, SSC	Occurs in coastal basins from the Pajaro River south to, but not including, the Santa Maria River. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.
steelhead - central CA coast ESU *Oncorhynchus mykiss*	FT	Anadromous, spending most of life cycle in the ocean. This ESU occurs from the Russian River south to Soquel Creek and Pajaro River, including the San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential.** The Project Area has no aquatic habitat to support the species.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Invertebrates				
conservancy fairy shrimp *Branchinecta conservatio*	FE, SSI, RP	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	**No Potential.** The Project Area is entirely developed and does not contain any vernal pool habitat**.**	No further action is recommended for this species.
vernal pool tadpole shrimp *Lepidurus packardi*	FE	VPTS pools are commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**No Potential.** The Project Area is entirely developed and does not contain any vernal pool habitat.	No further action is recommended for this species.
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT, SSI, RP	Occurs only in the central valley of California, in association with blue elderberry (Sambucus mexicana). Prefers to lay eggs in elderberrry 2 to 8 inches in diameter; some preference shown for "stressed" elderberry.	**No Potential.** The Project Area does not contain any elderberry to support the species**.**	No further action is recommended for this species.
San Bruno elfin butterfly *Incisalia (=Callophrys) mossii bayensis*	FE, SSI, RP	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tied to the distribution of the larval host plant, *Sedum spathulifolium*.	**No Potential.** The Project Area is outside of the known range for this species and lacks suitable coastal scrub habitat.	No further action is recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
bay checkerspot butterfly *Euphydryas editha bayensis*	FT, SSI, RP	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurscens* are the secondary host plants.	**No Potential.** The Project Area is entirely developed. There are no serpentine soils which support this species' required host plants.	No further action is recommended for this species.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SC	State Candidate
SE	State Endangered
ST	State Threatened
SSC	California Department of Fish and Wildlife (CDFW) Species of Special Concern
SSI	California Department of Fish and Wildlife (CDFW) Special Status Invertebrate
BCC	U.S. Fish & Wildlife Service (USFWS) Birds of Conservation Concern
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group Priority Species

California Native Plant Society Rankings

Rank 1A	California Native Plant Society (CNPS) Rank 1A: Plants presumed extirpated in California and rare or extinct elsewhere
Rank 1B.1	California Native Plant Society (CNPS) Rank 1B.1: Plants rare, threatened or endangered in California and elsewhere (seriously threatened in California)
Rank 1B.2	California Native Plant Society (CNPS) Rank 1B.2: Plants rare, threatened, or endangered in California and elsewhere (moderately threatened in California)
Rank 2B.2	California Native Plant Society (CNPS) Rank 2B.2: Plants rare, threatened, or endangered in California, but more common elsewhere (moderately threatened in California)
Rank 3	California Rare Plant Rank 3: Plants about which more information is needed - A review list
Rank 3.2	California Rare Plant Rank 3.2: Plants about which more information is needed - A review list (moderately threatened in California)
Rank 4.2	California Rare Plant Rank 4.2: Plants of limited distribution - A watch list (moderately threatened in California)
Rank 4.3	California Rare Plant Rank 4.3: Plants of Limited Distribution - A watch list (not very threatened in California)

****Potential species occurrence definitions:**

Present. Species was observed on the site during site visits or has been recorded (i.e. CNDDB, other reports) on the site recently.

High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species has a low probability of being found on the site.

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

APPENDIX C

SITE PHOTOGRAPHS

Above: View of the Project Area looking southwest along Benton Street, showing fully maintained and landscaped yards within the Project Area.

Below: View looking north from the corner of Sherman Street and Benton Street. The photographs on this page represent the majority of landscaped surfaces within the Project Area.

Photographs taken March 04, 2015

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Above: View of the Project Area and storage units to the left as seen from the corner of El Camino Real and Benon Street, looking northwest along El Camino Real.

Below: Open gravel area at the end of Sherman Street.

Photographs taken March 04, 2015

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Above: View northward along The Alameda. The Project Area (right) is almost entirely developed with minimal landscaping.

Below: Currently occupied and operated storage units within the eastern portion of the Project Area.

Photographs taken March 04, 2015

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Tree Report

The Irvine Company

Tree Report
Mission Town Center

Prepared for:
The Irvine Company
690 N. McCarthy Blvd., #100
Milpitas CA 95035

Prepared by:
HortScience, Inc.
325 Ray Street
Pleasanton, CA 94566

March 2015

Tree Report

Mission Town Center
Santa Clara CA

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Introduction and Overview

The Irvine Company is planning to redevelop several properties in the area of Sherman and Fremont Streets in Santa Clara CA, known as the Mission Town Center. Existing site use consists of office, warehouse and industrial buildings, residences, parking and associated landscape. The Irvine Company requested that HortScience, Inc. assess the health and structural condition of trees, and provide preliminary recommendations for tree preservation. This report presents the following information:

1. Evaluation of tree health and structural condition.
2. Assessment of tree suitability for preservation.
3. Guidelines for tree preservation.

Survey Methods

Trees were surveyed in January 2015. Each tree larger than 5" in diameter was visually assessed from the ground and evaluated as follows:

1. Identifying the tree as to species.
2. Attaching a numerically coded metal tag on the trunk of each tree.
3. Measuring the trunk diameter at a point 48" above grade.
4. Evaluating the health and structural condition using a scale of 0 – 5:
   - ***5*** - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   - ***4*** - Tree with slight decline in vigor, small amount of twig dieback, or minor structural defects that could be corrected.
   - ***3*** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   - ***2*** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   - ***1*** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormic shoots (secondary shoots that arise along the trunk and branches); extensive structural defects that cannot be abated.
   - ***0*** – Tree is dead.
5. Assess tree suitability for preservation as good, moderate or poor.
6. Determining if the tree meets the City of Santa Clara's criteria for Protected status as established in General Plan Conservation Policy 5.10.1-P4, ""Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way." Where trees had more than one stem, the circumference of all stems was added together. For the purposes of this report, trees in either good (rating of 4) or excellent (rating of 5) condition were considered "healthy."
7. Determining if any City-designated Heritage trees are present.

Description of Trees

Thirty-five (35) trees were evaluated, representing 14 species (Table 1). All trees appeared to have been planted as part of landscape development when the properties were originally developed. None of the species present were native to California.

Table 1. Tree condition and frequency of occurrence. Mission Town Center. The Irvine Company. Santa Clara CA.

Common name	Scientific name	Condition				No. of Trees	
		Poor	Fair	Good	Excell.	Protected	Total
Tree of heaven	*Ailanthus altissima*	1	--	--	--	--	1
Orange	*Citrus* x *sinensis*	--	1	--	--	--	1
Italian cypress	*Cupressus sempervirens*	1	8	3	--	--	12
Persimmon	*Diospyros kaki*	--	1	--	--	--	1
Southern magnolia	*Magnolia grandiflora*	--	--	1	--	1	1
Avocado	*Persea americana*	--	--	2	--	2	2
Italian stone pine	*Pinus pinea*	1	--	--	--	--	1
Pittosporum	*Pittosporum tobira*	--	--	1	--	--	1
London plane	*Platanus* x *hispanica*	--	--	2	1	2	3
Flowering cherry	*Prunus serrulata*	1	--	--	--	--	1
Black locust	*Robinia pseudoacacia*	--	2	--	--	--	2
Organpipe cactus	*Stenocereus thurberi*	--	--	1		1	1
Queen palm	*Syagrus romanzoffiana*	--	--	--	2	2	2
Mexican fan palm	*Washingtonia filifera*	--	1	2	3	5	6
Total, all trees surveyed		**4**	**13**	**12**	**6**	**12**	**35**

The City of Santa Clara's criteria for Protected (tree) status is established in General Plan Conservation Policy 5.10.1-P4, ""Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way." We did not observe any cedars (*Cedrus* sp., *Chamaecyparis* sp., *Calocedrus decurrens*), redwoods (*Sequoia sempervirens, Sequoiadendron giganteum*, *Metasequoia glyptostroboides*), oak species (*Quercus* sp.), bay laurel (*Umbellularia californica*), olives (*Olea europaea*) or pepper (*Schinus* sp.).

Appendix 8.10 of the City's General Plan lists trees that have been given Heritage status. Based on our review of the list, none of the trees at the project site has Heritage status.

Trees considered to have Protected status met both of the following criteria: 1) cedars, redwoods, oaks, olives, bay laurel and pepper of any size or other species with trunk circumference of 36" or greater (measured at 48" above the ground) and 2) healthy (condition rating of 4 or 5). Twelve (12) of the 35 trees were both large enough and in healthy to meet the criteria as Protected (see ***Tree Assessment Form***).

Italian cypress was the most frequently occurring species with 12 trees. Trees #60 – 69 were planted in a row, adjacent to a property line, where they formed a dense hedge (Photo 1). They planted close to one another. As a result, tree canopies were touching and competing for space. Cypresses were semi-mature in development with trunk diameters between 6" and 10". Overall tree health included poor (#68), fair (#61, 62, 63, 65, 66, 67) and good (#60, 64, 69). Trees in good condition were located at the ends of the hedge and were more exposed to light. Several trees had long trunk wounds near the base, the worst of which was #68.

Photo 1. Italian cypress #60 – 69 formed a dense hedge.

Italian cypress #88 and 89 were located in the front yard on Harrison St. Both were mature in development and in fair condition. Both had been topped.

Mexican fan palms #73, 74, 75 and 79 were located in a parking area at the intersection of The Alameda and Benton St. (Photo 2). The amount of brown (clear) trunk ranged from 14' (#74), 20' (#75), 30' (#73) and 35' (#79). All were located in small pavement cutouts. The base of palms #75 and #79 had displaced the adjacent curb. Tree condition was excellent for #73, 74 and 79 but good for #75.

Photo 2. Mexican fan palms #73, 74, 75 and queen palm #76 (red arrow).

Mexican fan palms #90 and 91 were located in a front yard on Harrison St. These were also mature in development with 40' brown trunk

Three (3) London planes were present in the same parking area on Benton St., facing The Alameda. Trees were surrounded by 4' tall shrubs. The planes were semi-mature in development with trunk diameters between 10" and 13". Tree condition was excellent for #81 and good for #80 and 82.

Queen palms #76 and 77 were also in this parking lot, between the pavement and a fence. The palms were semi-mature in development with 7' and 8' of brown trunk. Both were in excellent condition.

Black locusts #84 and 85 were located behind the sidewalk at the intersection of Benton and Sherman Streets. Both were mature in development. Tree #84 had a trunk diameter of 25" while #85 had trunks of 22" and 21". Both trees had been rounded over (crown reduced) to clear the adjacent overhead utility lines. Both were in fair condition. Black locust #84 was one-sided to the west with a basal cavity. Black locust #85 had codominant trunks that arose 2' above the ground.

Two mature avocados were present. Tree #78 was located in a parking area (Photo 3). Roots from the tree had lifted the pavement on all 3 sides of the 11' wide planting space. Four upright stems arose at 8'. There was no central leader. The upper crown was open and rangy in form.

Photo 3. Looking east across parking lot.

Avocado #92 located along El Camino Real near Harrison St. Two trunks of 20" arose at 1' resulting in a rounded crown. Tree condition was good.

No other species was represented by more than a single tree. Included in this group were:

- Southern magnolia was located in the front yard of a private residence on The Alameda (Photo 4). The trunk was 10' behind the face of curb. The tree was mature in development with a trunk diameter of 35". Three large scaffold limbs arose at 6'. One stem was vertical and two had broad sweep upright. A crack was present in the stem on the north. Extensive twig dieback was present throughout the canopy, likely due to lack of irrigation.

Photo 4. Looking north. The Alameda is the on the left.

- Persimmon #71 was located in the yard of a private residence at the corner of The Alameda and Fremont St. The tree was mature in development, had a trunk diameter of 11" and was in fair condition.

- Organpipe cactus #72 was adjacent to a private residence on The Alameda. It had several trunks that arose near the base. Overall condition was good.

- Pittosporum #83 was 10" diameter small tree located in a private residence on Benton St. The tree was surrounded by pavement. Overall condition was good.

- Orange #86 was a typical small tree in fair condition.

- Cherry #87 was 6" and largely dead with a large decay fruiting body at the base of the trunk.

- Tree of heave #93 was a small root sprout in poor condition.

- Italian stone pine #94 was a young tree in poor condition. The main trunk had been removed, leaving poor form and structure.

Description of individual trees is found on the enclosed ***Tree Assessment Form***. Tree locations are found on the ***Tree Assessment Map***. Both are included as **Attachments**

Suitability for Preservation

Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape. Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. For example, London plane and Mexican fan palm are tolerant of construction impacts while southern magnolia and black locust are more sensitive.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Species invasiveness**
  Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (www.cal-ipc.org/paf) lists species identified as having being invasive. Santa Clara is part of the Central West Floristic Province. Among species located at the Mission Town Center, black locust and Mexican fan palm have been identified as invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (Table 2).

Table 2. Tree suitability for preservation. Mission Town Center. The Irvine Company. Santa Clara CA.

High	Trees with good health and structural stability that have the potential for longevity at the site. Six (6) trees were rated as having high suitability for preservation were Mexican fan palm #73, 74, 79; Queen palm #76, 77; and London plane #81.
Moderate	Trees in fair health and/or possessing structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Sixteen (16) trees were rated as having moderate suitability for preservation: Italian cypress #60, 64, 69, 88, 89; London plane #80, 82; avocado #78, 92; Mexican fan palm #78, 90; organpipe cactus #72, persimmon #71, pittsporum #83, southern magnolia #70 and orange #86.
Low	Trees in poor health or possessing significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Thirteen (13) trees were rated as having low suitability for preservation: Italian cypress #61, 62, 63, 65, 66, 67, 68; black locust #84, 85; cherry #87, Italian stone pine #94, Mexican fan palm #91 and tree of heaven #93.

We consider trees with high suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Mitigation Requirements

The City of Santa Clara’s General Plan Conservation Policy 5.10.1-P4 requires that development "[p]rotect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference (12” diameter) measured from 48 inches above-grade on private and public property as well as in the public right-of-way." General Plan Policy 5.10.1-P3 requires "preservation of all City-designated heritage trees listed in the Heritage Tree Appendix 8.10 of the General Plan." The City also requires that tree removal be mitigated by replanting. General Plan Policy 5.3.1-P10 requires that new development "provide opportunities for increased landscaping and trees in the community, including requirements for new development to provide street trees and a minimum 2:1 on- or off-site replacement for trees removed as part of the project."

Additionally, the City's Design Guidelines require that mature trees proposed for removal be replaced on-site at a 1:1 ratio with 24”, 36” box or specimen size material. The City of Santa Clara does not have any further applicable tree protection policies, regulations, or ordinances.

Based on our assessment, there were 35 trees at the Mission Town Center project. No cedars, redwoods, oaks, bay laurel, or pepper trees of any size were present. No heritage trees listed in the Heritage Tree Appendix 8.10 of the General Plan were present. There were 12 Protected trees (based on trunk circumference and tree health). Normal mitigation requirement would be 2 replacement trees for every tree to be removed based on General Plan Policy 5.3.1-P10.

Evaluation of Impacts and Recommendations for Action

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The results of the general and individual tree surveys were the reference points for tree condition and quality. Impacts from the proposed project were assessed using the conceptual site plan prepared by MVE + Partners (March 2015).

The proposed project would consolidate several existing parcels into one development. A new residential – retail complex would be constructed. Sections of Sherman and Fremont Streets would be abandoned and incorporated into the new community. All existing parking, driveways and structures would be demolished.

Impacts to trees could occur in a variety of ways. Demolition of the existing structure and associated infrastructure may directly damage tree roots and crowns. Grading and other construction activities may also damage trees, through both direct mechanical injury and indirectly by altering drainage. New structures will be constructed in areas currently occupied by trees.

There are no trees on the project site that would require preservation under the City's policies based on species (cedars, redwoods, oaks, olives, bay laurel and pepper). There are, however, twelve trees that are both healthy and have a circumference greater than 36".

Based on my assessment of the conceptual site plan, there is no opportunity for preservation within and immediately adjacent to the proposed project area. The entire site will be demolished, cleared and re-configured. Even though 6 trees possess high suitability for preservation, impacts from the proposed project will be beyond their tolerance. For this reason, I recommend removal of all 35 trees assessed.

The proposed project should provide a minimum 2:1 on- or off-site replacement all trees removed as part of the project, or should plant at least 70 trees either on or off-site if all 35 trees are removed. With this mitigation, any impacts to trees will be less than significant.

HortScience, Inc.

James R. Clark, Ph.D.
Certified Arborist WE-0846
Registered Consulting Arborist #357

ATTACHMENTS

Tree Assessment Form

Tree Assessment Map

Tree Assessment

Mission Town Center
Santa Clara CA
January 2015

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	CONDITION 1=poor 5=excell.	PROTECTED TREE?	SUITABILITY for PRESERVATION	COMMENTS
60	Italian cypress	10	4	No	Moderate	Adj. to fence; typical form & structure; hedge.
61	Italian cypress	10	3	No	Low	Adj. to fence; typical form & structure; hedge.
62	Italian cypress	10	3	No	Low	Adj. to fence; typical form & structure; hedge.
63	Italian cypress	6	3	No	Low	Adj. to fence; typical form & structure; hedge.
64	Italian cypress	10	4	No	Moderate	Adj. to fence; corner; typical form & structure; hedge.
65	Italian cypress	9	3	No	Low	Adj. to fence; crowded; typical form & structure; hedge.
66	Italian cypress	7	3	No	Low	Adj. to fence; crowded; typical form & structure; hedge.
67	Italian cypress	6	3	No	Low	Adj. to fence; very crowded; typical form & structure; old trunk wound; hedge.
68	Italian cypress	7	2	No	Low	Adj. to fence; long trunk wound on S.; hedge.
69	Italian cypress	8	4	No	Moderate	Adj. to fence; old trunk wound; end of hedge.
70	Southern magnolia	35	4	Yes	Moderate	Approx. 10' to curb; multiple attachments @ 6'; 1 vertical; 2 with sweep; stem on N. a hazard beam; twig dieback throughout canopy.
71	Persimmon	11	3	No	Moderate	Randy form; low branched.
72	Organpipe cactus	8,8,7,7,6,5	4	Yes	Moderate	2' from foundation; low branched.
73	Mexican fan palm	21	5	Yes	High	Typical form & structure; 30' brown trunk; base 1' from sidewalk on E.
74	Mexican fan palm	22	5	Yes	High	Typical form & structure; 14' brown trunk.
75	Mexican fan palm	24	4	Yes	Moderate	Typical form & structure; 20' brown trunk; 3' wide planter; base displaced curb on 2 sides.

Tree Assessment

Mission Town Center
Santa Clara CA
January 2015

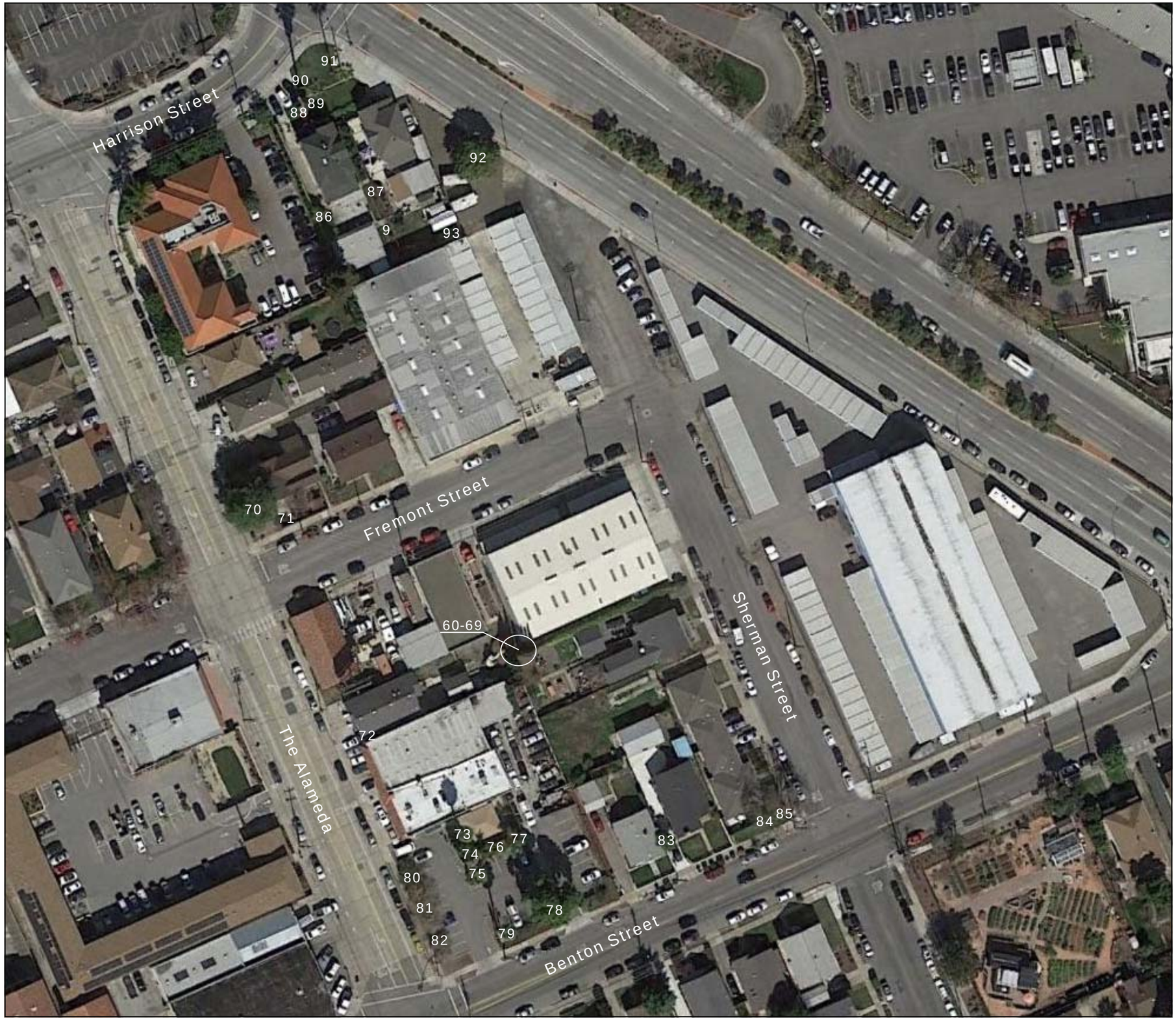
HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	CONDITION 1=poor 5=excell.	PROTECTED TREE?	SUITABILITY for PRESERVATION	COMMENTS
76	Queen palm	13	5	Yes	High	Typical form & structure; 8' brown trunk; base 1' from curb.
77	Queen palm	15	5	Yes	Moderate	Typical form & structure; 7' brown trunk.
78	Avocado	28	4	Yes	Moderate	11' wide planter; curb lifted on 3 sides; multiple attachments @ 8'; 4 stems narrow & upright; lost central leader.
79	Mexican fan palm	21	5	Yes	High	Typical form & structure; 35' brown trunk; curb lifted on E.
80	London plane	13	4	Yes	Moderate	Corrected lean S.; codominant trunks @ 8'; shrub bed.
81	London plane	10	5	No	High	Good form & structure; shrub bed.
82	London plane	11	4	Yes	Moderate	Codominant trunks @ 5'; rounded form; shrub bed.
83	Pittosporum	10	4	No	Moderate	Small tree; btwn. house & driveway; base adj. to pavement.
84	Black locust	25	3	No	Low	4' from sidewalk; basal cavity on W.; one-sided to W.; rounded over for utility lines.
85	Black locust	22,21	3	No	Low	5' from sidewalk on 2 sides; codominant trunks @ 2'; rounded over for utility lines.
86	Orange	5,5,4	3	No	Moderate	2' wide planter; typical form & structure; twig dieback in upper canopy.
87	Flowering cherry	6	1	No	Low	All but dead; huge *Ganoderma* conk @ base.
88	Italian cypress	12	3	No	Moderate	Tag @ base; diameter estimated; topped @ 14'.

Tree Assessment

Mission Town Center
Santa Clara CA
January 2015

TREE No.	SPECIES	TRUNK DIAMETER (in.)	CONDITION 1=poor 5=excell.	PROTECTED TREE?	SUITABILITY for PRESERVATION	COMMENTS
89	Italian cypress	12	3	No	Moderate	Tag @ base; diameter estimated; topped @ 14'.
90	Mexican fan palm	21	4	Yes	Moderate	40' brown trunk; adj. to sidewalk.
91	Mexican fan palm	19	3	No	Low	40' brown trunk; thin canopy.
92	Avocado	20,20	4	Yes	Moderate	Codominant trunks @ 1'; kiss to 4'; lean apart but canopy intact; round form; lifted.
93	Tree of heaven	5	2	No	Low	Poor form & structure; base @ property line; topped.
94	Italian stone pine	7	2	No	Low	Poor form & structure; topped @ 4' leaving large wound; propped up.



Tree Assessment Map

Viso Property
Santa Clara, CA

Prepared for:
Irvine Company
Milpitas, CA

February 2015

No Scale

Notes

- Base map provided by: ESRI
- Numbered tree locations are approximate.

HORT SCIENCE
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Preliminary Geotechnical Investigation Report

3 February 2015

Mr. Aaron Barger
The Irvine Company
690 N. McCarthy Blvd, Suite 100
Milpitas, California 95035

Re: Preliminary Geotechnical Investigation
Mission Town Center Apartment Homes
Santa Clara, California
Langan Project No.: 770619601

Dear Mr. Barger:

This letter report presents the results of the preliminary geotechnical investigation by Langan Treadwell Rollo for the proposed Viso Property development in Santa Clara, California. The approximate location of the site is shown on Figure 1.

The site occupies approximately 5.9-acre and is bound by Benton Street to the south, El Camino Real to the east, a community center and residential properties to the north and The Alameda to the west, as shown on Figure 2. The site is currently three city blocks that are occupied by warehouses and residential and commercial buildings. In addition, Fremont Street and Sherman Street run through the site. The site is relatively flat, with ground surface elevations ranging from approximately Elevation 67 to 72 feet[1] (Civil Engineering Associates, 2014).

We understand current plans for the redevelopment of the site will consist of the demolition of the existing buildings and Fremont and Sherman Streets and constructing five-story Type III wood-framed structures wrapped around a six-story concrete parking garage, as shown on Figure 3. Currently, the proposed buildings will be at-grade or with one basement level.

This letter report was prepared based on the scope presented in our proposal dated 1 October 2014. The purpose of our investigation was to provide preliminary recommendations for the proposed development for the following:

- site seismicity and seismic hazards, if any;
- potential foundation type(s) for the proposed buildings;
- preliminary capacities for the recommended foundation type(s), including vertical capacity and lateral load resistance;
- subgrade preparation for slab-on-grade floors;

[1] All elevations reference NAVD 88 and are from "ALTA/ASCM Land Title Survey, 1250 Sherman Street" dated 12/16/14 (Civil engineering Associates, 2014)

- 2013 California Building Code (CBC) soil profile type and mapped values S_S and S_1 and coefficients F_a and F_v;
- site preparation and grading, including criteria for fill quality and compaction;
- soil corrosivity;
- other potential geotechnical concerns for development of the site.

1.0 FIELD EXPLORATION AND LABORATORY TESTING

As part of our field exploration, we drilled five borings and performed seven Cone Penetration Tests (CPTs) at the site. The approximate locations of the borings and CPTs are presented on Figures 2 and 3. Prior to performing the field exploration, we obtained a soil boring/monitoring well permit from the Santa Clara Valley Water District (SCVWD), notified Underground Service Alert (USA) and checked the boring locations for underground utilities using a private utility locator. Details of each aspect of the field exploration and laboratory testing are discussed in the remainder of this section.

1.1 Borings

Five borings, designated B-1 through B-5, were drilled on 8 to 9 December 2014 using a truck-mounted, drill rig operated by Exploration Geoservices, Inc. The borings were drilled with a hollow stem auger to approximately 45 feet below ground surface (bgs). Our engineer logged the borings and obtained samples of the material encountered for visual classification and laboratory testing. Logs of the borings are presented in Appendix A as Figures A-1 through A-5. The soil encountered in the borings was classified in accordance with the Classification Chart presented on Figure A-6. Soil samples were obtained using three different types of samplers: two driven split-barrel samplers and a piston thin-walled sampler. The sampler types are as follows:

- Sprague & Henwood (S&H) split-barrel sampler with a 3.0-inch outside diameter and 2.5-inch inside diameter, lined with steel or brass tubes with an inside diameter of 2.43 inches
- Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and 1.5-inch inside diameter, without liners
- Shelby Tube (ST) a piston thin-walled sampler with a 3-inch outside diameter and a 2.93-inch inside diameter

The sampler types were chosen on the basis of soil type being sampled and desired sample quality for laboratory testing. In general, the S&H sampler was used to obtain samples in medium stiff to very stiff cohesive soil and the SPT sampler was used to evaluate the penetration resistance of sandy soil. The ST sampler was used to obtain relatively undisturbed samples of soft to medium stiff cohesive soil.

The SPT and S&H samplers were driven with a 140-pound, above-ground, automatic safety hammer falling 30 inches. The samplers were driven up to 18 inches and the hammer blows required to drive the samplers every six inches of penetration were recorded and are presented on the boring logs. A "blow count" is defined as the number of hammer blows per six inches of penetration. The blow counts required to drive the S&H and SPT samplers were converted to approximate SPT N-values using factors of 0.6 and 1.0, respectively, to account for sampler type and hammer energy, and are shown on the boring logs. The blow counts used for this conversion were the last two blow counts.

The ST sampler is pushed hydraulically into the soil; the piston pressure required to advance the sampler is shown on the log, measured in pounds per square inch (psi).

Upon completion, the boreholes were backfilled with cement grout in accordance with the requirements of the SCVWD.

The soil cuttings from the borings were collected in 55-gallon drums, which were stored temporarily at the site, tested, and transported off-site for proper disposal.

1.2 Cone Penetration Test

Seven CPTs (designated as CPT-1 through CPT-7) were performed 8 December 2014 by Middle Earth Geo Testing Inc. at the approximate locations shown on Figures 2 and 3. The CPTs were advanced to depths of approximately 47 to 80 feet bgs.

The CPTs were performed by hydraulically pushing a 1.4-inch-diameter, cone-tipped probe, with a projected area of 15 square centimeters, into the ground. The cone tip measures tip resistance, and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges or load cells within the cone continuously measured the cone tip resistance and frictional resistance during the entire depth of each probing. Accumulated data was processed by computer to provide engineering information, such as the types and approximate strength characteristics of the soil encountered. The CPT logs, showing tip resistance, side friction and friction ratio by depth, as well as interpreted SPT N-Values and interpreted soil classification, are presented in Appendix B on Figures B-1 through B-7. Soil types were estimated using the classification chart shown on Figure B-8.

Pore-pressure dissipation tests (PPDTs) were performed during the advancement of CPT-1, CPT-2 and CPT-4 at various depths. PPDTs are conducted at various depths to measure hydrostatic water pressures and to determine the approximate depth of the groundwater level. The variation of pore pressure with time is measured behind the tip of the cone and recorded. For this investigation, the duration of the tests range from approximately 400 to 1,100 seconds. The results of the three PPDTs are presented on Figures B-9 through B-11.

Upon completion of the field investigation, the CPT holes were backfilled with cement-bentonite grout in accordance with the requirements of SCVWD.

1.3 Laboratory Testing

The samples recovered from the field investigation were examined to verify their soil classification, and representative samples were selected for laboratory testing. Samples were tested to measure moisture content, fines contents, shear strength, plasticity (Atterberg Limits), R-value and compressibility, where appropriate. Results of the laboratory tests are included on the boring logs and in Appendix C.

1.4 Soil Corrosivity Testing

To evaluate the corrosivity of the soil near the foundation subgrade, we performed corrosivity tests on samples obtained from the upper three feet. The corrosivity of the soil samples was evaluated by CERCO Analytical using the following ASTM Test Methods:

- Redox - ASTM D1498
- pH - ASTM D4972
- Resistivity (100% Saturation) – ASTM G57
- Sulfide – ASTM D4658M
- Chloride – ASTM D4327
- Sulfate – ASTM D4327

The laboratory corrosion test results and a brief corrosivity evaluation are presented in Appendix D.

2.0 SITE AND SUBSURFACE CONDITIONS

The site is currently three city blocks that are occupied by warehouses and residential and commercial buildings. In addition, Fremont Street and Sherman Street cross through the site.

An idealized subsurface profile (Figure 4) illustrates the general subsurface conditions at the site. Where explored, pavement sections of approximately 3 to 5 inches of asphalt concrete (AC) underlain by up to 12 inches of aggregate base (AB) were encountered. Beneath the pavement section, the site is underlain by alluvial deposits. The upper clay is approximately 20 to 30 feet thick, except at Boring B-3 where the upper clay is 37 feet thick. The upper clay consists of medium stiff to very stiff clay, clay with sand, clay with sand and gravel and sandy clay. Laboratory tests results indicate the clay has moderate expansion potential[2] with a plasticity index of 18. Where tested, the undrained shear strengths of the near surface clay range from 770 to 1,920 pounds per square foot (psf). Laboratory test results indicate the clay

[2] Highly expansive soil undergoes large volume changes with changes in moisture content.

has a compression ratio of 0.13 to 0.17 and is overconsolidated[3]. The clay has interbedded layers of loose to medium dense sand, clayey sand and silty sand with thicknesses of one to five feet; where tested, the sand contains 15 to 38 percent fines (particle passing the No. 200 sieve).

The upper clay is underlain by medium dense to very dense sand, silty sand, sand with gravel, gravel and gravel with sand approximately up to 19 feet in thickness. Where tested, the sand contains about 4 to 23 percent fines. The sand and gravel layer is underlain stiff to hard clay with interbedded layers of dense to very dense sand, silty sand and sand with gravel to the maximum depth explored.

Based on maps[4] of the historic high groundwater in the project vicinity, the groundwater is approximately 10 to 20 feet bgs. The groundwater levels encountered in our borings during drilling and measured in PPDTs that were performed during the advancement of CPT-1, CPT-2 and CPT-4 are summarized in Table 1. The groundwater levels were measured at the time of drilling and likely do not represent the stabilized groundwater level. Season fluctuation in rainfall influence groundwater levels and may cause several feet of variation.

TABLE 1

Summary of Groundwater Depths Encountered During Field Exploration

Exploration Point	Date Measured	Groundwater Depth (feet)	Groundwater Elevation (feet)
B-1	12/8/2014	11	56.3
B-2	12/8/2014	11	56.6
B-3	12/9/2014	8.5	59.0
B-4	12/9/2014	26.5	45.3
B-5	12/8/2014	10	57.1
CPT-1 (PPDT)	12/8/2014	18.2	49.1
CPT-2 (PPDT)	12/8/2014	13.6	54.0
CPT-4 (PPDT)	12/8/2014	26.5	45.0

Notes:
1. Boring groundwater depths may not represent stabilized levels and groundwater levels may fluctuate due to seasonal rainfall.
2. PPDT = pore pressure dissipation test.

[3] An overconsolidated clay has experienced a pressure greater than its current load.

[4] California Division of Mines and Geology (2002). "State of California Seismic Hazard Zone Report 058 prepared by the California Geologic Survey".

3.0 REGIONAL SEISMICITY

The major active faults in the area are the San Andreas, San Gregorio, Hayward, and Calaveras Faults. These and other faults of the region are shown on Figure 5. For each of the active faults within 55 kilometers (km) of the site, the distance from the site and estimated mean characteristic Moment magnitude[5] [2007 Working Group on California Earthquake Probabilities (WGCEP) (2008) and Cao et al. (2003)] are summarized in Table 2.

TABLE 2
Regional Faults and Seismicity

Fault Segment	Approx. Distance from fault (km)	Direction from Site	Mean Characteristic Moment Magnitude
Monte Vista-Shannon	11	Southwest	6.50
Total Hayward	14	Northeast	7.00
Total Hayward-Rodgers Creek	14	Northeast	7.33
Total Calaveras	16	Northeast	7.03
N. San Andreas - Peninsula	17	Southwest	7.23
N. San Andreas (1906 event)	17	Southwest	8.05
N. San Andreas - Santa Cruz	20.5	Southwest	7.12
Zayante-Vergeles	30	South	7.00
Greenville Connected	39	East	7.00
San Gregorio Connected	40	West	7.50
Mount Diablo Thrust	43	North	6.70
Monterey Bay-Tularcitos	51	Southwest	7.30

Figure 5 also shows the earthquake epicenters for events with magnitude greater than 5.0 from January 1800 through August 2014. Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836 an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale (Figure 6) occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, $M_{w,}$ for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to a M_w of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a

[5] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

maximum intensity of XI (MM), a M_w of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The Loma Prieta Earthquake occurred on 17 October 1989, in the Santa Cruz Mountains with a M_w of 6.9, approximately 36 km from the site.

In 1868 an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated M_w for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably a M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (M_w = 6.2).

The most recent earthquake to be felt in the Bay Area occurred on 24 August 2014 and was located on the West Napa fault, approximately 102 kilometers north of the site, with a M_w of 6.0.

The 2007 WGCEP at the U.S. Geologic Survey (USGS) predicted a 63 percent chance of a magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Area in 30 years. More specific estimates of the probabilities for different faults in the Bay Area are presented in Table 3.

TABLE 3

WGCEP (2008) Estimates of 30-Year Probability of a Magnitude 6.7 or Greater Earthquake

Fault	Probability (percent)
Hayward-Rodgers Creek	31
N. San Andreas	21
Calaveras	7
San Gregorio	6

4.0 DISCUSSION AND PRELIMINARY RECOMMENDATIONS

The primary geotechnical issues that should be addressed during design development are adequate foundation support, settlement, and geologic hazards. Our discussions and recommendations regarding foundation and other geotechnical aspects of the project are presented in the remainder of this report.

4.1 Geologic Hazards

The site is in a seismically active area and will likely be subjected to very strong shaking during a major earthquake. Strong ground shaking during an earthquake can result in ground failure

such as that associated with soil liquefaction[6], lateral spreading[7], and cyclic densification[8]. Each of these conditions has been preliminarily evaluated based on our literature review, field investigation and analyses, and is discussed in this section.

4.1.1 Liquefaction and Associated Hazards

The site is located within a zone designated with the potential for liquefaction, as identified by the California Geologic Survey (formerly known as the California Department of Conservation, Division of Mines and Geology) in a map titled, *State of California Seismic Hazard Zones, San Jose West Quadrangle*, prepared by the California Geologic Survey, dated 19 October 2004.

When saturated soil with little to no cohesion liquefies during a major earthquake, it experiences a temporary loss of shear strength as a result of a transient rise in excess pore water pressure generated by strong ground motion. Flow failure, lateral spreading, differential settlement, loss of bearing, ground fissures, and sand boils are evidence of excess pore pressure generation and liquefaction.

We used the results of the CPTs to evaluate liquefaction potential; blow count data from the borings was not used because of the potential for heave and flow into the augers disturbing the soil and making the SPT N-values unreliable. Layers of loose to medium dense saturated sand and silty sand, varying in thickness of up to approximately three feet, were encountered below the groundwater level from depths of approximately 10 to 60 feet bgs. Based on our analyses, we conclude several of these layers could potentially liquefy during a major earthquake and may experience liquefaction-induced settlement.

Following the procedures presented in the 1996 NCEER and the 1998 NCEER/NSF workshops on the Evaluation of Liquefaction Resistance of Soils[9] and a peak ground acceleration (PGA) of 0.5g based on the peak ground acceleration (PGA_M), we estimate liquefaction induced settlement of these layers could be on the order of ½ to 1½ inch. Because the potentially liquefiable layers are discontinuous, we estimate that up to one inch of differential settlement may occur during an earthquake.

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6 Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporally loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits.

7 Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

8 Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is compacted by earthquake vibrations, causing ground surface settlement.

9 Youd, T.L. and Idriss, I.M., 2001, Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, Journal of Geotechnical and Geoenvironmental Engineering, 127(4), 297 – 313.

4.1.2 Seismic Densification

Cyclic densification refers to seismically-induced differential compaction of non-saturated granular material (sand and gravel above the groundwater table) caused by earthquake vibrations. The borings and CPTs indicate that the materials above the water table are sufficiently dense or clayey, and therefore the potential for seismic densification is low.

4.1.3 Lateral Spreading

Lateral spreading is a phenomenon in which a surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. The surficial blocks are transported downslope or in the direction of a free face, such as a channel, by earthquake and gravitational forces. Lateral spreading is generally the most pervasive and damaging type of liquefaction-induced ground failure generated by earthquakes.

The site is relatively flat and the potentially liquefiable soils are not continuous, hence, we conclude widespread shear zones should not develop for significant lateral displacements to occur during liquefaction. Therefore, lateral spreading is not likely to affect the site.

4.1.4 Fault Rupture

Historically, ground surface ruptures closely follow the trace of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act and no known active or potentially active faults exist on the site. Therefore, we conclude the risk of fault offset through the site from a known active fault is low. In a seismically active area, the remote possibility exists for future faulting in areas where no faults previously existed; however, we conclude that the risk of surficial ground deformation from faulting at the site is low.

4.1.5 Tsunami

Recent published maps (California Emergency Agency, 2009) indicate the project site is not within the tsunami inundation zone; therefore, we conclude the potential risk by inundation from tsunami to be low within the project site. However, the project civil engineer should evaluate the impact of sea level rise on the potential risk of inundation from a tsunami.

4.2 Foundation and Settlement

We preliminarily conclude light-weight at-grade structures, such as wood-framed buildings, may be supported on shallow footings that are founded near the bottom of the zone of severe moisture change or post-tensioned (P-T) slabs over select fill, provided the static and dynamic settlement discussed below are tolerable. If basements are proposed that extend at or below the groundwater table, then mat foundations should be considered. Heavier structures, such as a six-story parking garage, may need to be supported on deep foundations, such as piles, or on improved soil using Rammed Aggregate Piers (RAPs) to mitigate settlement associated with

heavier building loads. The proposed building site is susceptible to the following potential sources of settlement:

- consolidation of the underlying alluvial deposits under the weight of new building loads or new fill
- liquefaction-induced settlement.

Structural loads are presently not available for the proposed development. Once building loads and grading plans are available, the settlement estimates can be refined. For our analyses, we have assumed that proposed structures that will be at-grade will be founded near the existing ground surface elevation; where basements are proposed, we assumed the finished floor elevation of the basement is approximately 10 to 12 feet bgs. Preliminary bearing capacities for shallow foundations for wood frame structures and the associated static settlements are presented in Table 4.

TABLE 4

Shallow Foundations

Building Configuration	Allowable Dead Plus Live Load Bearing Capacity[1] (psf)	Estimated Settlement (inches)
At-Grade	2,500	1
Basement	1,800	½

Notes:
1. For total loads (wind and/or seismic), a one-third increase may be applied to the allowable dead plus live loads.

As discussed previously, we estimate that up to 1½ inch of liquefaction-induced settlements may occur; differential settlement between columns may be on the order of one inch during a major earthquake. These settlements are in addition to the predicted static induced consolidation settlement. The structural engineer should evaluate the impact of liquefaction-induced settlement to structures supported on shallow foundations. If the total and differential settlements for wood frame structures are not tolerable than a stiffer foundation system such as an interconnected grid system or mat should be used.

To reduce the potential for movement of the footings due to shrink and swell of the moderately expansive clay, we recommend that footings be bottomed at least 24 inches below the lowest adjacent soil subgrade (measured from the top of the select fill).

If PT slabs are used, design recommendations may be provided during final design.

One method of reducing the static settlement for heavy structures like the parking garage is to use Ram Aggregate Piers (RAPs) to improve the weak surficial soil. Shallow spread footings can then be used on top of the RAPs. RAPs improve the existing soil by replacing a portion of it with compacted gravel columns. RAPs are constructed by drilling 10- to 25-foot-deep, 30- to 36-inch-diameter shafts and backfilling the shafts with compacted aggregate. The aggregate is compacted in 12-inch lifts using a modified hydraulic tamper attached to an excavator. The purpose of the compacted aggregate piers is to reduce settlement potential and increase allowable bearing capacities (thus reducing the footing size) by strengthening the soil matrix. Compacted aggregate piers can also be designed to resist uplift loads.

4.3 Basement Walls

We recommend all basement walls be designed to resist lateral pressures imposed by the adjacent soil and vehicles. Because the site is in a seismically active area, the design should also be checked for seismic conditions. Under seismic loading conditions, there will be a seismic pressure increment that should be added to active earth pressures (Sitar et al., 2012). We used the procedures outlined in Sitar et al. (2012) and the peak ground acceleration based on the Design Earthquake ground motion level to compute the seismic pressure increment. Basement walls should be designed for the more critical loading condition of static or seismic conditions using the equivalent fluid weights and pressures presented in Table 5.

TABLE 5
Basement Wall Design Earth Pressures
(Drained Conditions)

Condition	Static Conditions		Seismic Conditions[1]
	Unrestrained Walls (Active)	Restrained Walls (At rest)	Total Pressure – Active Plus Seismic Pressure Increment
Above Groundwater	40 pcf	65 pcf	70 pcf
Below Groundwater	85 pcf	95 pcf	100 pcf

Notes:
1. The more critical condition of either at-rest pressure for static conditions or active pressure plus a seismic pressure increment for seismic conditions should be checked.

Where traffic will pass within 10 feet of basement walls, temporary traffic loads should be considered in the design of the walls. Traffic loads may be modeled by a uniform pressure of 100 psf applied in the upper 10 feet of the walls. If the basement walls are designed to resist

lateral forces such as wind or earthquake loading they should be checked using passive pressures. To calculate the passive resistance against the below-grade walls, we preliminarily recommend an equivalent fluid weight of 250 pcf. This value includes a factor of safety of about 1.5 and assumes several inches of movement would be required to mobilize full passive resistance. The walls should be checked by the structural engineer for this condition, if passive resistance of walls is needed.

The lateral earth pressures given assume the walls are properly backdrained above the water table to prevent the buildup of hydrostatic pressure. If the walls are not drained, they should be designed using the below groundwater earth pressures presented in Table 5 to account for hydrostatic pressure. One acceptable method for backdraining the walls is to place a prefabricated drainage panel against the back side of the wall. The drainage panel should extend to the base of the wall and drain into the surrounding soil near the base. We should check the manufacturer's specifications for the proposed drainage panel material to verify it is appropriate for its intended use.

If backfill is required behind basement walls, the walls should be braced or hand-compaction equipment used to prevent unwanted surcharges on the walls.

4.4 Slab-On-Grade Floors

Where slab-on-grade floors are to be cast, at least 3 percent above the soil subgrade should be scarified to a depth of eight inches, moisture conditioned to at least 3 percent above optimum moisture content, and rolled to provide a firm, non-yielding surface compacted to at least 88 percent relative compaction[10] where moderately expansive soil is encountered. See Section 4.6 for more detailed earthwork recommendations. A minimum of 8 inches of select fill should be placed beneath the slab-on-grade as discussed in Section 4.6. If the subgrade is disturbed during excavation for footings and utilities, it should be re-rolled. Loose, disturbed materials should be excavated, removed, and replaced with engineered fill during final subgrade preparation.

Moisture is likely to condense on the underside of the slabs, even though they will be above the groundwater table. Consequently, a moisture barrier should be installed beneath the slabs if movement of water vapor through the slabs would be detrimental to its intended use. A moisture barrier is generally not required beneath parking garage slabs, except for areas beneath mechanical, electrical, and storage rooms. A typical moisture barrier consists of a capillary moisture break and a water vapor retarder.

The capillary moisture break should consist of at least four inches of clean, free-draining gravel or crushed rock. The vapor retarder should meet the requirements for Class C vapor retarders stated in ASTM E1745-97. The vapor retarder should be placed in accordance with the requirements of ASTM E1643-98. These requirements include overlapping seams by six inches, taping seams, and sealing penetrations in the vapor retarder. The vapor retarder should

[10] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 laboratory compaction procedure.

be covered with two inches of sand to aid in curing the concrete and to protect the vapor retarder during slab construction. The particle size of the gravel/crushed rock and sand should meet the gradation requirements presented in Table 6.

TABLE 6
Gradation Requirements for Capillary Moisture Break

Sieve Size	Percentage Passing Sieve
Gravel or Crushed Rock	
1 inch	90 – 100
3/4 inch	30 – 100
1/2 inch	5 – 25
3/8 inch	0 – 6
Sand	
No. 4	100
No. 200	0 – 5

The sand overlying the membrane should be dry at the time concrete is cast. Excess water trapped in the sand could eventually be transmitted as vapor through the slab. If rain is forecast prior to pouring the slab, the sand should be covered with plastic sheeting to avoid wetting. If the sand becomes wet, concrete should not be placed until the sand has been dried or replaced.

Concrete mixes with high water/cement (w/c) ratios result in excess water in the concrete, which increases the cure time and results in excessive vapor transmission through the slab. Therefore, concrete for the floor slab should have a low w/c ratio - less than 0.50. If approved by the project structural engineer, the sand can be eliminated and the concrete can be placed directly over the vapor retarder, provided the w/c ratio of the concrete does not exceed 0.45 and water is not added in the field. If necessary, workability should be increased by adding plasticizers. In addition, the slab should be properly cured. Before the floor covering is placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer's requirements.

4.5 2013 California Building Code Mapped Values

For seismic design in accordance with the provisions of 2013 California Building Code/ASCE 7-10, we preliminarily recommend the following:

- Risk Targeted Maximum Considered Earthquake (MCE_R) S_s and S_1 of 1.5g and 0.6g, respectively
- Site Class D
- Site Coefficients F_A and F_V of 1.0 and 1.5
- MCE_R spectral response acceleration parameters at short periods, S_{MS}, and at one-second period, S_{M1}, of 1.5g and 0.9g, respectively
- Design Earthquake (DE) spectral response acceleration parameters at short period, S_{DS}, and at one-second period, S_{D1}, of 1.0g and 0.6g, respectively
- Peak ground acceleration, PGA_M of 0.5g

4.6 Earthwork

The following subsections present preliminary recommendations for site preparation and lime treatment if needed.

4.6.1 Site Preparation

Demolition in areas to be developed should include removal of existing pavement and underground obstructions, including foundations of existing structures. Any vegetation and organic topsoil should be stripped in areas to receive new site improvements. Stripped organic soil can be stockpiled for later use in landscaped areas, if approved by the owner and architect; organic topsoil should not be used as compacted fill.

Demolished asphalt and concrete at the site may be crushed to provide recycled construction materials, including sand, free-draining crushed rock, and Class 2 aggregate base (AB) provided it is acceptable from an environmental standpoint. Where crushed rock will be used beneath vapor retarders and in other applications where free-draining materials are required, it should have no greater than six percent of material passing the 3/8-inch sieve and meet the other requirements presented on Table 6 in Section 4.4. Where recycled Class 2 AB will be used beneath pavements, it should meet requirements of the Caltrans Standard Specifications. Recycled Class 2 AB that does not meet the Caltrans specifications should not be used beneath City streets, but it is acceptable for use as select fill within building pads and beneath concrete flatwork, provided it meets the requirements for select fill as presented later in this section.

Existing underground utilities beneath areas to receive new improvements should be removed or abandoned in-place by filling them with grout. The procedure for in-place abandonment of utilities should be evaluated on a case-by-case basis, and will depend on location of utilities relative to new improvements. However, in general, existing utilities within four feet of final grades should be removed, and the resulting excavation should be properly backfilled based on the recommendations presented in this section.

Prior to placing fill, the subgrade exposed after stripping and site clearing, as well as other portions of the site that will receive new fill or site improvements, should be scarified to a depth of at least eight inches, moisture-conditioned to at least three percent above the optimum moisture content, and compacted to at least 88 percent relative compaction, where the exposed material consists of moderately expansive soil. Where lean clay or sandy soil are encountered during grading, the scarified surface should be moisture-conditioned to above the optimum moisture content and compacted to at least 90 percent relative compaction. An exception to this general procedure is within any proposed vehicle pavement areas, where the upper six inches of the pavement subgrade should be compacted to at least 95 percent relative compaction regardless of expansion potential.

Heavy construction equipment should not be allowed directly on the final subgrade. The clay exposed at the foundation level may be susceptible to disturbance under construction equipment loads. If the subgrade is disturbed during the rainy season, it may be necessary to place a minimum 12-inch working pad consisting of crushed rock on top of the subgrade or lime treating the upper 12 inches of the subgrade to winterize it. Any select fill placed during grading should meet the following criteria:

- be free of organic matter
- contain no rocks or lumps larger than three inches in greatest dimension
- have a low expansion potential (defined by a liquid limit of less than 40 and plasticity index lower than 12)
- have a low corrosion potential[11]
- be approved by the geotechnical engineer.

All fill placed beneath improvements should meet the criteria for select fill previously discussed in this section. All select fill should be moisture-conditioned to above optimum moisture content, placed in horizontal lifts not exceeding eight inches in loose thickness, and be compacted to at least 90 percent relative compaction, except for fill that is placed within the proposed vehicular pavement areas. In these situations, the upper six inches of the soil

[11] Low corrosion potential is defined as a minimum resistivity of 2,000 ohms-cm and maximum sulfate and chloride concentrations of 250 parts per million.

subgrade, and aggregate baserock materials should be compacted to at least 95 percent relative compaction. Where used, sand containing less than 10 percent fines (particles passing the No. 200 sieve) should also be compacted to at least 95 percent relative compaction. Samples of on-site and proposed import fill materials should be submitted to the geotechnical engineer for approval at least three business days prior to use at the site.

We recommend that at least 6 inches of select fill be placed above native soil in areas that will have concrete flatwork, and 8 inches beneath building slabs-on-grade. Materials for capillary break (sand and gravel) should not count as part of the select fill. The select fill should extend at least five feet beyond building footprints. Select fill should meet the criteria previously presented in this section.

4.6.2 Lime Treatment

Alternatively, instead of placing select fill, the upper 8 inches of the existing surface soil in building pads may be lime treated to reduce the expansion potential and help winterize the site. We preliminarily recommend that at least 5 percent lime by weight of the soil be used to treat the upper 8 inches of native soil for at-grade structures. The lime treatment should extend at least five feet beyond building footprints where hardscape areas are planned; however, landscape areas should not be lime treated because the lime treated soil may make it difficult for the plants to survive. In landscape areas adjacent to building footprints and exterior slabs, select fill should be placed. The lime treatment contractor should evaluate the type and amount of lime to reduce the plasticity index of the soil to meet the select fill criteria.

If the lime treatment is selected, we recommend that the specialty contractor prepare a treatment specification for our review prior to construction.

4.7 Corrosion Potential

CERCO Analytical performed tests on two soil samples from the site to evaluate corrosion potential to buried metals and concrete. The results of the tests are presented in Appendix D and summarized in Table 7.

TABLE 7
Summary of Corrosivity Test Results

Test Boring	Sample Depth (feet)	pH	Sulfate (ppm)	Resistivity (ohms-cm)	Redox (mV)	Chloride (ppm)
B-4	0 to 2.5	8.11	N.D.	3,100	350	N.D
B-5	0 to 2.5	8.41	35	1,700	290	19

N.D. = None Detected

Based upon resistivity measurements, the near surface soils are moderately corrosive to corrosive to buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron. The chemical analysis indicates reinforced concrete and cement mortar coated steel, should not be affected by the corrosivity of the soil. To protect reinforcing steel from corrosion, adequate coverage should be provided as required by the building code.

A brief evaluation of the corrosivity of the soil samples is presented in Appendix D. For more detailed recommendations regarding the corrosion protection of buried metals and concrete, a licensed corrosion consultant should be retained.

4.8 Asphalt Pavements

The State of California flexible pavement design method was used to develop the recommended asphalt concrete pavement sections. We expect the final soil subgrade in asphalt-paved areas will generally consist of on-site soil. On the basis of the laboratory test results on this soil, we selected an R-value of 12 for design.

For our calculations, we assumed a Traffic Index (TI) of 4 for automobile parking areas with occasional trucks, and 5 and 6 for driveways and truck-use areas; these TIs should be confirmed by the project civil engineer. Table 8 presents our preliminary recommendations for asphalt pavement sections.

TABLE 8

Pavement Section Design

TI	Asphalt Concrete (inches)	Class 2 Aggregate Base R = 78 (inches)
4	2.5	7
5	3	9
6	4	11

Pavement components should conform to the current Caltrans Standard Specifications. The upper six inches of the soil subgrade in pavement areas should be moisture-conditioned to above optimum and compacted to at least 95 percent relative compaction and rolled to provide a smooth non-yielding surface. Aggregate base should be compacted to at least 95 percent relative compaction.

4.9 Final Report

The recommendations presented in this letter are preliminary. They should not be used to develop final design drawings. A final geotechnical investigation should be performed at the project site to develop final geotechnical recommendations.

If you have any questions, please call. Thank you.

Sincerely yours,
Langan Treadwell Rollo

Serena T. Jang
Senior Project Manager

770619601.04_STJ_Mission Town Center Apartment Homes

Attachments: References
Figures 1 through 6
Appendix A – Log of Test Borings
Appendix B – Cone Penetration Tests
Appendix C – Laboratory Data
Appendix D – Corrosivity Analysis with Brief Evaluation

770619601.04_STJ_Mission Town Center Apartment Homes

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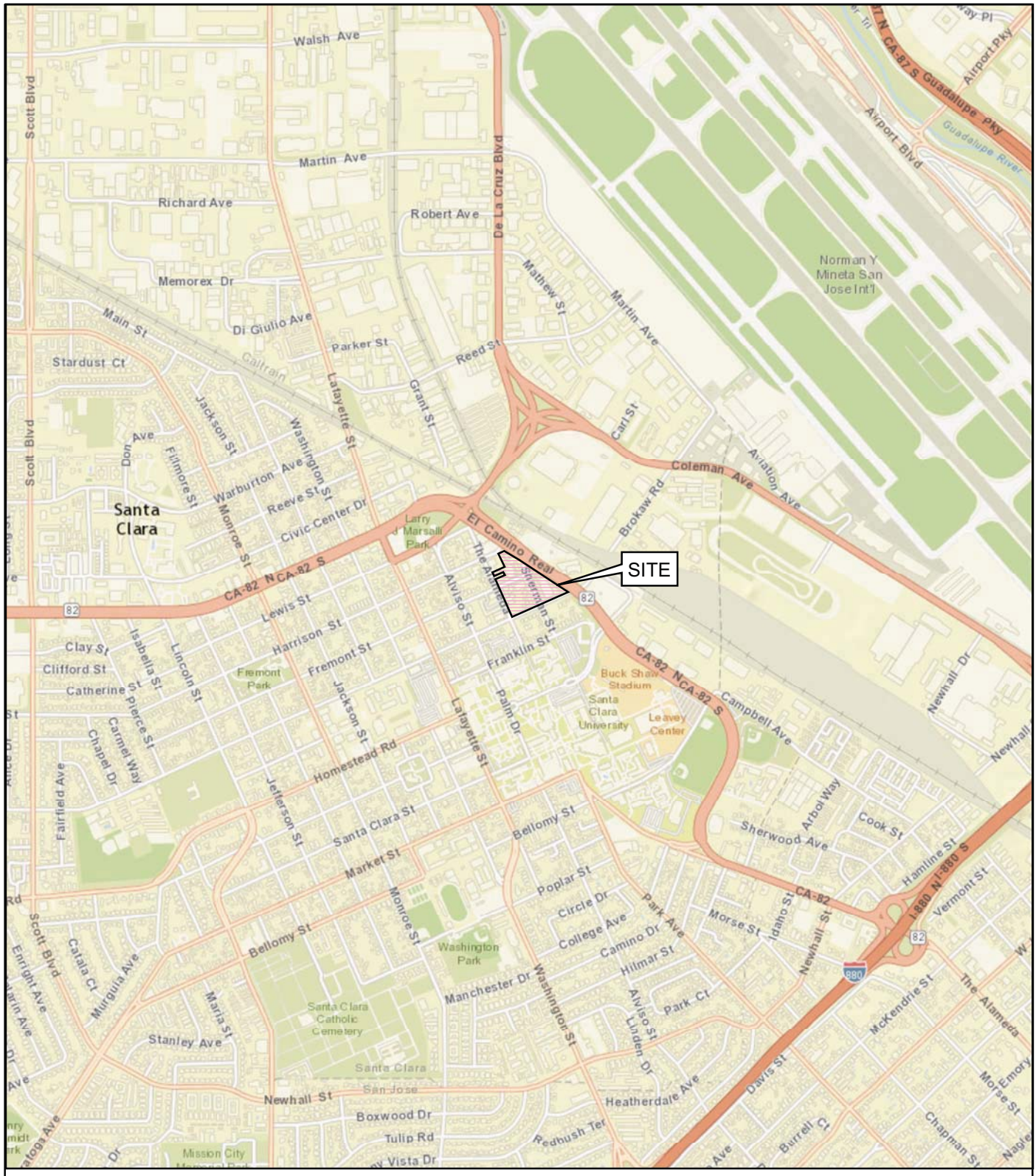
FIGURES



NOTES:

World street basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.
Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN.

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MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

SITE LOCATION MAP

LANGAN TREADWELL ROLLO

Date 12/30/14	Project No. 770619601	Figure 1

Reference: World topographics basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Credits: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey and the GIS User Community.

EXPLANATION

B-1 — Approximate location of boring by Langan Treadwell Rollo, December 2014

CPT-1 — Approximate location of Cone Penetration Test (CPT) by Langan Treadwell Rollo, December 2014

Approximate site boundary

A — A' Idealized subsurface profile location

0 100 Feet

Approximate scale

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

SITE PLAN

Date 02/02/15	Project No. 770619601	Figure 2

LANGAN TREADWELL ROLLO

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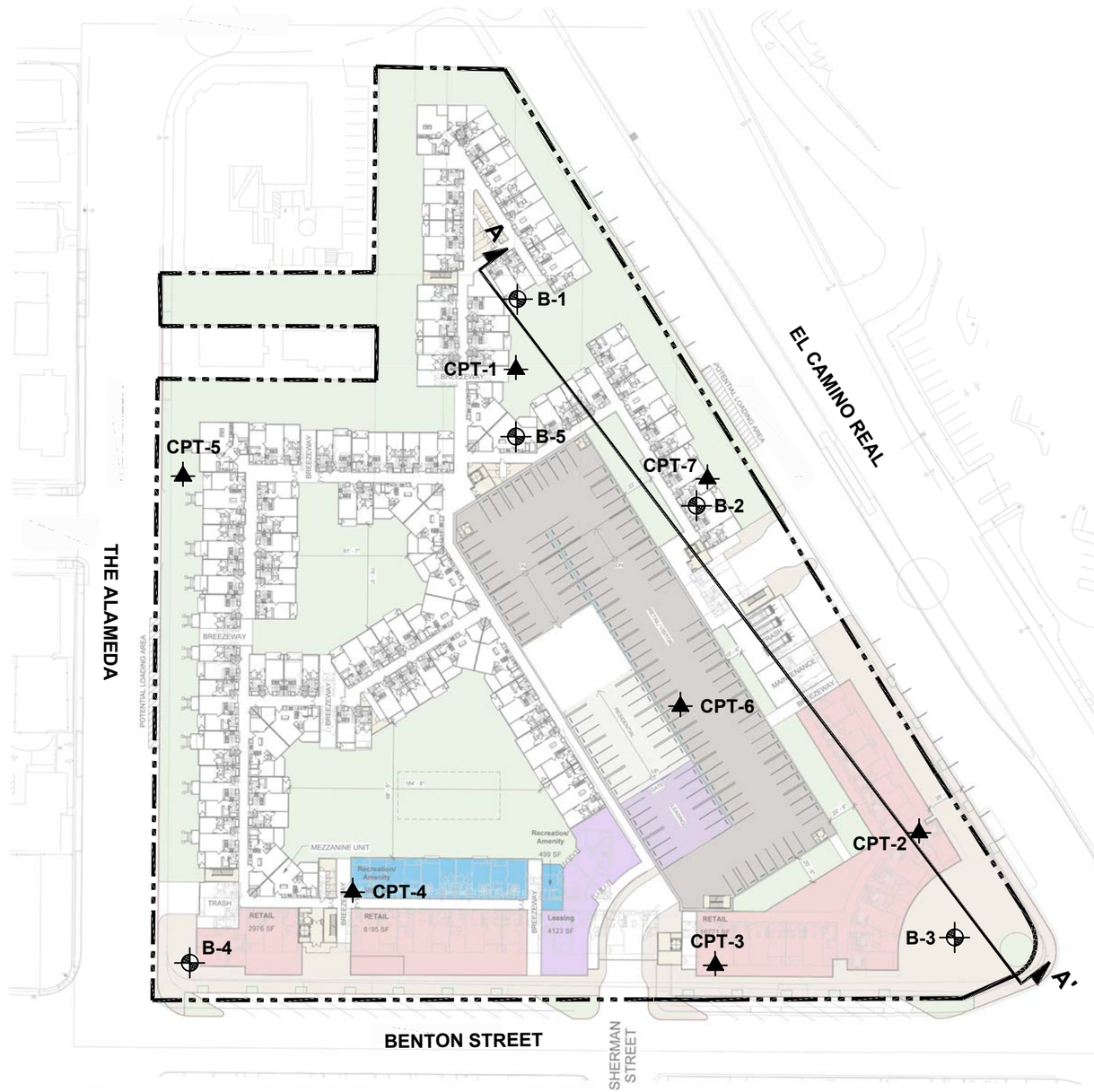

EXPLANATION

B-1 — Approximate location of boring by Lagan Treadwell Rollo, December 2014

CPT-1 — Approximate location of Cone Penetration Test (CPT) by Langan Treadwell Rollo, Decebmer 2014

Approximate site boundary

A — A' Idealized subsurface profile location

0 100 Feet

Approximate scale

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

SITE PLAN WITH PROPOSED DEVELOPMENT

Date 02/02/15	Project No. 770619601	Figure 3

LANGAN TREADWELL ROLLO

Reference: Base map from a drawing titled "Mission Town Center Apartment Homes, Level 1," by MVE + Partners, dated 01/21/15.

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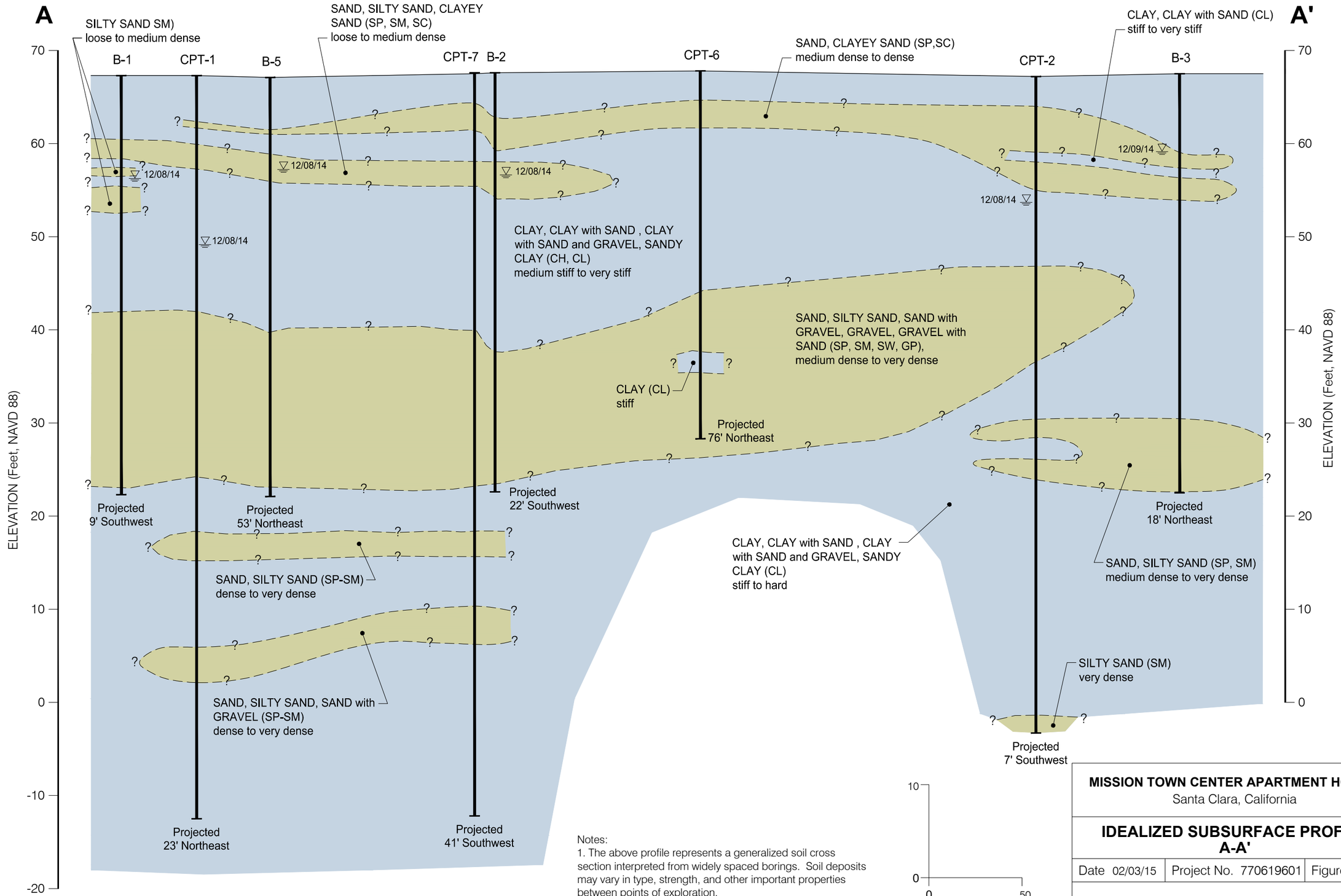

Notes:
1. The above profile represents a generalized soil cross section interpreted from widely spaced borings. Soil deposits may vary in type, strength, and other important properties between points of exploration.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

IDEALIZED SUBSURFACE PROFILE
A-A'

Date 02/03/15	Project No. 770619601	Figure 4

LANGAN TREADWELL ROLLO

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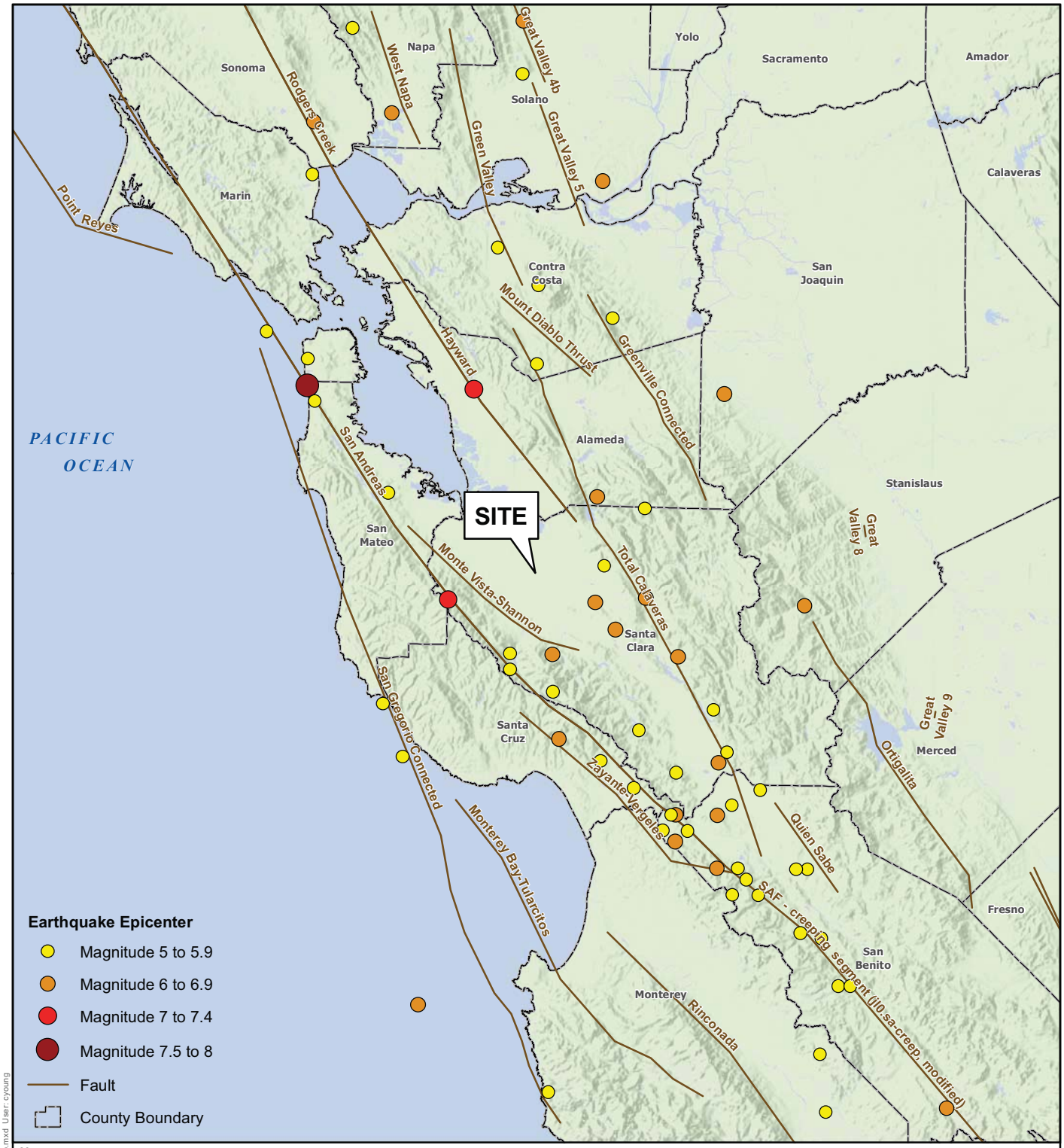

Notes:

1. Quaternary fault data displayed are based on a generalized version of USGS Quaternary Fault and fold database, 2010. For cartographic purposes only.
2. The Earthquake Epicenter (Magnitude) data is provided by the U.S Geological Survey (USGS) and is current through 08/26/2014.
3. Basemap hillshade and County boundaries provided by USGS and California Department of Transportation.
4. Map displayed in California State Coordinate System, California (Teale) Albers, North American Datum of 1983 (NAD83), Meters.

0 5 10 20
Miles

N

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

MAP OF MAJOR FAULTS AND EARTHQUAKE EPICENTERS IN THE SAN FRANCISCO BAY AREA

LANGAN TREADWELL ROLLO

Date 12/30/2014	Project No. 770619601	Figure 5

\\langan.com\data\SJ\data6\770619601\ArcGIS\ArcMap_Documents\Fault Map.mxd User: cyoung

I **Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced.**
Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly.

II **Felt indoors by a few people, especially on upper floors of multi-story buildings, and by sensitive or nervous persons.**
As in Grade I, birds and animals are disturbed, and trees, structures, liquids and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended.

III **Felt indoors by several people, usually as a rapid vibration that may not be recognized as an earthquake at first. Vibration is similar to that of a light, or lightly loaded trucks, or heavy trucks some distance away. Duration may be estimated in some cases.**
Movements may be appreciable on upper levels of tall structures. Standing motor cars may rock slightly.

IV **Felt indoors by many, outdoors by a few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Vibration like that due to passing of heavy, or heavily loaded trucks. Sensation like a heavy body striking building, or the falling of heavy objects inside.**
Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.

V **Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors.**
Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerably. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.

VI **Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general excitement, and some persons run outdoors.**
Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows break. Knickknacks, books and pictures fall. Furniture overturns in many instances. Heavy furnishings move.

VII **Frightens everyone. General alarm, and everyone runs outdoors.**
People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes and streams. Water is muddied. Gravel or sand stream banks cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged.

VIII **General fright, and alarm approaches panic.**
Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupts in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters varies. Damage slight in brick structures built especially to withstand earthquakes; considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns.

IX **Panic is general.**
Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings - some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.

X **Panic is general.**
Ground, especially when loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from river banks and steep coasts. Sand and mud shifts horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Most masonry and frame structures, and their foundations are destroyed. Railroad rails bend slightly. Pipe lines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces.

XI **Panic is general.**
Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and land slips develop in soft, wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near shock centers, great to dams, dikes and embankments, even at long distances. Few if any masonry structures remain standing. Supporting piers or pillars of large, well-built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipe lines buried in earth are put completely out of service.

XII **Panic is general.**
Damage is total, and practically all works of construction are damaged greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rock falls, and slumps in river banks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault slips develop in firm rock, and horizontal and vertical offset displacements are notable. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are distorted. Objects are thrown upward into the air.

MISSION TOWN CENTER APARTMENT HOMES Santa Clara, California	**MODIFIED MERCALLI INTENSITY SCALE**
LANGAN TREADWELL ROLLO	Date 12/30/14 | Project No. 770619601 | Figure 6

APPENDIX A

LOG OF TEST BORINGS

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-1

Boring location: See Site Plan, Figure 2
Logged by: A. Nabulsi
Date started: 12/8/14 | Date finished: 12/8/14
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Safety
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

DEPTH (feet)	SAMPLES: Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION (Ground Surface Elevation: 67.3 feet[2])	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					5 inches asphalt concrete (AC)						
1–2	BULK			CL	CLAY with SAND (CL) dark brown, very stiff, moist, fine sand, fine gravel LL = 36, PI = 18, see Figure C-10						
3	S&H	10 12 22	20								
4–5	BULK			CL	SANDY CLAY (CL) brown, very stiff, moist, fine sand						
6	S&H	6 10 13	14		light brown with gray mottling, stiff						
8	S&H	5 6 11	10	SM	SILTY SAND (SM) olive-gray with black mottling, loose to medium dense, moist, fine-grained					24.0	97
9–10				CL	SANDY CLAY (CL) olive-gray with black mottling, stiff, moist, fine sand				19.6	22.5	
11	SPT	7 7 6	13	SM	(12/08/14, 10:20 a.m.) SILTY SAND (SM) dark brown, medium dense, moist, fine-grained						
13	ST		75 psi	CL	CLAY with SAND (CL) gray-brown, medium stiff, wet, fine sand, some silt						
14				SM	SILTY SAND (SM) olive-brown, loose, wet, fine-grained						
15	SPT	2 2 3	5	CH	CLAY (CH) gray, medium stiff, wet LL = 56, PI = 29, see Figure C-10						
19	S&H	4 6 9	9		TxUU Test, see Figure C-4	TxUU	2,400	850		36.3	84
24	S&H	10 14 18	19	CL	CLAY with SAND (CL) gray-brown, very stiff, wet, fine sand						
25–26	SPT	15 18 20	38	GP	GRAVEL with SAND (GP) gray-brown, dense, wet, fine sand, fine- to coarse-grained up to 1-1/4-inches in diameter, with some clay						
29	SPT	20 41 42	83	SW	SAND with GRAVEL (SW) dark brown, very dense, wet, medium- to coarse-grained, fine to coarse gravel up to 1-3/4-inches in diameter						

LANGAN TREADWELL ROLLO

Project No.: 770619601 | Figure: A-1a

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-1

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31					SP	SAND with GRAVEL (SP) (continued) grades with increase gravel content						
32												
33					SP	SAND (SP) olive-gray, very dense, wet, fine- to medium-grained, trace coarse sand						
34	SPT		12 36 41	78	SW	SAND with GRAVEL (SW) dark brown, very dense, wet, medium- to coarse-grained, fine gravel						
35												
36					GP	GRAVEL with SAND (GP) gray-brown, very dense, wet, fine- to coarse-grained up to 1-inch in diameter, medium to coarse sand						
37												
38												
39	SPT		23 27 42	69	SW	SAND with GRAVEL (SW) dark brown, very dense, wet, fine- to coarse-grained, fine gravel						
40												
41												
42												
43					SP	SAND (SP) olive-gray, medium dense, wet, fine- to medium-grained				4.9	16.9	
44	SPT		7 3 9	12	CL	CLAY (CL) olive-gray to gray, medium stiff, wet gray						
45												
46												
47												
48												
49												
50												
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Boring terminated at a depth of 45 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 11 feet below ground surface during drilling.
PP = pocket pentrometer

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.6 and 1.0, respectively to account for sampler type and hammer energy.
[2] Elevations based on NAVD 88.

LANGAN TREADWELL ROLLO

Project No.: 770619601
Figure: A-1b

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-2

Boring location: See Site Plan, Figure 2
Logged by: C. Leege
Date started: 12/8/14 | Date finished: 12/8/14
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Safety
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Ground Surface Elevation: 67.6 feet[2]

DEPTH (feet)	Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					3 inches asphaltic concrete (AC)						
					12 inches aggregate base (AB)						
1–2	BULK										
3–4	S&H	4 5 8	8	CL	CLAY with SAND (CL) dark brown to gray and yellow, stiff, moist, fine sand, trace fine gravel TxUU Test, see Figure C-5	TxUU	400	1,920		12.3	106
5–6	S&H	7 14 17	19	SC	CLAYEY SAND (SC) yellow-brown, medium dense, moist, fine-grained, trace fine gravel				15.3	10.2	
7	BULK										
8–9	S&H	8 9 14	14		increase clay content						
9–10				CL	CLAY with SAND (CL) yellow-brown, stiff, moist, fine sand, trace fine gravel LL = 36, PI = 13, see Figure C-10						
11–12	S&H	7 9 13	13	SP	(12/08/14, 2:00 p.m.) SAND (SP) red-brown, medium dense, wet, fine-grained					15.3	114
14–15	S&H	3 4 5	5	CL	CLAY (CL) gray with olive-gray mottling, medium stiff, wet						
16–17	ST		50 psi			PP		700			
19–20	S&H	4 5 7	7		dark gray, trace organics						
22–23				CL	SANDY CLAY (CL) blue-gray, stiff, wet, fine sand, trace organics						
24–25	S&H	5 6 11	10							22.5	102
29–30	S&H	8 12 21	21								

LABORATORY TEST DATA

LANGAN TREADWELL ROLLO

Project No.: 770619601 | Figure: A-2a

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-2

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	SPT		8 9 11	20	SW	SAND (SW) gray, medium dense, wet, fine- to medium-grained, trace silt				22.7	22.4	
32					SM	SILTY SAND (SM) gray, medium dense, wet, fine-grained						
33					SW	SAND (SW) brown, very dense, wet, fine- to coarse-grained, trace fine to coarse gravel up to 1 inch in diameter						
34	SPT		19 27 28	55								
35												
36												
37												
38												
39	SPT		21 40 42	82								
40												
41												
42					SC	CLAYEY SAND (SC) gray, dense, wet, fine- to medium-grained						
43												
44	S&H		19 28 30	35	CL	CLAY (CL) gray, hard, wet						
45												
46												
47												
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Boring terminated at a depth of 45 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 11 feet below ground surface during drilling.
PP = pocket pentrometer

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.6 and 1.0, respectively to account for sampler type and hammer energy.
[2] Elevations based on NAVD 88.

LANGAN TREADWELL ROLLO

Project No.: 770619601
Figure: A-2b

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-3

Boring location: See Site Plan, Figure 2
Logged by: C. Leege
Date started: 12/9/14 | Date finished: 12/9/14
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Safety
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Ground Surface Elevation: 67.5 feet[2]

DEPTH (feet)	Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					3 inches asphalt concrete						
1–2	BULK			CL	SANDY CLAY (CL) dark brown, stiff, moist, fine sand R-Value Test, see Figure C-11						
3	S&H	8 20 39	35								
4	BULK			CL	SANDY CLAY (CL) light brown, hard, moist, fine sand, trace fine gravel						
5–6	SPT	11 13 15	28		very stiff LL = 29, PI = 9, see Figure C-10						
8	S&H	7 11 14	15		gray-brown with yellow mottling, stiff (12/09/14, 11:30 a.m.)						
9				SP	SAND (SP) light yellow, medium dense, wet, fine-grained						
11	S&H	7 13 26	23	CL	CLAY with SAND (CL) gray-brown with yellow-red mottling, very stiff, wet, fine sand				38.0	24.7	
12–13				SC	CLAYEY SAND (SC) red-brown, medium dense, wet, fine-grained						
14	S&H	4 5 6	7	CL	CLAY (CL) gray-brown, medium stiff, wet						
16	ST		75 psi		TxUU Test, see Figure C-6 Consolidation Test, see Figure C-1	TxUU	2,100	770		41.8 35.5	80 85
19	S&H	8 9 4	12		stiff						
24	S&H	8 10 12	13	CL	CLAY with SAND (CL) gray, stiff, wet, fine sand					20.8	105
29	SPT	5 7 9	16		very stiff, trace fine gravel						

LANGAN TREADWELL ROLLO

Project No.: 770619601 | Figure: A-3a

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-3

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						CLAY with SAND (CL) (continued)						
31					CL							
32						SANDY CLAY (CL) gray, stiff, wet, fine sand						
33												
34	S&H		9 11 13	14	CL						23.5	103
35												
36												
37						SAND (SW) gray, dense, wet, fine- to medium-grained, trace fine gravel						
38												
39	S&H		16 36 39	45							16.5	113
40						very dense						
41	SPT		27 27 36	63	SW							
42												
43												
44	SPT		27 38 42	80								
45												
46												
47												
48												
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50												
51												
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Boring terminated at a depth of 45 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 8.5 feet below ground surface during drilling.
PP = pocket pentrometer

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.6 and 1.0, respectively to account for sampler type and hammer energy.
[2] Elevations based on NAVD 88.

LANGAN TREADWELL ROLLO

Project No.: 770619601
Figure: A-3b

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-4

Boring location: See Site Plan, Figure 2
Logged by: C. Leege
Date started: 12/9/14 | Date finished: 12/9/14
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Safety
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Ground Surface Elevation: 71.8 feet[2]

DEPTH (feet)	Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					5 inches asphalt concrete (AC)						
1–2	BULK			CL	CLAY with SAND and GRAVEL (CL) dark brown, moist, fine sand, fine to coarse gravel up to 1-inch in diameter, trace organics						
3–4	S&H	11 11 18	17	CL	SANDY CLAY with GRAVEL (CL) brown, medium stiff, moist, fine to medium sand, fine gravel TxUU Test, see Figure C-7	TxUU	400	780		16.1	97
5–6	S&H	15 27 32	35	SP-SC	SAND with CLAY and GRAVEL (SP-SC) light brown, dense, moist, fine- to medium-grained, fine gravel					11.7	121
7–8	S&H	7 11 10	13	SP	SAND (SP) yellow, medium dense, dry, fine-grained						
9–10				CL	CLAY with SAND (CL) yellow with gray-brown mottling, stiff, moist, fine sand, trace organics						
11–12	S&H	11 14 22	22	SP	SAND (SP) yellow and dark brown, medium dense, moist, fine-grained, trace organics					11.7	108
13–14	S&H	5 7 9	10	CL	CLAY with SAND (CL) olive, stiff, moist, fine sand, trace organics						
15–16	SPT	4 7 5	12	SP	SAND (SP) brown, medium dense, moist, fine-grained						
17				CL	CLAY with SAND (CL) brown, stiff, moist, fine sand						
18–19	S&H	3 4 7	7	CH	CLAY (CH) dark brown to gray, medium stiff, moist LL = 60, PI = 33, see Figure C-10						
20					Consolidation Test, see Figure C-2					26.7	95
21–22	ST		75 psi		TxUU Test, see Figure C-8	TxUU	2,400	940		32.0	90
23–24	S&H	7 9 10	11	CL	CLAY (CL) gray with red-brown mottling, stiff, moist						
25–26					▽ (12/9/14, 8:30 a.m.)						
27–28				SW	SAND with GRAVEL (SW) brown, medium dense, wet, medium- to coarse-grained, fine to coarse gravel up to 1-1/2-inches in diameter						
29–30	SPT	9 13 15	28						4.4	11.8	

LABORATORY TEST DATA

LANGAN TREADWELL ROLLO

Project No.: 770619601 | Figure: A-4a

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-4

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						SAND with GRAVEL (SP) (continued)						
31					SP							
32												
33												
34	SPT		19 23 27	50	CL	SANDY CLAY (CL) red-brown, hard, wet, fine to medium sand						
35						SAND (SW) brown, very dense, wet, fine- to medium-grained, trace fine gravel						
36												
37												
38												
39	SPT		23 27 36	63	SW							
40						medium- to coarse-grained						
41												
42												
43						grades fine- to coarse-grained						
44	SPT		37 50/ 5"	50/ 5"	GP	GRAVEL with SAND (GP) brown, very dense, wet, subangular fine to coarse up to 1-1/2-inches in diameter, medium to coarse sand, trace silt						
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												

Boring terminated at a depth of 44.4 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 26.5 feet below ground surface during drilling.
PP = pocket pentrometer

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.6 and 1.0, respectively to account for sampler type and hammer energy.
[2] Elevations based on NAVD 88.

LANGAN TREADWELL ROLLO

Project No.: 770619601
Figure: A-4b

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-5

Boring location: See Site Plan, Figure 2
Logged by: C. Leege
Date started: 12/8/14 | Date finished: 12/8/14
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Safety
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Ground Surface Elevation: 67.1 feet[2]

DEPTH (feet)	Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					4 inches asphalt concrete (AC)						
1–2	BULK			CL	SANDY CLAY with GRAVEL (CL) dark brown, moist, fine sand, fine gravel						
3–4	S&H	15 23 24	28	CL	SANDY CLAY (CL) brown, very stiff, moist, fine to medium sand, trace fine gravel					13.5	113
5–6	S&H	7 9 14	14	SC	CLAYEY SAND (SC) brown, medium dense, moist, fine- to medium-grained						
7–8	S&H	7 12 24	22	CL	SANDY CLAY (CL) light brown, stiff, moist, fine sand Consolidation Test at 6 feet, see Figure C-3					25.4	97
9–10				SP	(12/08/14, 1:00 p.m.) SAND (SP) red-brown with black mottling, medium dense, wet, fine-grained, trace silt						
10–11	SPT	5 5 4	9	SC					38.5	24.8	
11–12				CL	CLAYEY SAND (SC) olive, medium dense, wet, fine-grained						
13–14	S&H	9 8 9	10	CL	CLAY (CL) olive, stiff, wet LL = 36, PI = 14, see Figure C-10						
14–15				CL	SANDY CLAY (CL) olive-brown, stiff, wet, fine sand						
15–16	ST		50 psi	CL	CLAY (CL) gray, medium stiff, wet TxUU Test, see Figure C-9	TxUU	2,100	810		43.5	77
16–17				CL	CLAY (CL) gray and black, medium stiff, wet	PP		750			
17–18	S&H	4 8 10	11	CL	CLAY (CL) gray with light brown mottling, stiff, wet						
19–20				CL	SANDY CLAY (CL) gray with red-brown mottling, stiff, wet, fine sand						
21–22	S&H	8 11 11	13	CL						25.0	101
23–24				SW	SAND (SW) dark brown, very dense, wet, fine- to coarse-grained, trace fine gravel						
25–26	SPT	27 50/ 5"	50/ 5"								

LABORATORY TEST DATA

LANGAN TREADWELL ROLLO

Project No.: 770619601 | Figure: A-5a

PROJECT: **MISSION TOWN CENTER APARTMENT HOMES**
Santa Clara, California

Log of Boring B-5

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						SAND (SW) (continued)						
31												
32					SW							
33												
34	SPT		21 27 45	72								
35						SAND with GRAVEL (SW) brown, very dense, wet, fine- to coarse-grained, fine to coarse gravel up to 2-inches in diameter						
36												
37												
38					SW							
39	SPT		26 50 50/ 2"	100/ 8"								
40						no coarse gravel						
41												
42						SAND (SW) brown, very dense, wet, fine- to medium-grained						
43					SW							
44	SPT		6 14 21	35						2.9	19.4	
45					CL	SANDY CLAY (CL) blue-gray, hard, wet, fine sand						
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												

Boring terminated at a depth of 45 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 10 feet below ground surface during drilling.
PP = pocket pentrometer

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.6 and 1.0, respectively to account for sampler type and hammer energy.
[2] Elevations based on NAVD 88.

LANGAN TREADWELL ROLLO

Project No.: 770619601
Figure: A-5b

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soils (more than half of soil > no. 200 sieve size	**Gravels** (More than half of coarse fraction > no. 4 sieve size)	**GW**	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	**SW**	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	**Silts and Clays** LL = < 50	**ML**	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and Clays LL = > 50	**MH**	Inorganic silts of high plasticity
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts and clays of high plasticity
Highly Organic Soils		**PT**	Peat and other highly organic soils

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.075
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.075
Silt and Clay	Below No. 200	Below 0.075

Unstabilized groundwater level

Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered

Classification sample taken with Standard Penetration Test sampler

Undisturbed sample taken with thin-walled tube

Disturbed sample

Sampling attempted with no recovery

Core sample

Analytical laboratory sample

Sample taken with Direct Push or Drive sampler

SAMPLER TYPE

C Core barrel

CA California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter

D&M Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube

O Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube

PT Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube

S&H Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter

SPT Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter

ST Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

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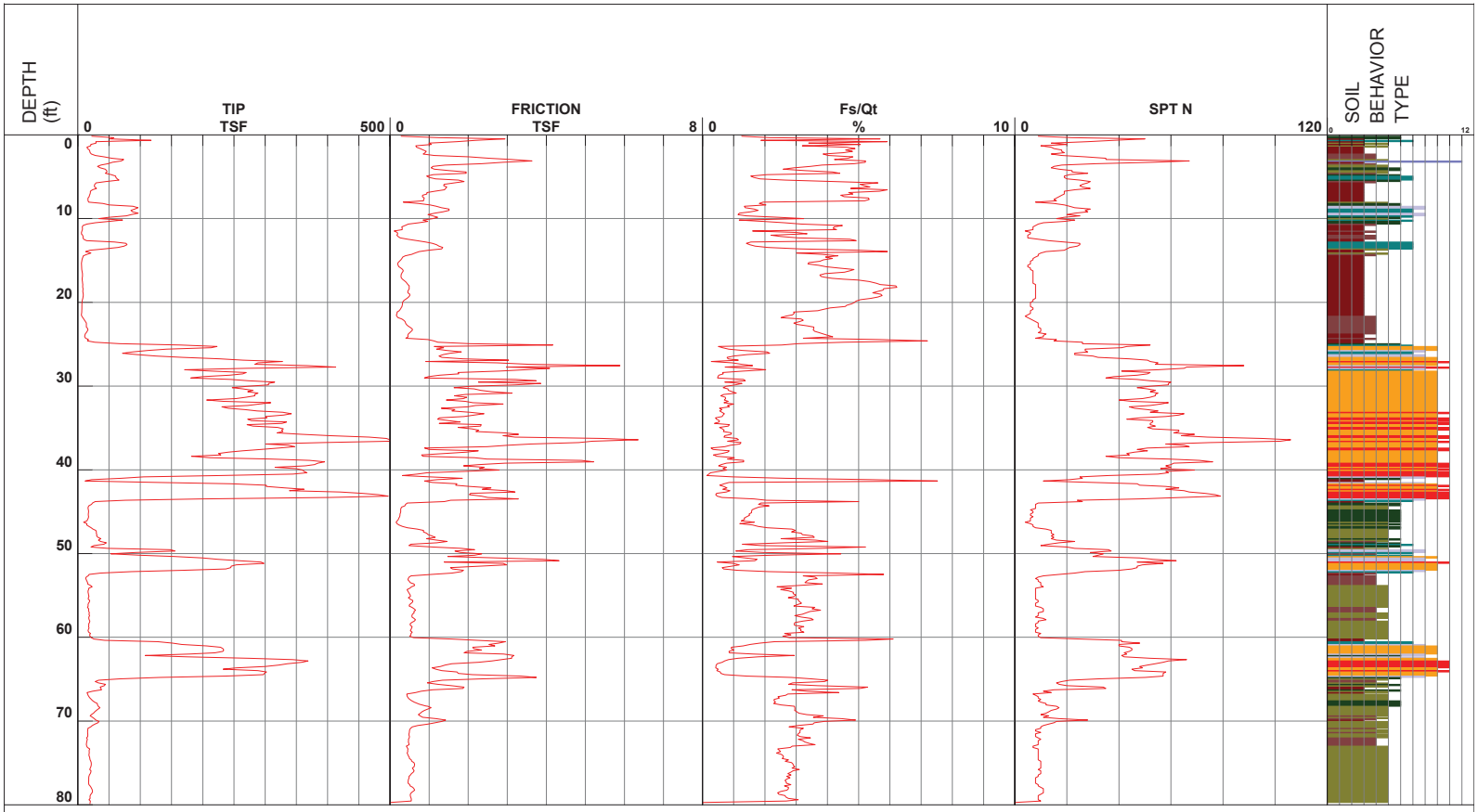
CLASSIFICATION CHART

Date 12/23/14 | Project No. 770619601 | Figure A-6

APPENDIX B

CONE PENETRATION TESTS



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

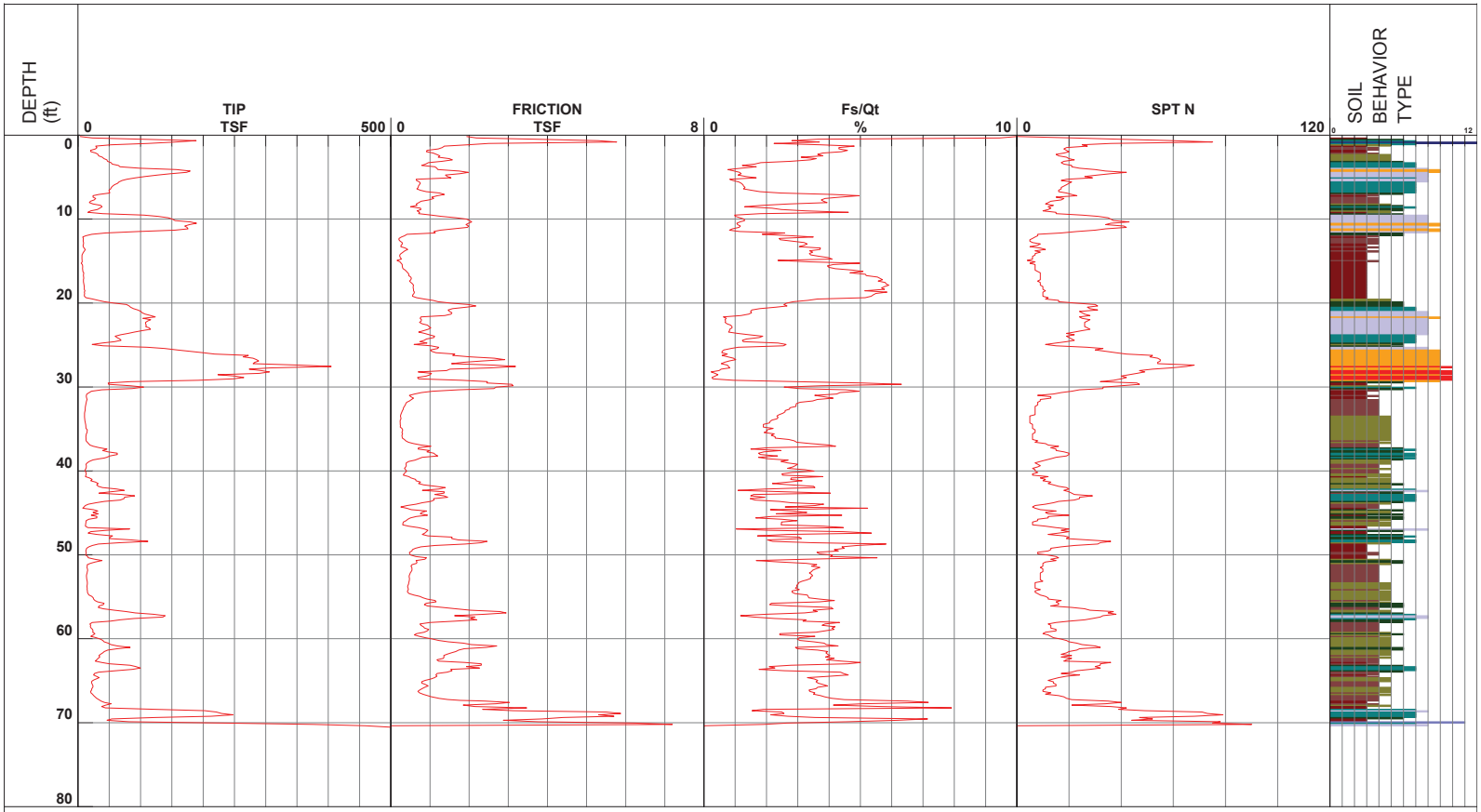
Terminated at 79.8 feet.
Groundwater measured at 18.2 feet from pore pressure dissipation test, see Figure B-9.
Date performed 12/08/14.
Ground surface elevlation: 67.3 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-1

Date 12/30/14	Project No. 770619601	Figure B-1

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

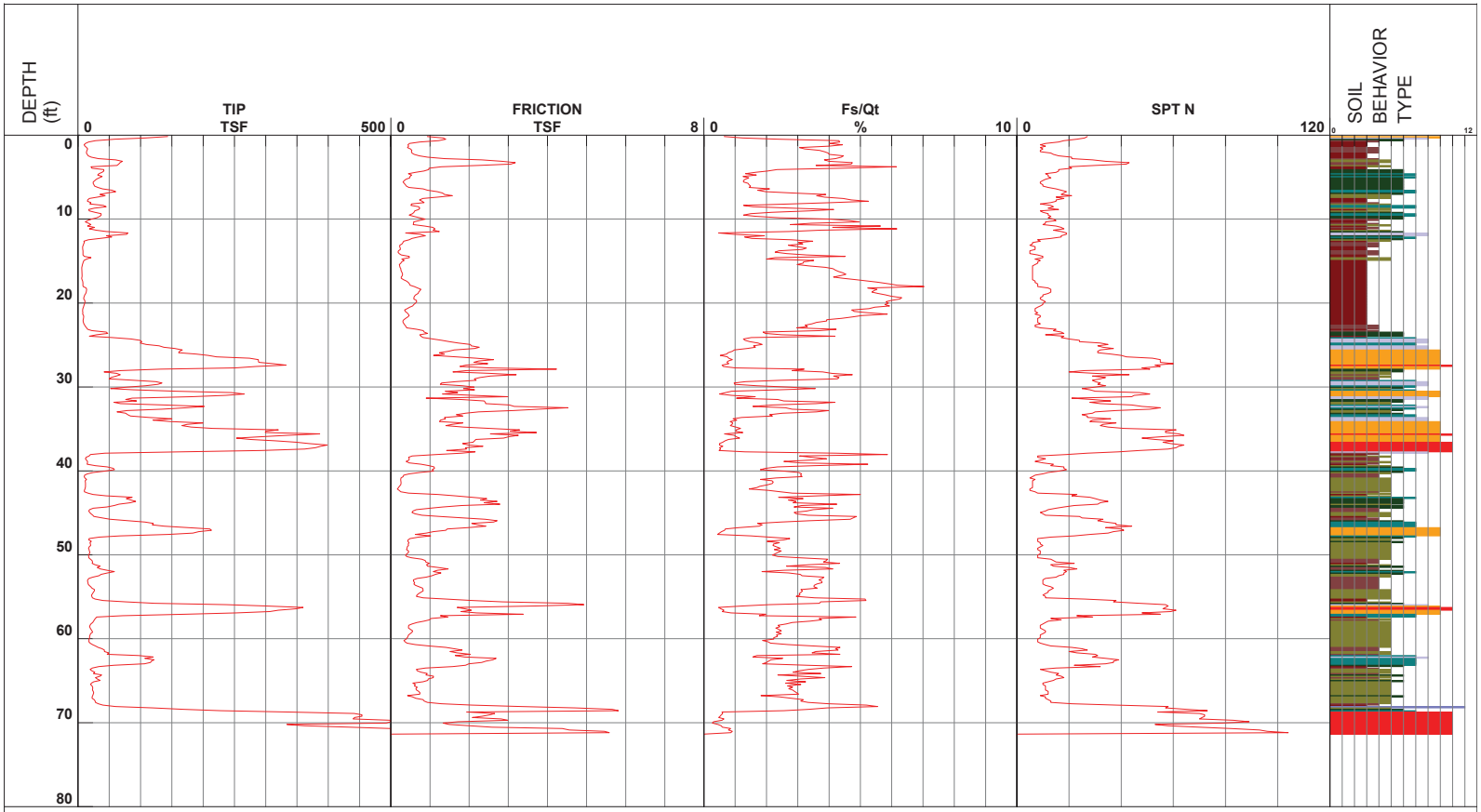
Terminated at 70.5 feet.
Groundwater measured at 13.6 feet from pore pressure dissipation test, see Figure B-10.
Date performed 12/08/14.
Ground surface elevlation: 67.6 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-2

Date 12/30/14	Project No. 770619601	Figure B-2

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

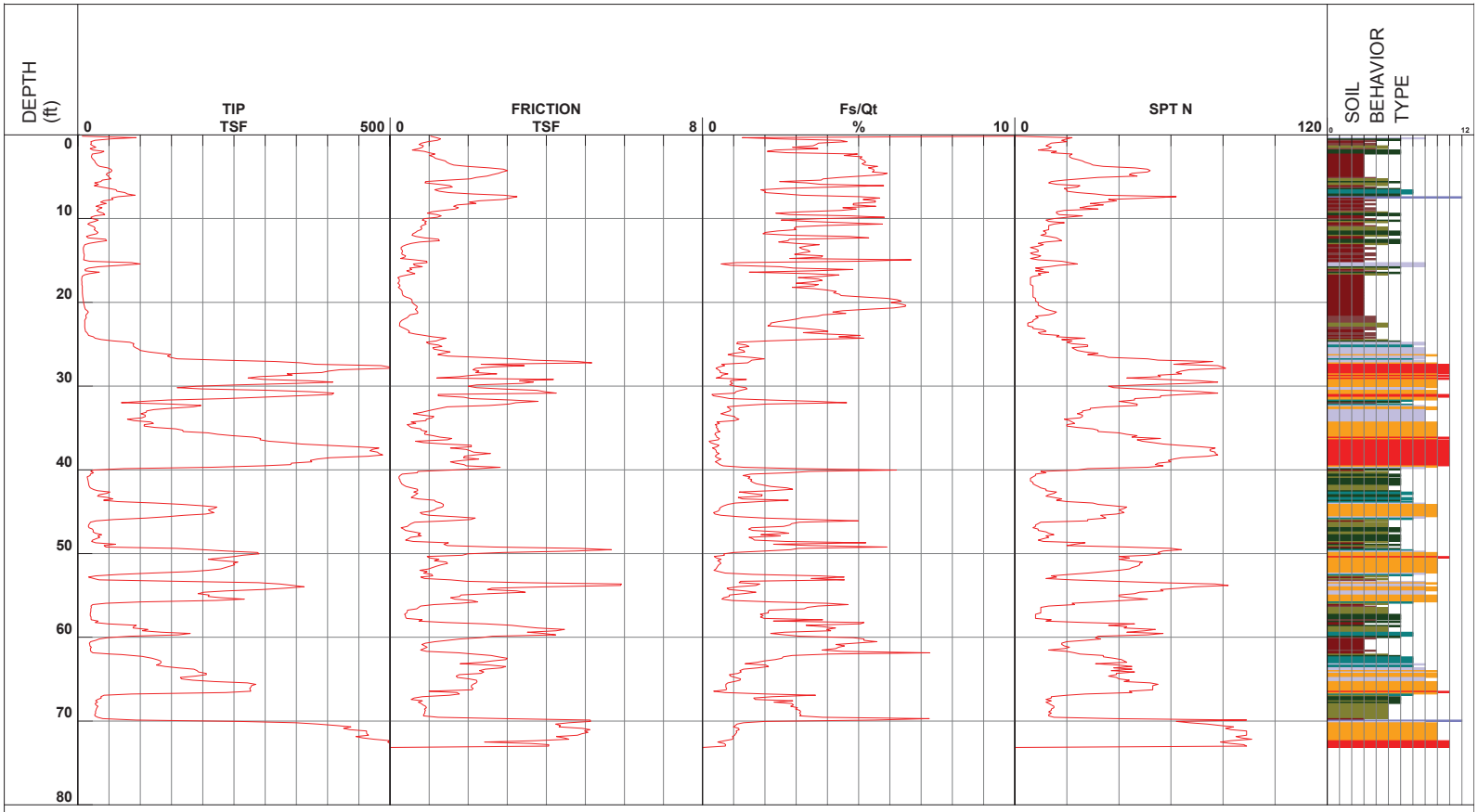
Terminated at 71.5 feet.
Groundwater not measured.
Date performed 12/08/14.
Ground surface elevlation: 68.8 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-3

Date 12/30/14	Project No. 770619601	Figure B-3

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

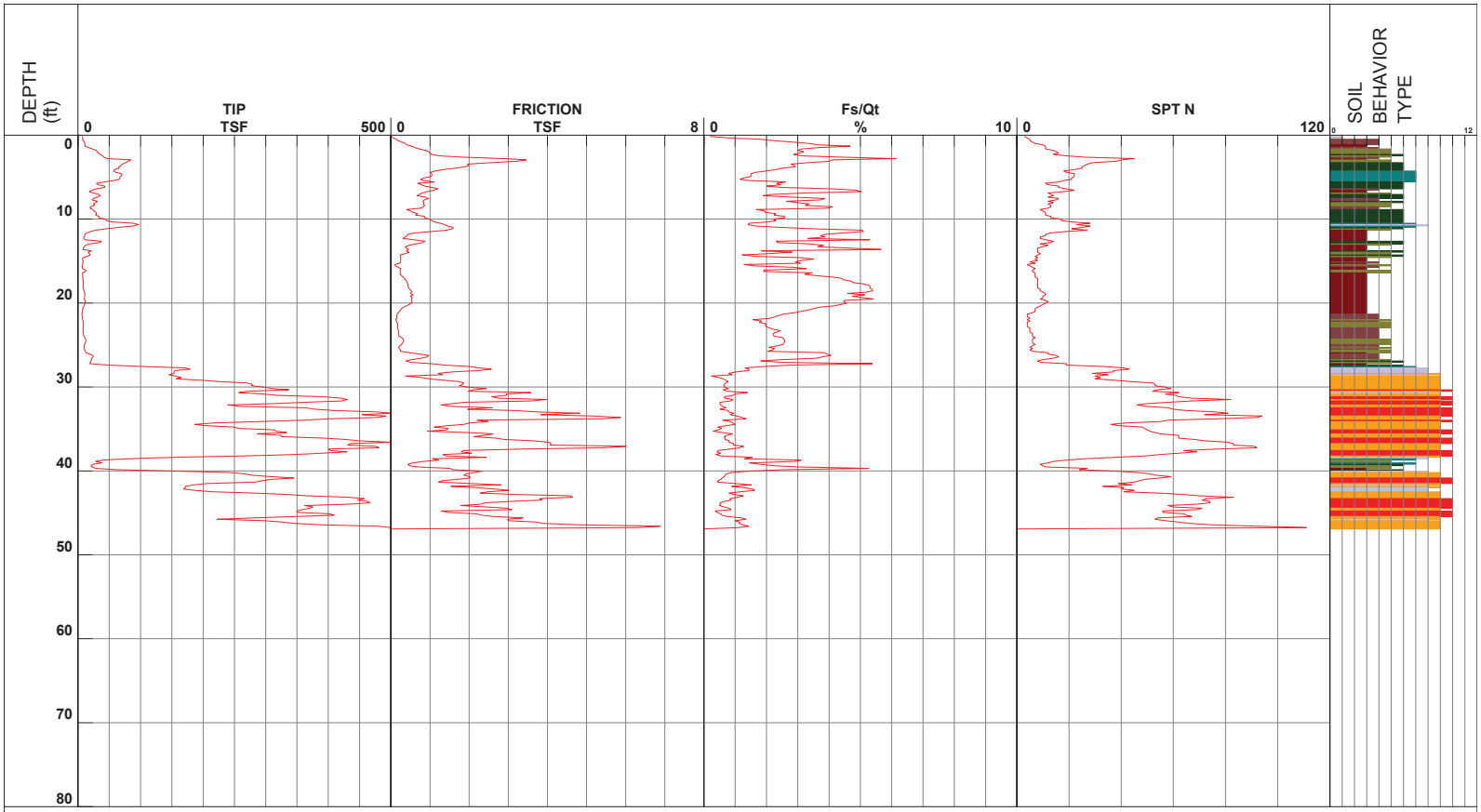
Terminated at 73.3 feet.
Groundwater measured at 26.5 feet from pore pressure dissipation test, see Figure B-11.
Date performed 12/08/14.
Ground surface elevlation: 71.5 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-4

Date 12/30/14	Project No. 770619601	Figure B-4

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

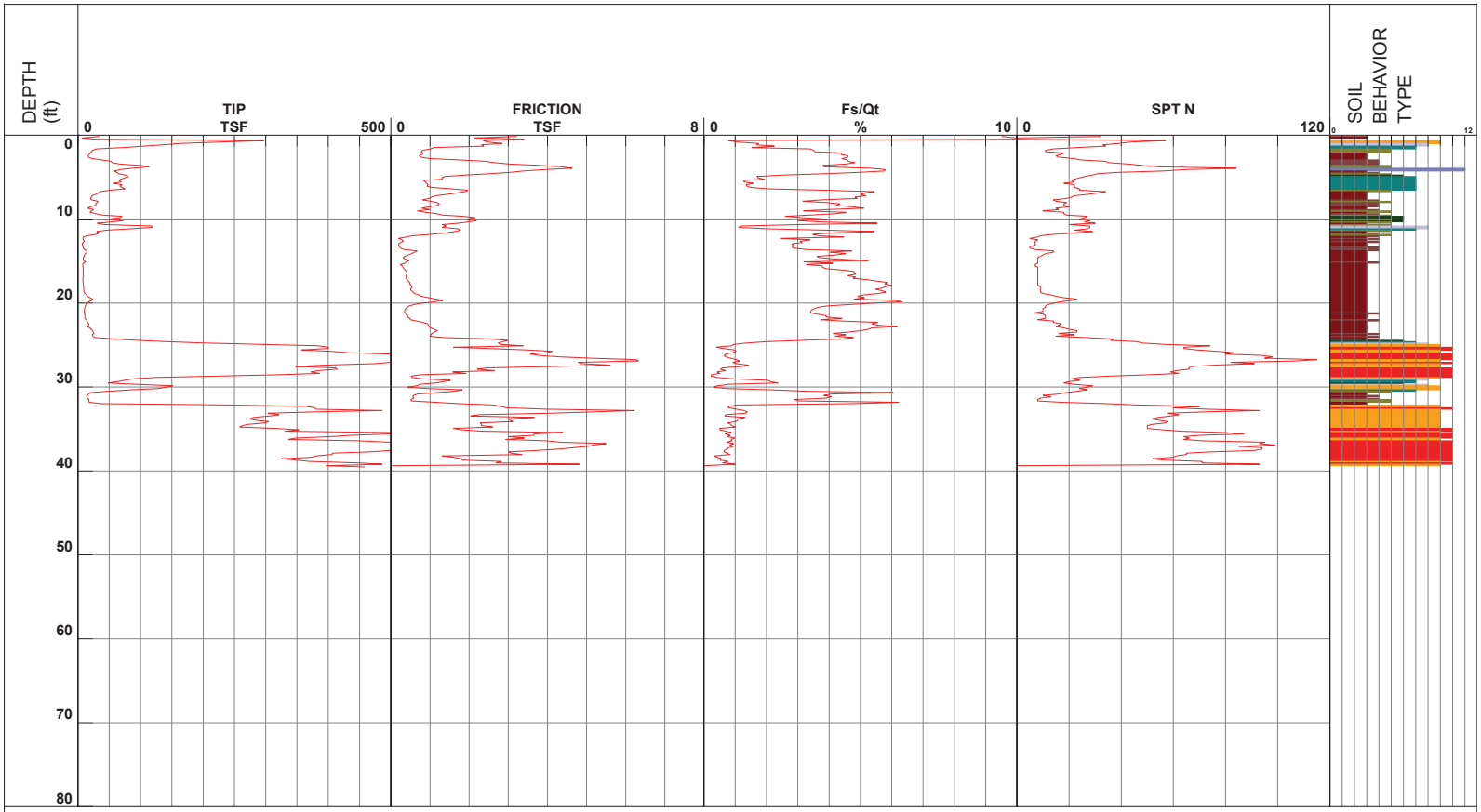
Terminated at 47 feet.
Groundwater not measured.
Date performed 12/08/14.
Ground surface elevlation: 68.2 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-5

Date 12/30/14	Project No. 770619601	Figure B-5

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

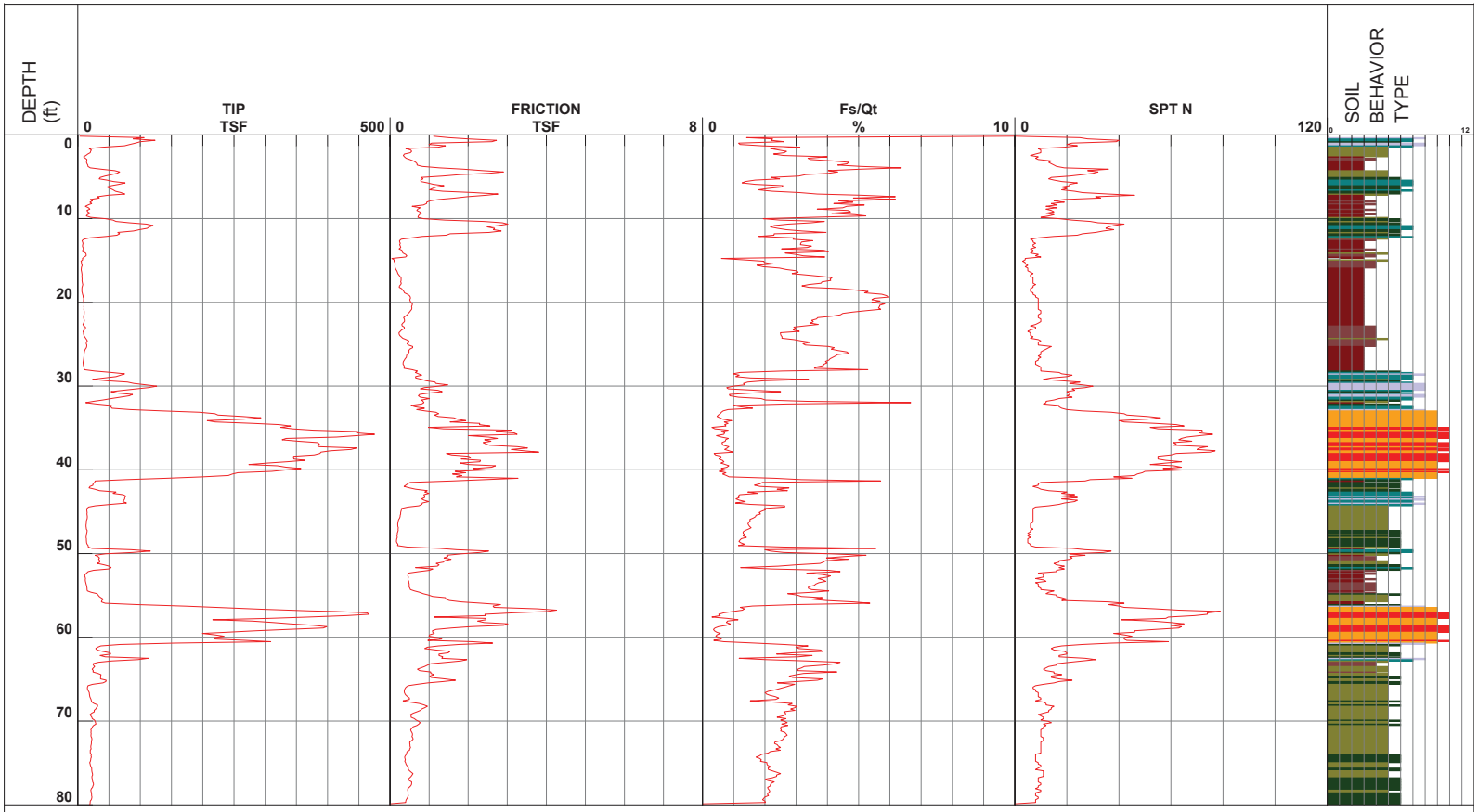
Terminated at 39.5 feet.
Groundwater not measured.
Date performed 12/08/14.
Ground surface elevlation: 67.8 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-6

Date 12/30/14	Project No. 770619601	Figure B-6

LANGAN TREADWELL ROLLO



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

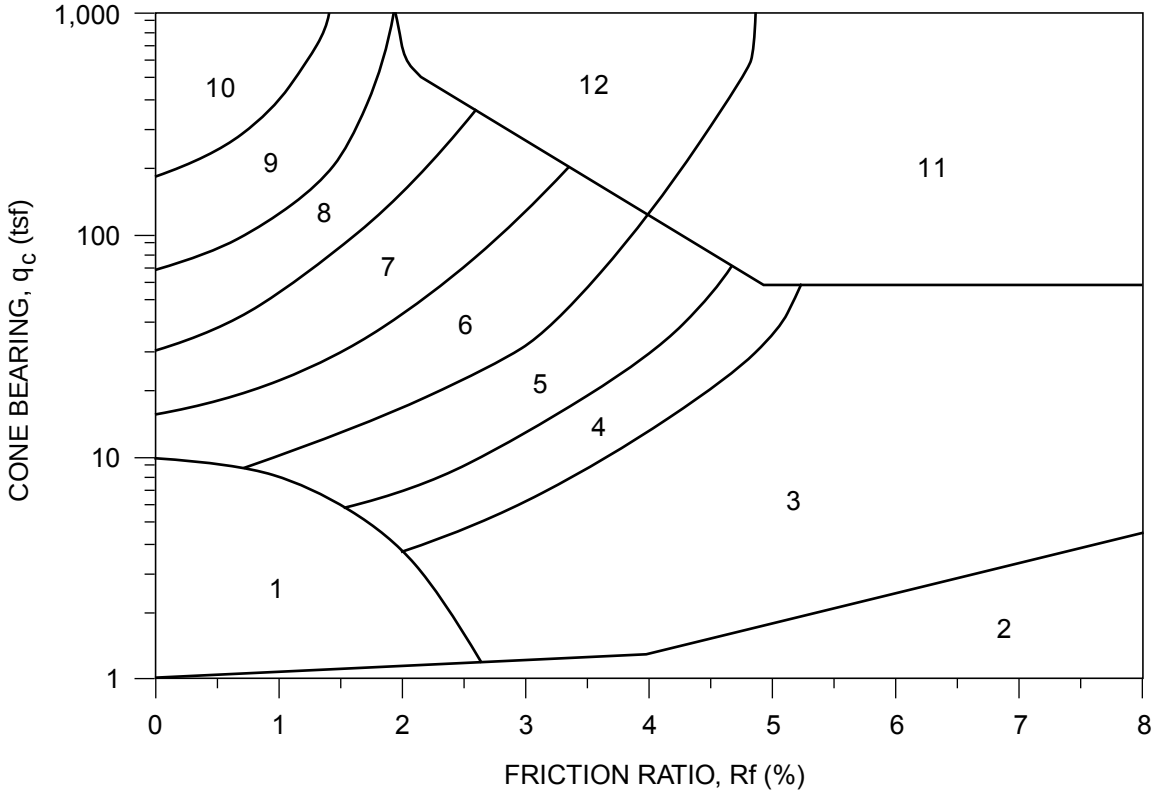
Terminated at 80 feet.
Groundwater not measured
Date performed 12/08/14.
Ground surface elevlation: 67.6 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONE PENETRATION TEST RESULTS
CPT-7

Date 12/30/14	Project No. 770619601	Figure B-7

LANGAN TREADWELL ROLLO



ZONE	q_c/N[1]	Su Factor (Nk)[2]	SOIL BEHAVIOR TYPE[1]
1	2	15 (10 for $q_c \leq 9$ tsf)	Sensitive Fine-Grained
2	1	15 (10 for $q_c \leq 9$ tsf)	Organic Material
3	1	15 (10 for $q_c \leq 9$ tsf)	CLAY
4	1.5	15	SILTY CLAY to CLAY
5	2	15	CLAYEY SILT to SILTY CLAY
6	2.5	15	SANDY SILT to CLAYEY SILT
7	3	---	SILTY SAND to SANDY SILT
8	4	---	SAND to SILTY SAND
9	5	---	SAND
10	6	---	GRAVELLY SAND to SAND
11	1	15	Very Stiff Fine-Grained (*)
12	2	---	SAND to CLAYEY SAND (*)

(*) Overconsolidated or Cemented
q_c = Tip Bearing
f_s = Sleeve Friction
$Rf = f_s/q_c \times 100$ = Friction Ratio

Note: Testing performed in accordance with ASTM D3441.

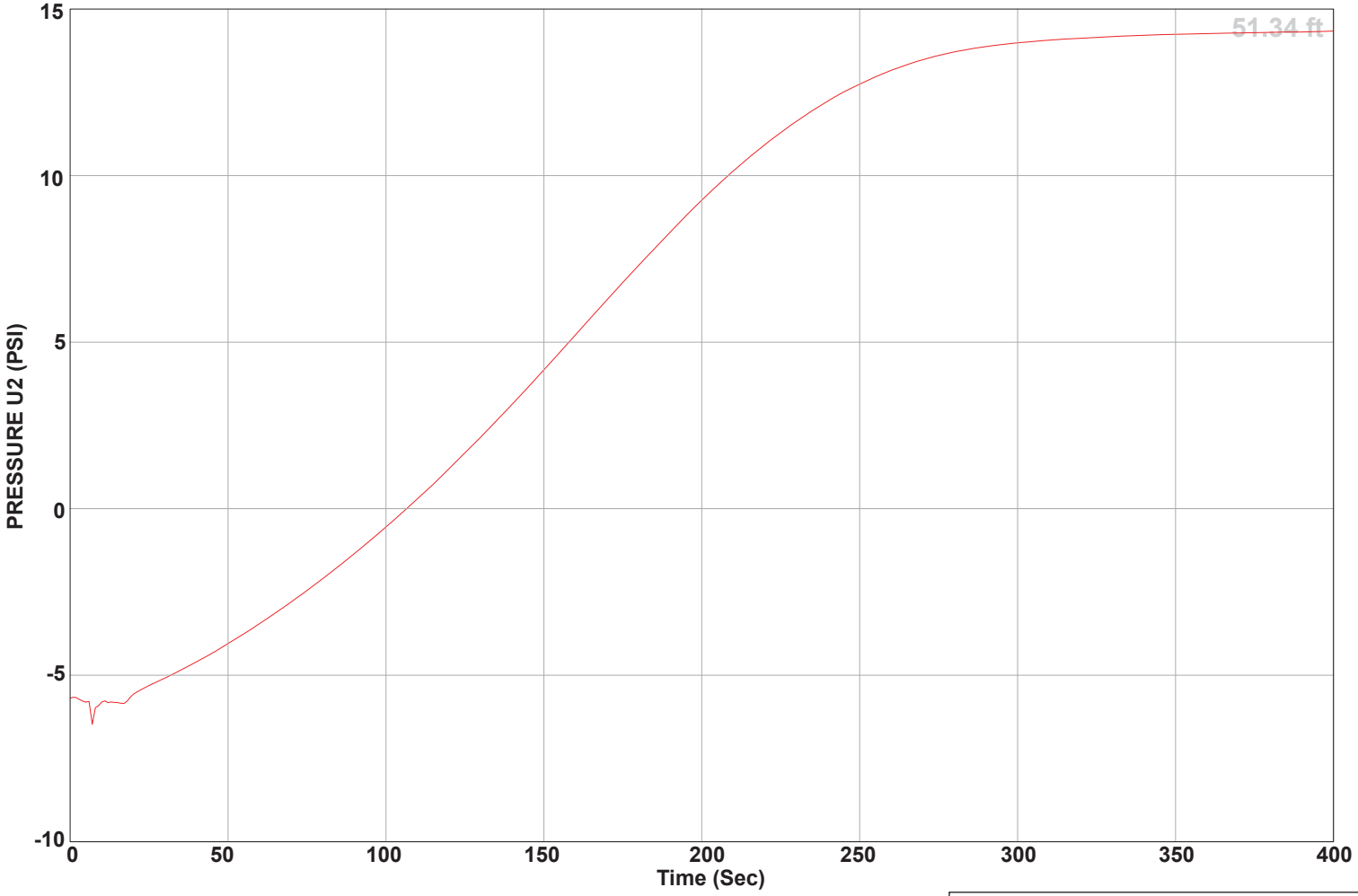
References: 1. Robertson, 1986, Olsen, 1988.
2. Bonaparte & Mitchell, 1979 (young Bay Mud $q_c \leq 9$).
Estimated from local experience (fine-grained soils $q_c > 9$).

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CLASSIFICATION CHART FOR CONE PENETRATION TESTS

LANGAN TREADWELL ROLLO

Date 01/22/15	Project No. 770619601	Figure B-8



Probe Depth (feet)	End point (psi)	Calculated Head (feet)	Calculated GW depth (feet)	GW Elevation (feet)
51.3	14.3	33.1	18.2	49.1

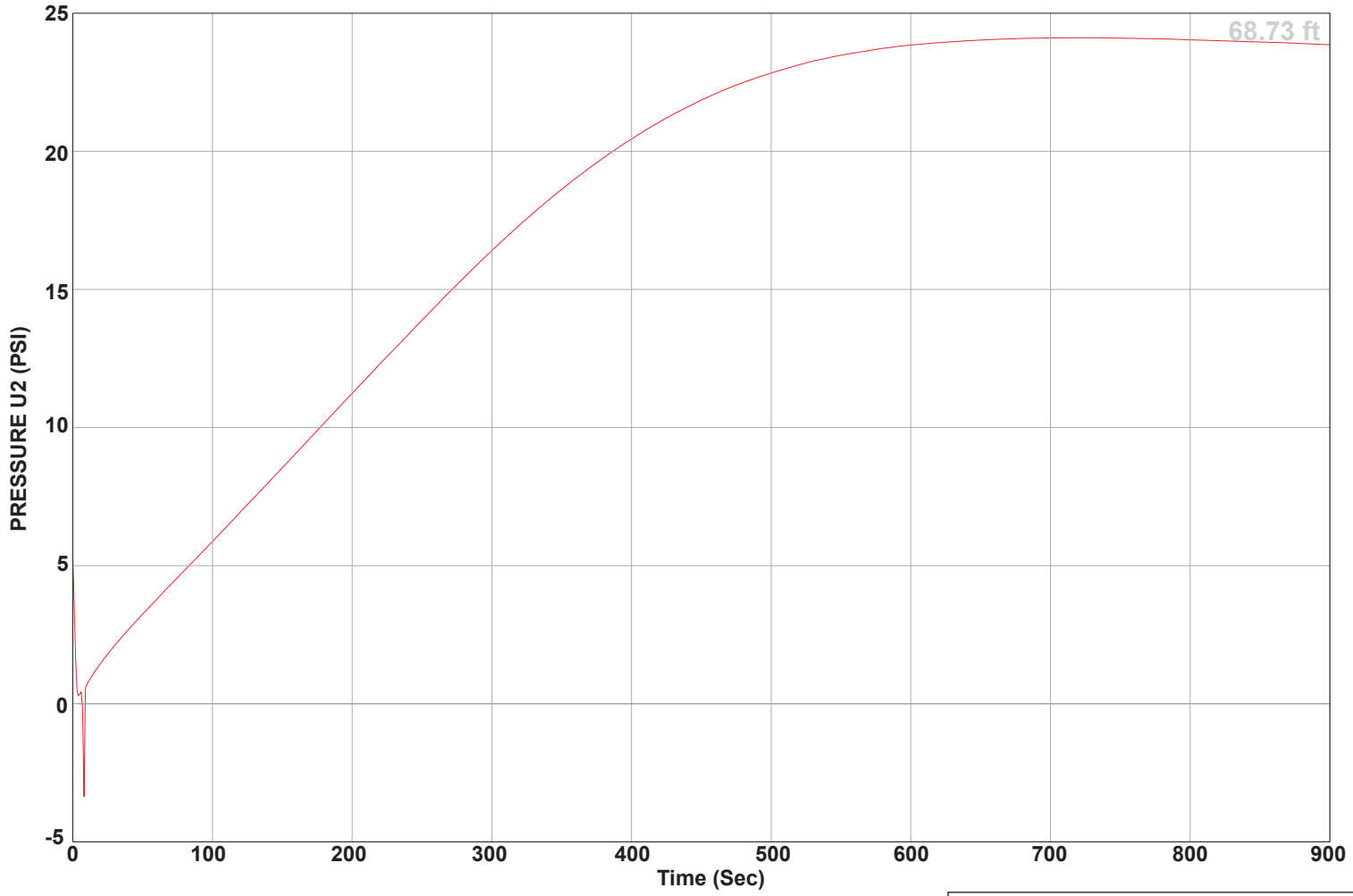
Note:
1. Ground Surface Elevation: 67.3 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

PORE PRESSURE DISSIPATION TEST
CPT-1

Date 01/22/15 | Project No. 770619601 | Figure B-9

LANGAN TREADWELL ROLLO



Probe Depth (feet)	End point (psi)	Calculated Head (feet)	Calculated GW depth (feet)	GW Elevation (feet)
68.7	23.8	55.1	13.6	54

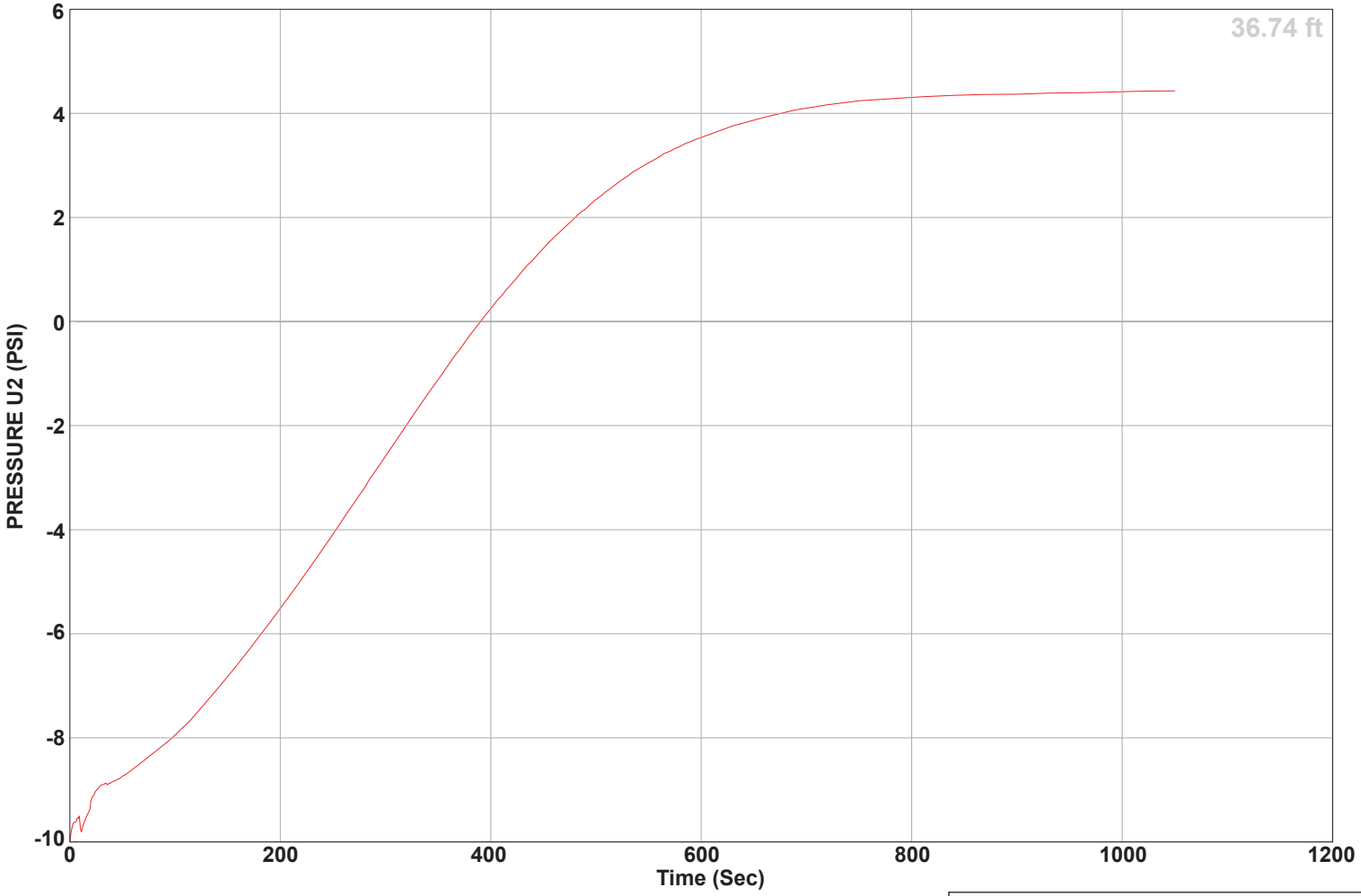
Note:
1. Ground Surface Elevation: 67.6 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

PORE PRESSURE DISSIPATION TEST
CPT-2

Date 01/22/15 | Project No. 770619601 | Figure B-10

LANGAN TREADWELL ROLLO



Probe Depth (feet)	End point (psi)	Calculated Head (feet)	Calculated GW depth (feet)	GW Elevation (feet)
36.7	4.4	10.2	26.5	45.0

Note:
1. Ground Surface Elevation: 71.5 feet, NAVD 88 Datum.

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

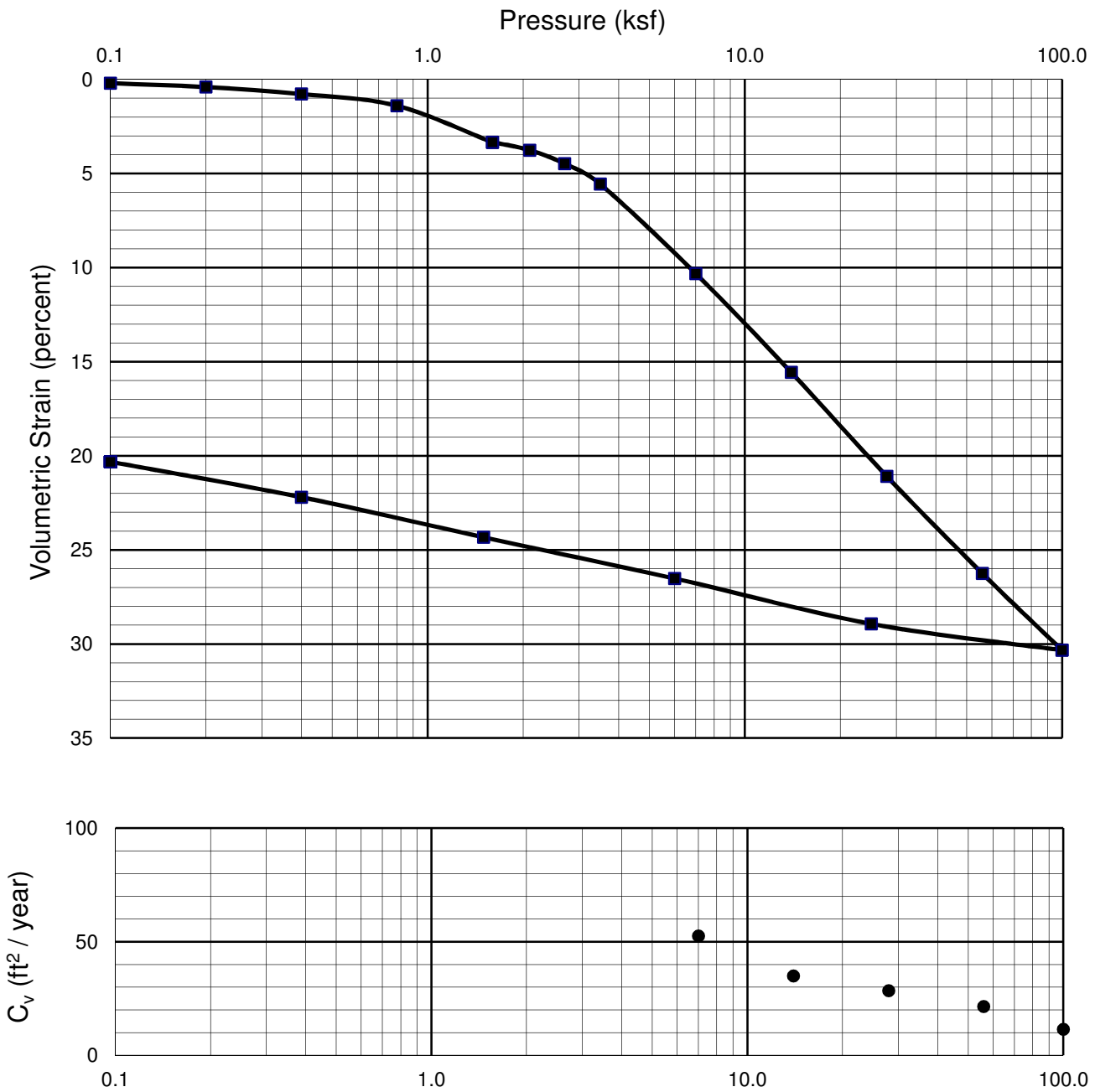
PORE PRESSURE DISSIPATION TEST
CPT-4

Date 01/22/15 | Project No. 770619601 | Figure B-11

LANGAN TREADWELL ROLLO

APPENDIX C

LABORATORY DATA



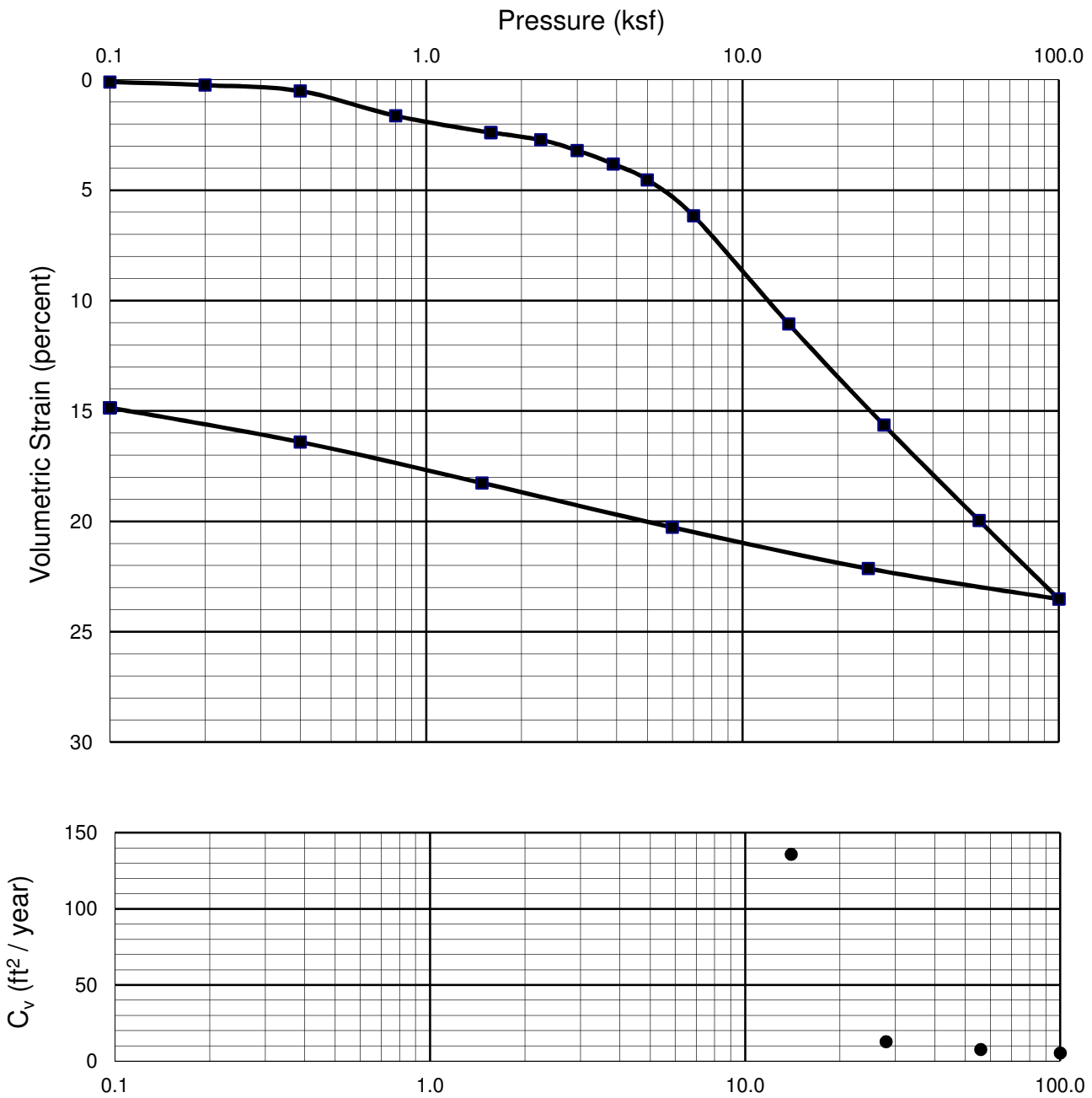
Sampler Type: Shelby Tube			Condition	Before Test		After Test	
Diameter (in) 2.42	Height (in) 1.00		Water Content	w_o	35.5 %	w_f	21.8 %
Overburden Pressure, p_o	1,400 psf		Void Ratio	e_o	0.99	e_f	0.59
Preconsol. Pressure, p_c	3,000)0 psf		Saturation	S_o	97 %	S_f	100 %
Compression Ratio, $C_{\varepsilon c}$	0.170		Dry Density	γ_d	85 pcf	γ_d	106 pcf
LL - -	PL - -	PI - -		G_s	2.70 (assumed)		
Classification CLAY (CL), gray-brown		Source B-3 at 15 feet					

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONSOLIDATION TEST REPORT

LANGAN TREADWELL ROLLO

Date 12/27/14	Project No. 770619601	Figure C-1



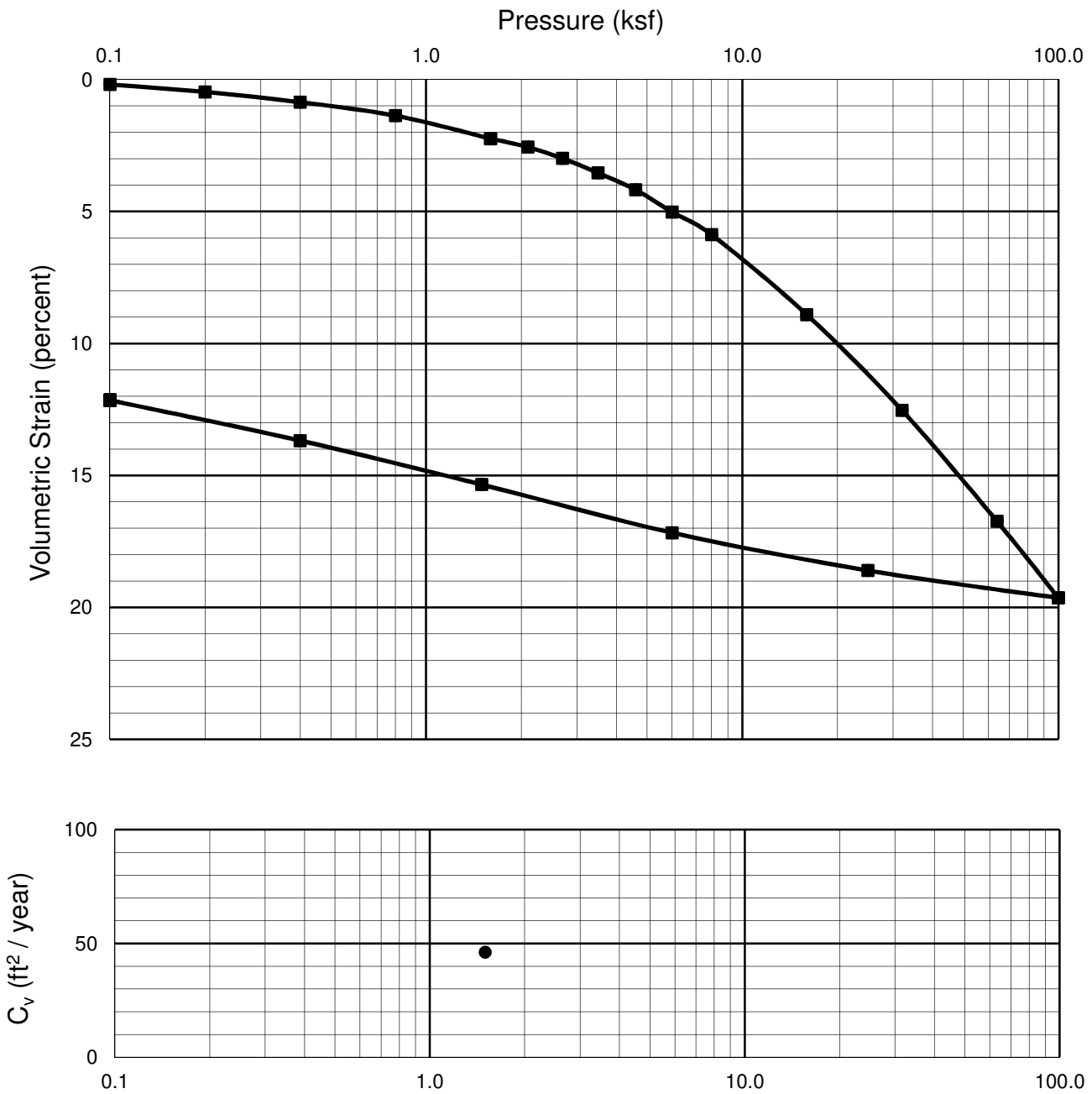
Sampler Type: Shelby Tube			Condition	Before Test		After Test	
Diameter (in) 2.42	Height (in) 1.00		Water Content	w_o	26.7 %	w_f	19.2 %
Overburden Pressure, p_o	2,400 psf		Void Ratio	e_o	0.78	e_f	0.52
Preconsol. Pressure, p_c	5,000 psf		Saturation	S_o	92 %	S_f	100 %
Compression Ratio, $C_{\varepsilon c}$	0.15		Dry Density	γ_d	95 pcf	γ_d	111 pcf
LL 60	PL 27	PI 33		G_s	2.70 (assumed)		
Classification CLAY (CH), dark brown to gray			Source	B-4 at 20 feet			

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONSOLIDATION TEST REPORT

LANGAN TREADWELL ROLLO

Date	12/24/14	Project No.	770619601	Figure C-2



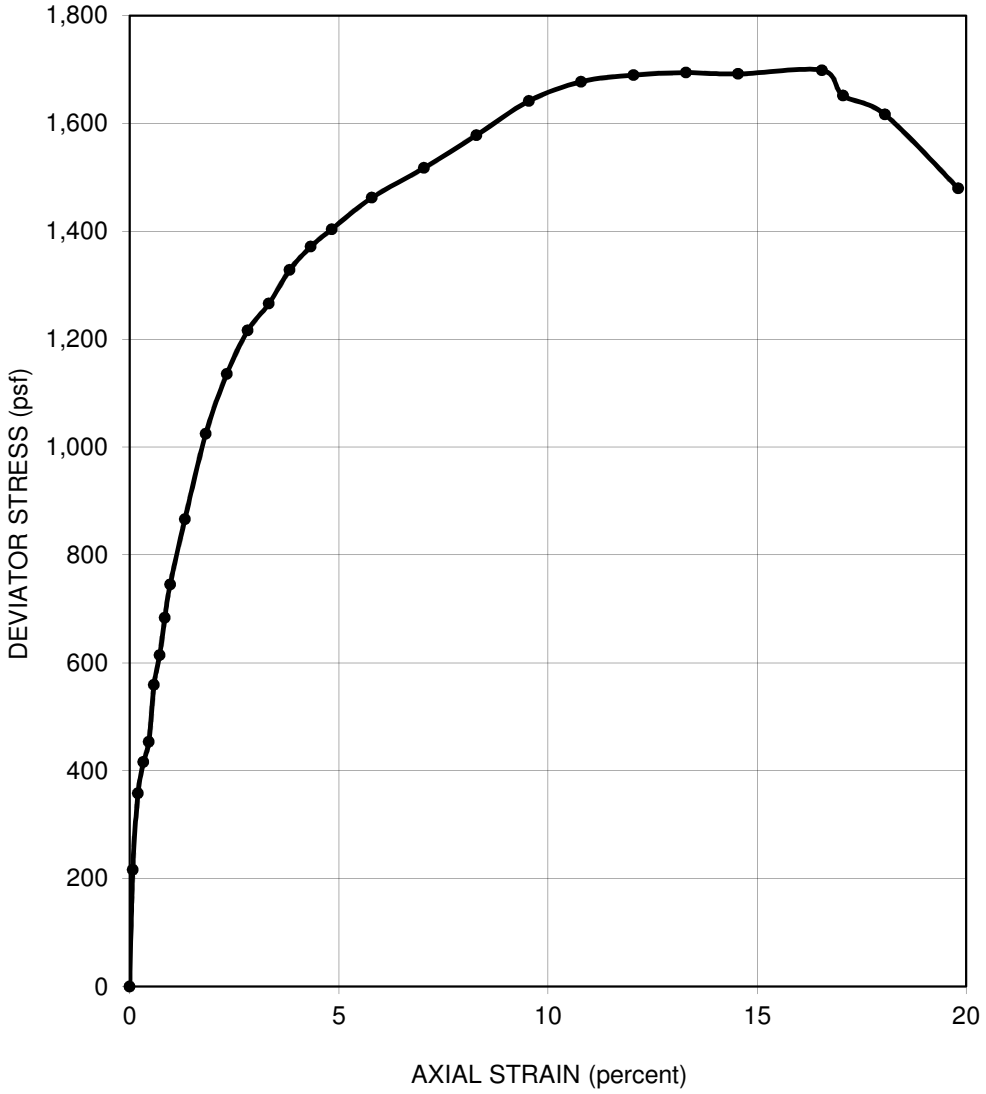
Sampler Type: Sprague & Henwood			Condition	Before Test		After Test	
Diameter (in) 2.42	Height (in) 1.00		Water Content	w_o	25.4 %	w_f	19.7 %
Overburden Pressure, p_o 750 psf			Void Ratio	e_o	0.74	e_f	0.53
Preconsol. Pressure, p_c 7,500 psf			Saturation	S_o	92 %	S_f	100 %
Compression Ratio, $C_{\varepsilon c}$ 0.13			Dry Density	γ_d	97 pcf	γ_d	110 pcf
LL - -	PL - -	PI - -		G_s 2.70 (assumed)			
Classification SANDY CLAY (CL), light brown		Source B-5 at 6 feet					

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

CONSOLIDATION TEST REPORT

LANGAN TREADWELL ROLLO

Date 12/24/14	Project No. 770619601	Figure C-3



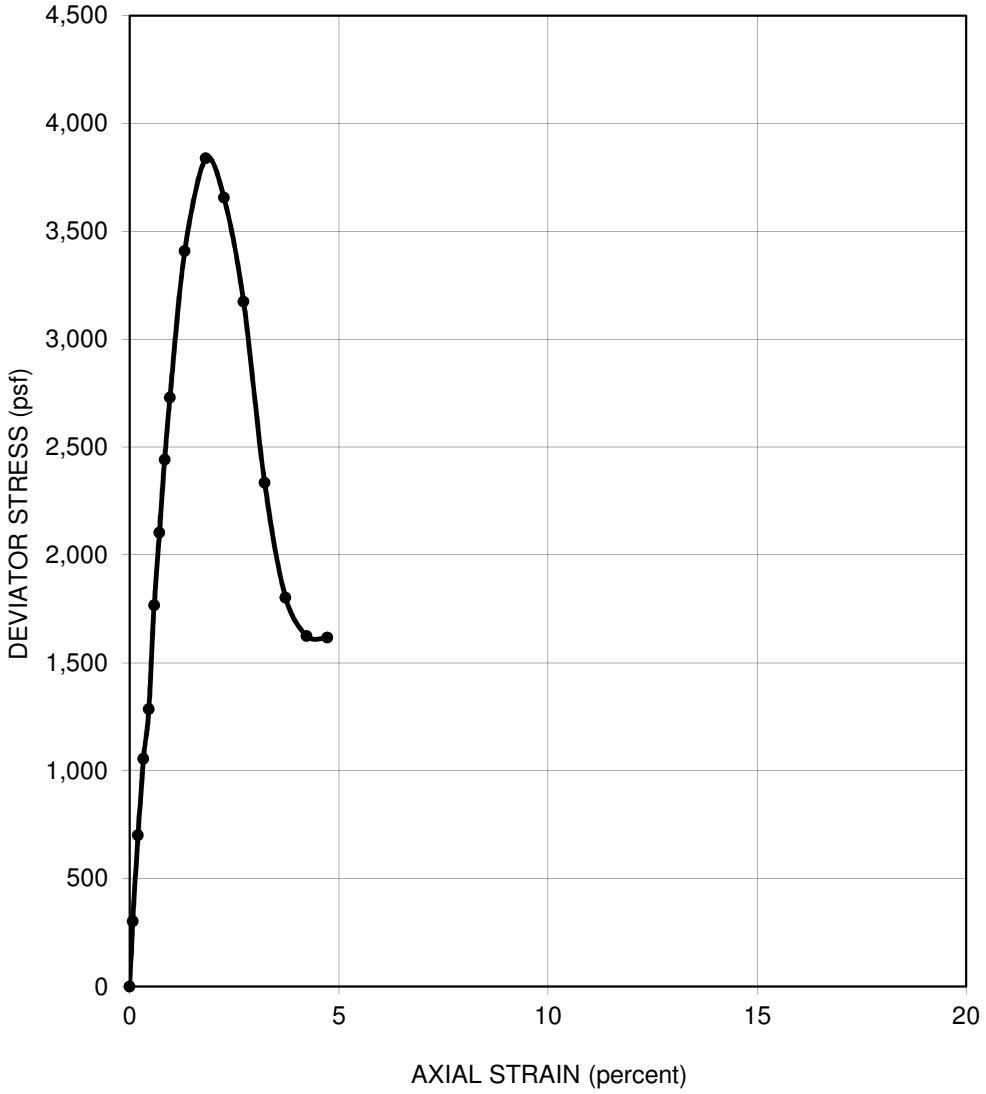
SAMPLER TYPE	Sprague and Henwood			SHEAR STRENGTH	850	psf	
DIAMETER (in.)	2.4	HEIGHT (in.)	6.0	STRAIN AT FAILURE	16.6	%	
MOISTURE CONTENT	36.3	%		CONFINING PRESSURE	2,400	psf	
DRY DENSITY	84	pcf		STRAIN RATE	0.50	% / min	
DESCRIPTION	CLAY (CH), gray			SOURCE	B-1 at 19.5 feet		

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/19/14	Project No.	770619601	Figure	C-4



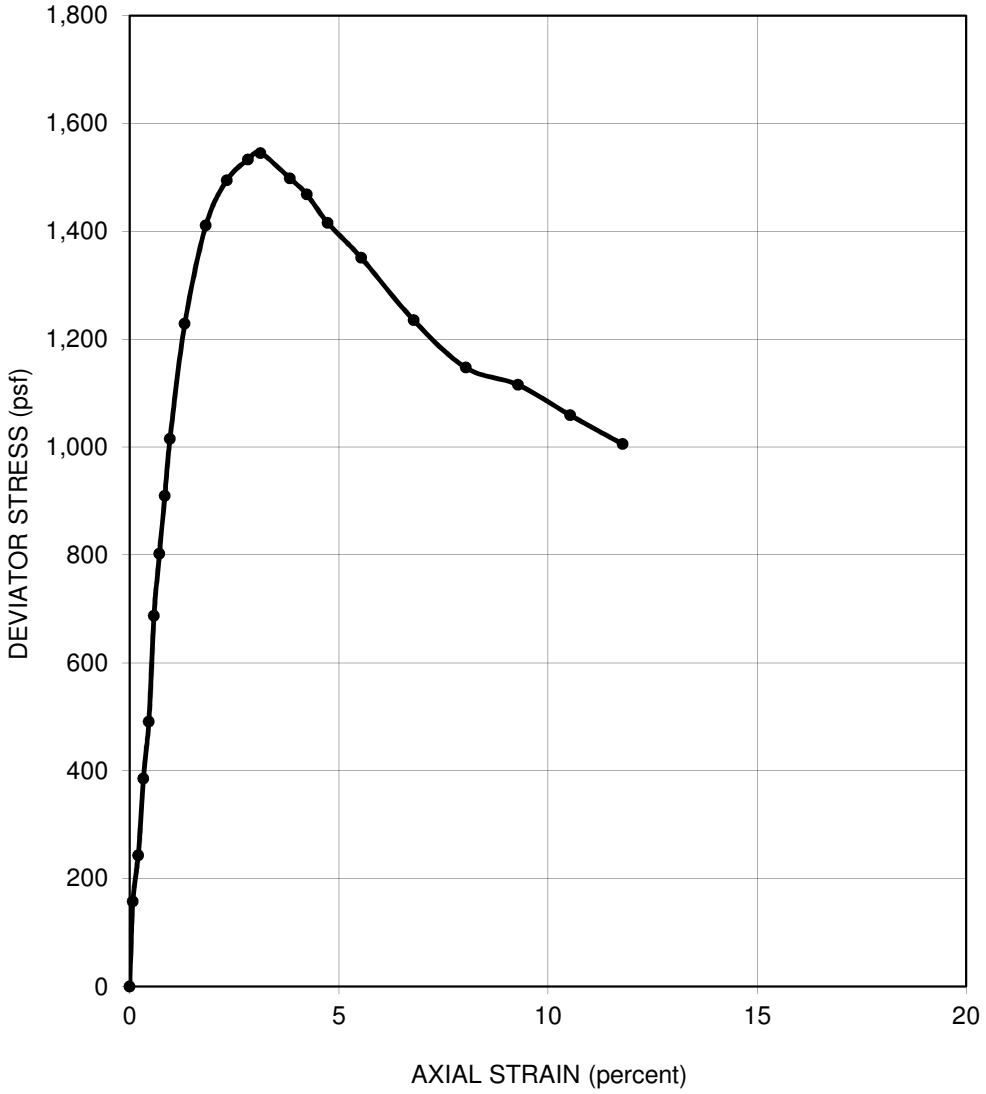
SAMPLER TYPE	Sprague and Henwood			SHEAR STRENGTH	1,920 psf
DIAMETER (in.)	2.4	HEIGHT (in.)	5.3	STRAIN AT FAILURE	1.8 %
MOISTURE CONTENT	12.3 %			CONFINING PRESSURE	400 psf
DRY DENSITY	106 pcf			STRAIN RATE	0.50 % / min
DESCRIPTION	CLAY with SAND (CL), dark brown , gray and yellow			SOURCE	B-2 at 3.5 feet

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/19/14	Project No.	770619601	Figure	C-5



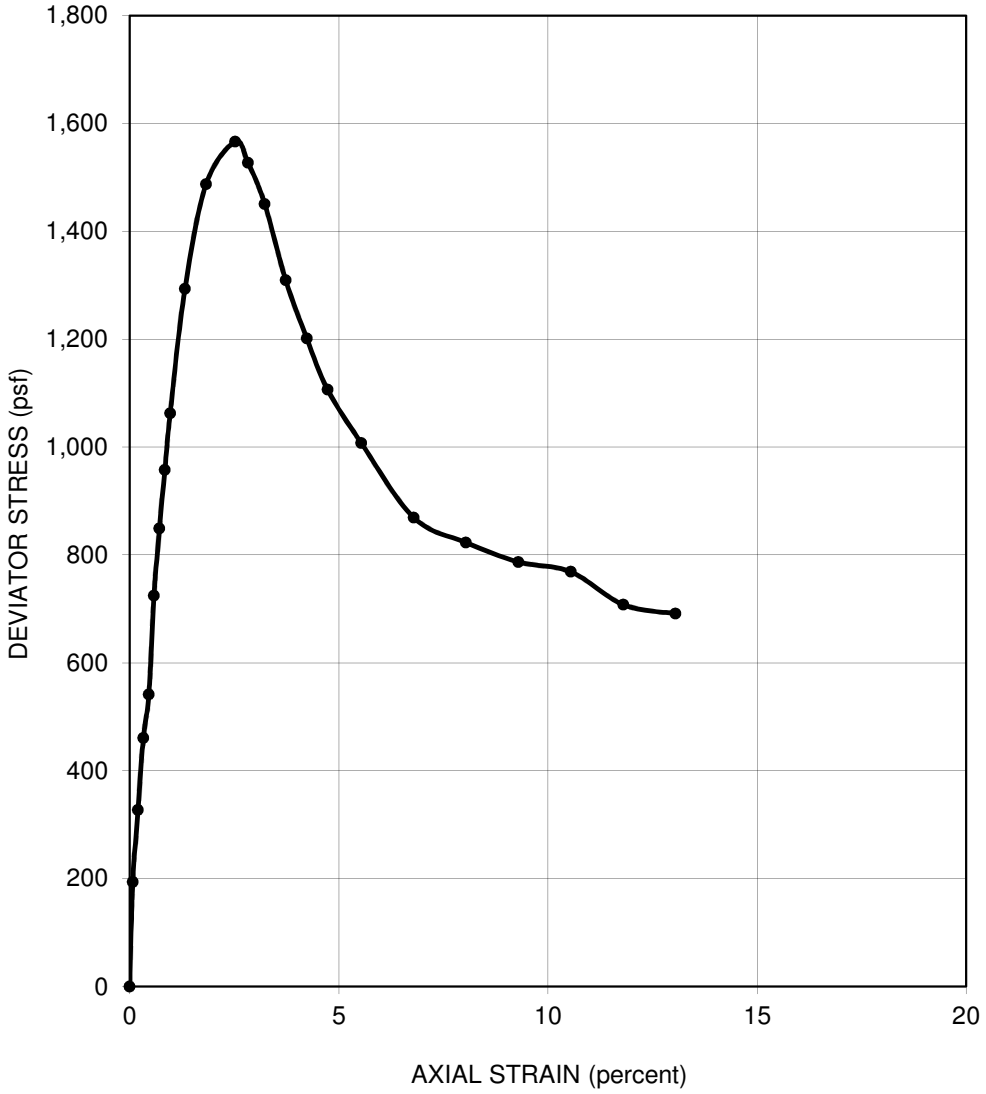
SAMPLER TYPE	Shelby Tube			SHEAR STRENGTH	770	psf	
DIAMETER (in.)	2.8	HEIGHT (in.)	6.1	STRAIN AT FAILURE	3.1	%	
MOISTURE CONTENT	41.8	%		CONFINING PRESSURE	2,100	psf	
DRY DENSITY	80	pcf		STRAIN RATE	0.50	% / min	
DESCRIPTION	CLAY (CL), gray-brown			SOURCE	B-3 at 15 feet		

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/16/14	Project No.	770619601	Figure	C-6



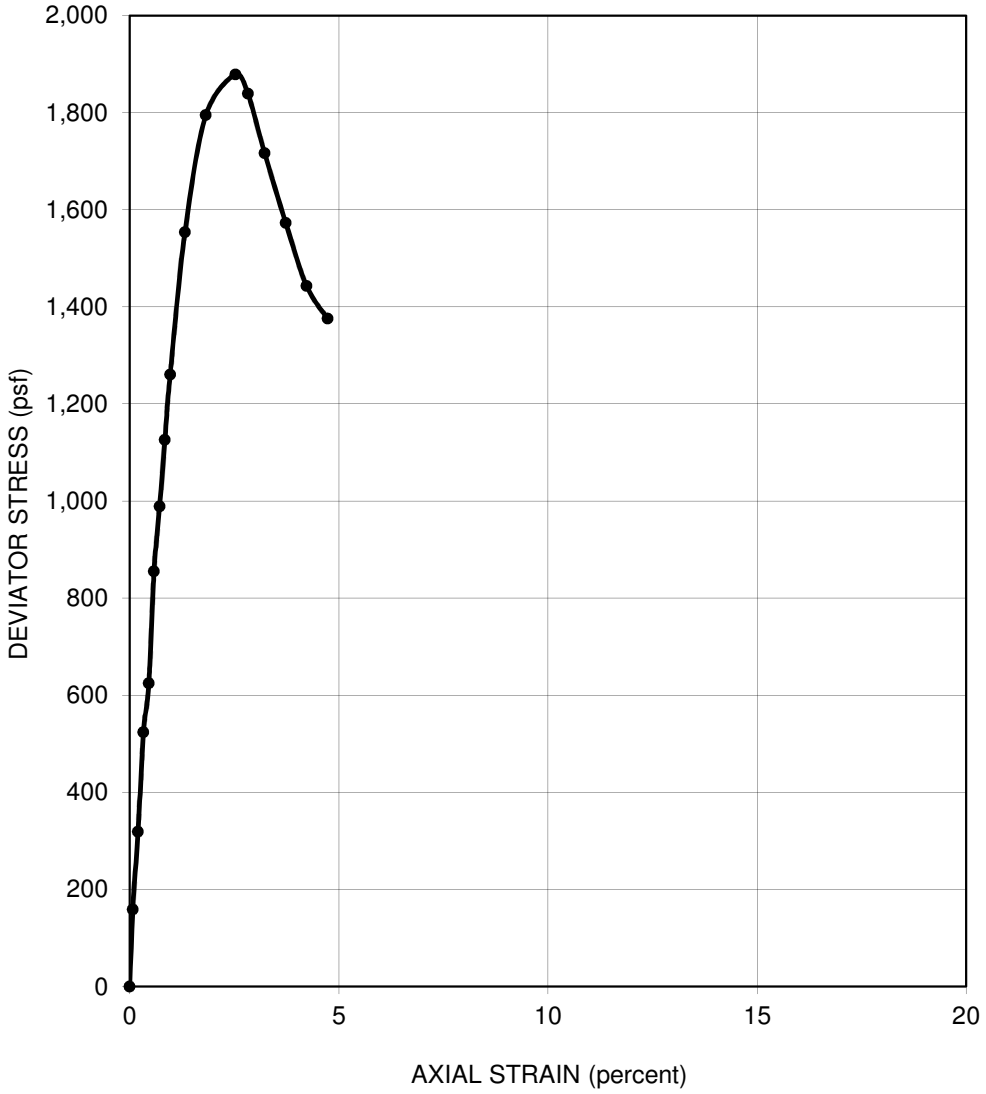
SAMPLER TYPE	Sprague and Henwood			SHEAR STRENGTH	780 psf
DIAMETER (in.)	2.4	HEIGHT (in.)	5.4	STRAIN AT FAILURE	2.5 %
MOISTURE CONTENT	16.1 %			CONFINING PRESSURE	400 psf
DRY DENSITY	97 pcf			STRAIN RATE	0.50 % / min
DESCRIPTION	SANDY CLAY with GRAVEL (CL), brown			SOURCE	B-4 at 3.5 feet

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/19/14	Project No.	770619601	Figure	C-7



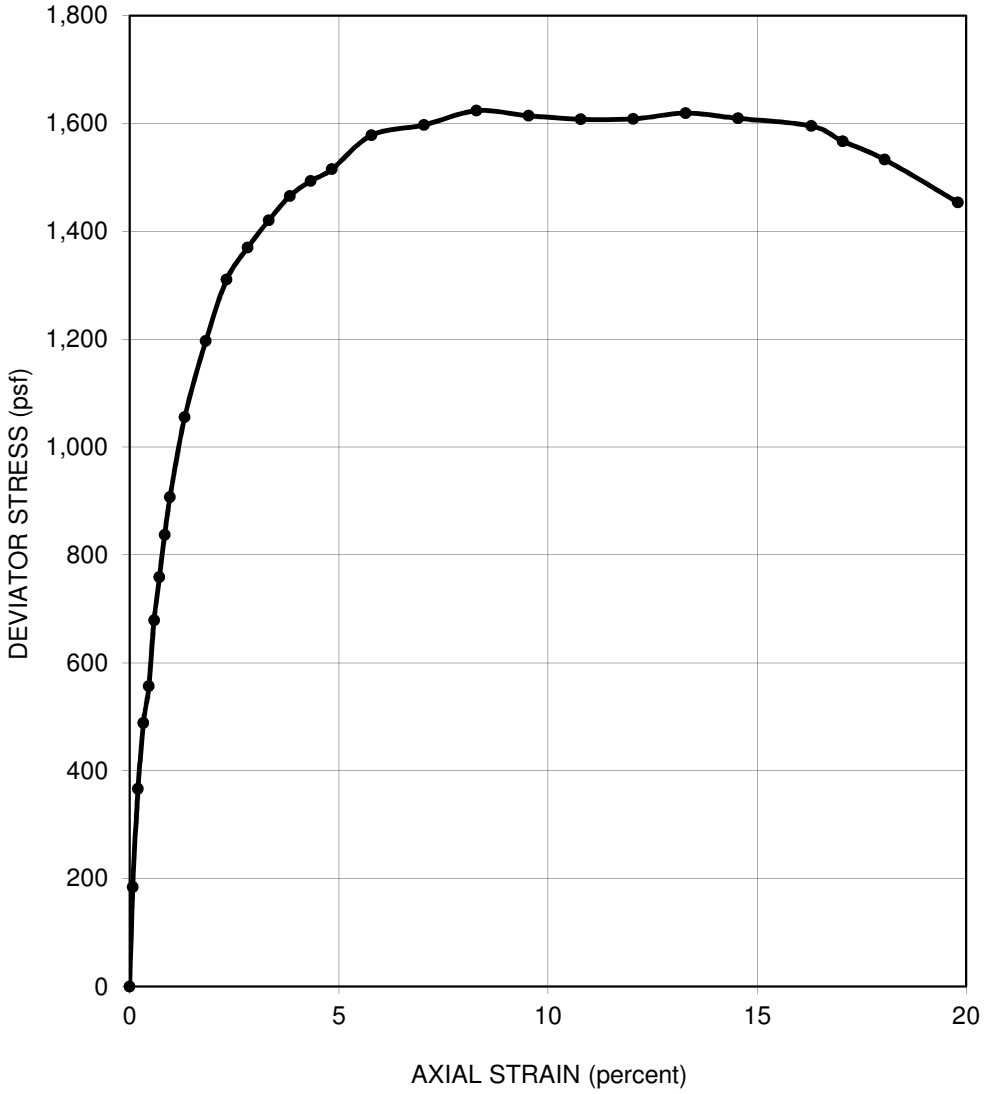
SAMPLER TYPE	Shelby Tube			SHEAR STRENGTH	940	psf	
DIAMETER (in.)	2.9	HEIGHT (in.)	6.1	STRAIN AT FAILURE	2.5	%	
MOISTURE CONTENT	32.0	%		CONFINING PRESSURE	2,400	psf	
DRY DENSITY	90	pcf		STRAIN RATE	0.50	% / min	
DESCRIPTION	CLAY (CH), dark brown to gray			SOURCE	B-4 at 20 feet		

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/16/14	Project No.	770619601	Figure	C-8



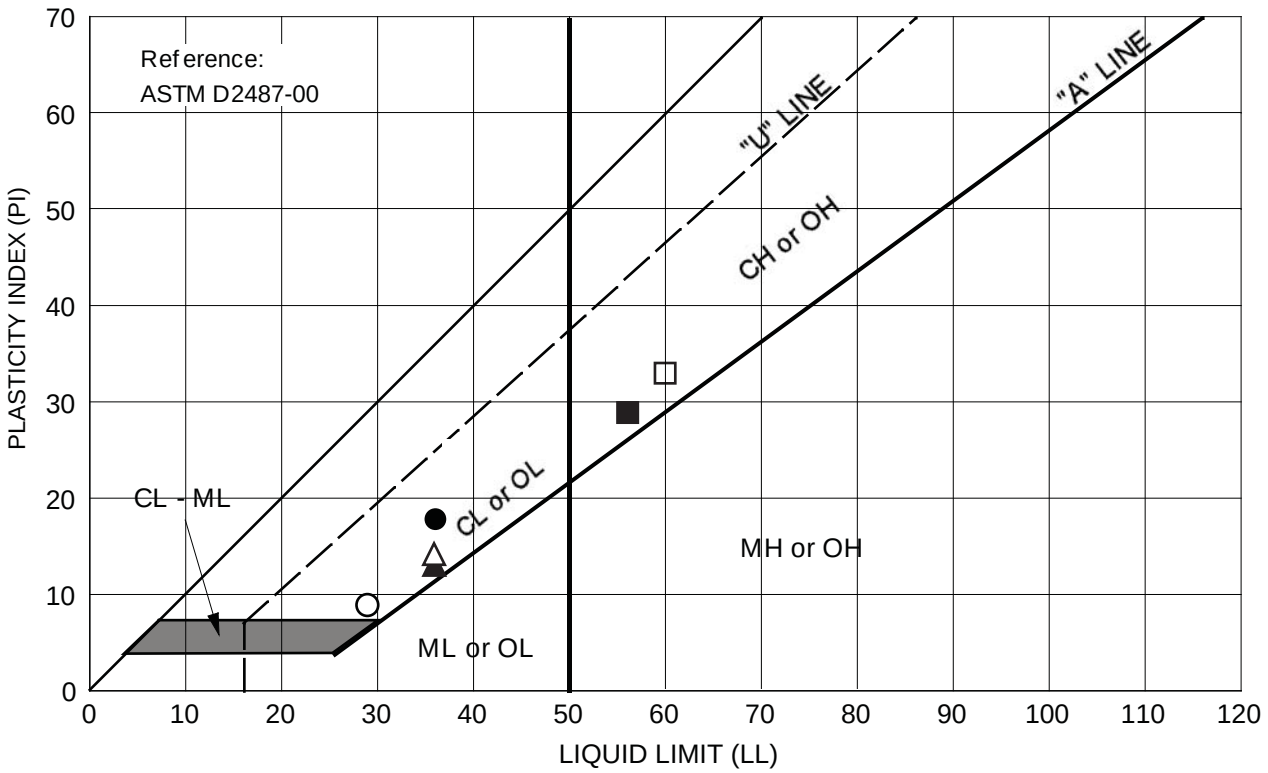
SAMPLER TYPE	Shelby Tube			SHEAR STRENGTH	810 psf
DIAMETER (in.)	2.9	HEIGHT (in.)	6.1	STRAIN AT FAILURE	8.3 %
MOISTURE CONTENT	43.5 %			CONFINING PRESSURE	2,100 psf
DRY DENSITY	77 pcf			STRAIN RATE	0.50 % / min
DESCRIPTION	CLAY (CL), gray			SOURCE	B-5 at 15 feet

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN TREADWELL ROLLO

Date	12/19/14	Project No.	770619601	Figure	C-9



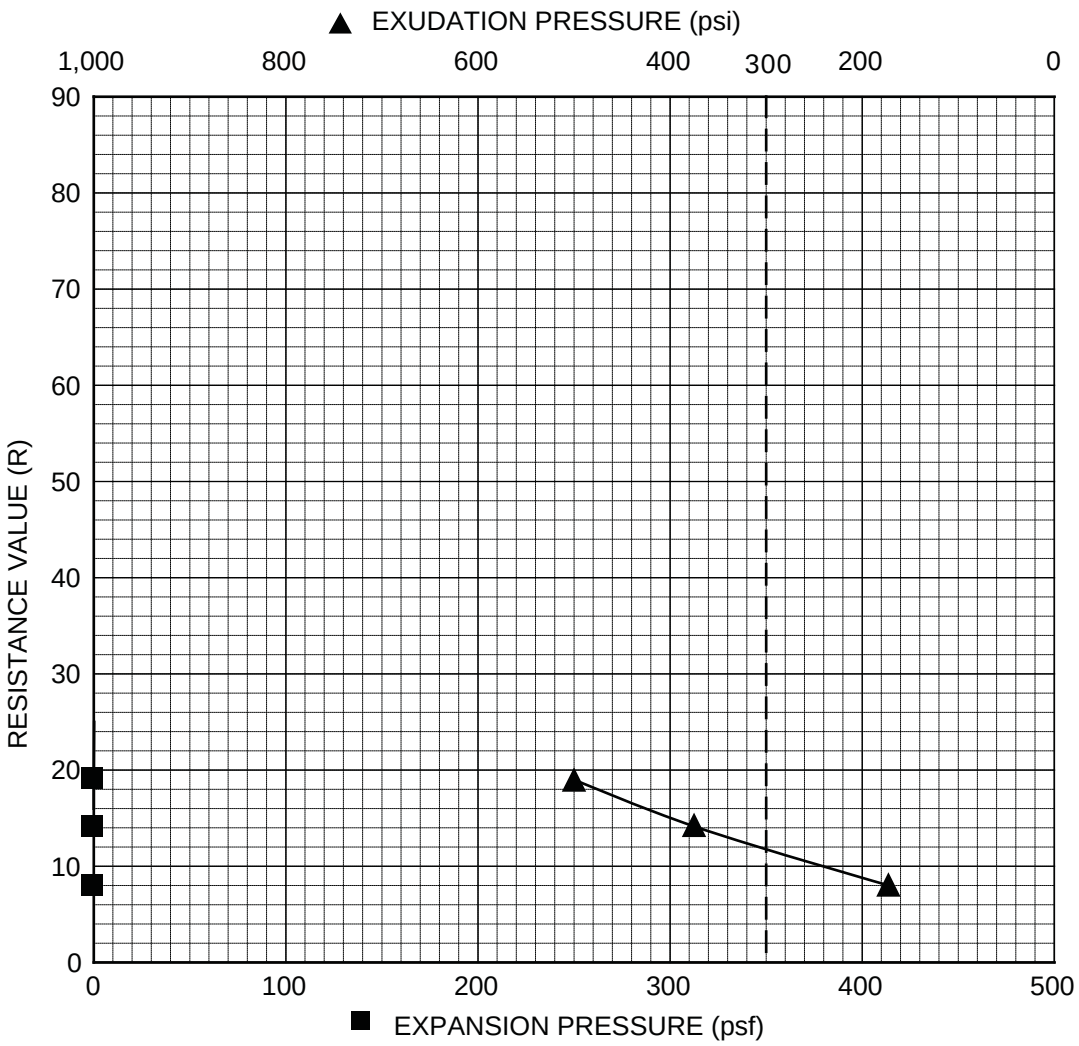
Symbol	Source	Description and Classification	Natural M.C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
●	B-1 at 0.5 to 5.0 ft.	CLAY with SAND (CL), dark brown/ SANDY CLAY (CL), brown	--	36	18	--
■	B-1 at 14.5 feet	CLAY (CH), gray	--	56	29	--
▲	B-2 at 8 feet	CLAY with SAND (CL), yellow-brown	--	36	13	--
○	B-3 at 5 feet	SANDY CLAY (CL), light-brown	--	29	9	--
□	B-4 at 19.5 feet	CLAY (CH), dark brown to gray	--	60	33	--
△	B-5 at 11 feet	CLAY (CL), olive	--	36	14	--

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

PLASTICITY CHART

LANGAN TREADWELL ROLLO

Date 02/03/15 | Project No. 770619601 | Figure C-10



Specimen ID:	A	B	C	D
Water Content (%)	16.7	15.0	14.1	--
Dry Density (pcf)	111.0	114.8	117.0	--
Exudation Pressure (psi)	176	365	501	--
Expansion Pressure (psf)	0.00	0.00	0.00	--
Resistance Value (R)	8	14	19	--

Sample Source	Sample Description	Sand Equivalent	Expansion Pressure	R value
B-3 at 1/2 to 5 feet	SANDY CLAY (CL), dark brown/ SANDY CLAY (CL), light brown	--	--	12

MISSION TOWN CENTER APARTMENT HOMES
Santa Clara, California

RESISTANCE VALUE TEST DATA

LANGAN TREADWELL ROLLO

Date 02/03/15	Project No. 770619601	Figure C-11

APPENDIX D

CORROSIVITY ANALYSIS WITH BRIEF EVALUATION

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

17 December, 2014

Job No.1412155
Cust. No.12242

Mr. Chad Leege
Langan Treadwell Rollo
4030 Moorpark Avenue, Suite 210
San Jose, CA 95117

Subject: Project No.: 770619601.700.210
Project Name: Viso Property, 3300 The Alameda, Santa Clara
Corrosivity Analysis – ASTM Test Methods

Dear Mr. Leege:

Pursuant to your request, CERCO Analytical has analyzed the soil samples submitted on December 15, 2014. Based on the analytical results, a brief evaluation is enclosed for your consideration.

Based upon the resistivity measurements, Sample No.002 is classified as "corrosive" and Sample No.001 is classified as "moderately corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentrations ranged from none detected to 19 mg/kg, and are determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentrations ranged from none detected to 35 mg/kg and are determined to be insufficient to damage reinforced concrete structures and cement mortar-coated steel at these locations.

The pH of the soils ranged from 8.11 to 8.41, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

The redox potentials ranged from 290 to 350-mV, which is indicative of potentially "slightly corrosive" soils resulting from anaerobic soil conditions.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please *call JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: Langan Treadwell Rollo
Client's Project No.: 770619601.700.210
Client's Project Name: Viso Property - 3300 The Alameda, Santa Clara, CA
Date Sampled: 12/08 & 09/14
Date Received: 15-Dec-14
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 17-Dec-2014

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
1412155-001	B-4 @ 0.5-2.5	350	8.11	-	3,100	-	N.D.	N.D.
1412155-002	B-5 @ 0.5-2.5	290	8.41	-	1,700	-	19	35

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
Date Analyzed:	16-Dec-2014	16-Dec-2014	-	15-Dec-2014	-	16-Dec-2014	16-Dec-2014

Cheryl McMillen
Laboratory Director

* Results Reported on "As Received" Basis
N.D. - None Detected

Quality Control Summary - **All laboratory quality control parameters were found to be within established limits**

Hydrology Study

Civil
Engineering
Associates

224 Airport Parkway
Suite 525
San Jose, CA 95110
Phone: (408) 453-1066
Fax: (408) 453-1060

June 10, 2015 14-118

Carlene Matchniff
IRVINE COMPANY
690 N McCarthy Blvd, Ste 100,
Milpitas, CA 95035

RE: Mission Town Center EIR Hydrology Study

Dear Carlene,

The purpose of this study is to provide an analysis of the proposed project's impact in terms of hydrology and stormwater quality. The study has been divided into 4 basic components as outlined below:

A. Existing and Planned Storm Drainage Infrastructure
B. Proposed Types of Stormwater Treatment
C. Best Management Practices (BMPs) and related NPDES Compliance
D. Summary of Change in Runoff due to Proposed Project

A. Existing and Planned Storm Drainage Infrastructure

The proposed project is located at the corner of El Camino Real and Benton Street in the City of Santa Clara. Specifically, the project site is bounded by Benton Street to the south, Harrison Street to the north, The Alameda to the west, and El Camino Real to the east. Currently the project area consists of a mix of single family residential homes, industrial yards, storage facilities and restaurants. The proposed site also includes portions of Fremont and Sherman Streets (public streets) which the proposed project intends to vacate. The portions of Fremont and Sherman Streets to be vacated have public utilities within them (including public storm drains) which will need to be removed/relocated as a part of the development.

The existing sites drain primarily overland to the public streets and the drainage is collected into the public systems via street catch basins. There are two primary storm drainage systems adjacent to the project. One runs from west to east along Benton Street and ranges in size from 24" to 27" along the frontage. The other consists of a 60" storm main that runs from south to north through the existing Sherman Street.

The existing system in Benton Street is to remain in place aside from removing a dead end portion located within the area of Sherman Street which is to be vacated. However the larger 60" Sherman Street storm main is to be relocated around the Site to the east along Benton Street and then to the north along El Camino Real. Due to the longer length required and subsequent flatter pipe slope, the new segment of storm drain is proposed to be upsized as part of the Project from 60" to 72" to maintain prior capacity.

The remaining storm drainage infrastructure shall remain primarily untouched and the project does not propose to modify the existing drainage systems in any significant way.

B. Proposed Types of Stormwater Treatment

As a part of complying with current National Pollutant Discharge Elimination System (NPDES) permitting and the local government Municipal Regional Permit (MRP), projects of this size are required to implement Low Impact Development (LID) measures to reduce stormwater runoff and mimic site predevelopment hydrology.

LID promotes minimizing disturbed areas and impervious cover and utilizing infiltration, storage, evapotranspiration (evaporating stormwater into the air directly or through plant transpiration) and/or biotreating stormwater runoff onsite. The current regulations also provide for special consideration for projects which meet certain smart growth, high density and transit oriented development criteria. These types of projects are referred to as Special Projects and are allowed LID treatment reduction credits.

The proposed project meets all of the criteria for a "Special Project Category C: Transit-Oriented Development" which allows a certain percentage of the project stormwater to be treated via mechanical non-LID based treatment. These are called LID Treatment Reduction Credits. To be considered a Category C Special Project, a project must meet all of the following criteria:

1. Be characterized as a non auto-related land use project. Examples of auto-related projects include stand-alone surface parking lots, car dealerships, gas stations, car washes or any auto-related project unrelated to the concept of Transit-Oriented development.
2. If a commercial or mixed-use project, achieve a Floor Area Ratio (FAR) of at least 2:1.
3. If a residential development, achieve a density of at least 25 DU/Ac.

The proposed project is a non auto-related mixed-use project. The current FAR for the project is approximately 2.2:1 based on approximately 554,000 SF of building area (which includes all hallways, stairwells, storage, etc but excludes the garage) and a site area of 5.7 Acres. Based on these facts and due to the fact that the project lies within a quarter mile of the Santa Clara CALTRAIN Station, the project qualifies for 80% LID treatment credits but is only proposing to utilize approximately 70% of the credit. A completed Special Projects Worksheet has been included with this report for reference.

Should the project change during the entitlement process and any of the criteria for treatment credits be modified, the project will revise the treatment design to provide the required amount of LID based treatment. Should project modifications be required that would preclude the project from meeting the minimum Special Project Category C criteria the project treatment design would be modified to include 100% LID based treatment and no Reduction Credits would be requested.

The project proposes to treat approximately 30% of the stormwater using LID based biotreatment and the remainder using a Media Filter type device (Perk Filter vault system by Old Castle or equivalent).

In addition, the NPDES and MRP regulations require certain projects to implement Hydromodification Management (HM) controls. HM controls limit runoff from proposed projects to predevelopment levels. Due to the fact that proposed project will be reducing impervious surfaces and thus reducing overall runoff, the project is not considered an HM project and is not required to implement HM controls.

The project is also located within an area identified on the City of Santa Clara HM Applicability Map as "Catchments Draining to Hardened Channel and/or Tidal Areas". Any project located within one of these areas is also exempt from HM requirements.

C. Best Management Practices (BMPs) and related NPDES Compliance

In addition to the LID stormwater treatment requirements that control project design and post construction water treatment, the State NPDES General Construction Permit sets requirements for protection measures during the construction of a project. These measures are generally referred to as Best Management Practices (BMPs).

The General Permit requires projects that disturb one acre or more of land to file a Notice of Intent with the State Water Resources Control Board and develop a Storm Water Pollution Prevention Plan (SWPPP) which includes an Erosion Control Plan. These documents outline how the project will protect against stormwater pollution and more specifically outlines which BMPs will be utilized and how. These documents are required to be prepared and submitted to the State prior to any earth disturbing activities.

The final design of the SWPPP and Erosion Control Plan will be done prior to construction. The California Stormwater Quality Association has generated an advisory BMP Handbook which outlines and details a number of BMPs. This Handbook is often utilized as a source for developing the site specific BMPs. Listed below are a number of typical BMPs and their CASQA Handbook detail number for reference that will potentially be implemented with the construction of the proposed project.

GENERAL BMP CATEGORY	TYPICAL BMPs UTILIZED AND CASQA DETAIL REFERENCE
Erosion Control	EC-1 Scheduling
	EC-2 Preservation of Existing Vegetation
Sediment Control	SE-2 Sediment Basin
	SE-5 Fiber Roll
	SE-7 Street Sweeping & Vacuuming
	SE-10 Storm Drain Inlet Protection
Tracking Control	TC-3 Maintain Paved Driveway
	TC-1 Stabilized / Rocked Entry
Wind Erosion	WE-1 Wind Erosion Control - Water Down Site
Non-Stormwater Management	NS-6 Illicit Connection/Discharge
	NS-7 Potable Water/Irrigation
	NS-12 Concrete Curing
	NS-13 Concrete Finishing
Waste Management	WM-3 Stockpile Management

D. Summary of Change in Runoff due to Proposed Project

The existing project site is roughly 5.7 acres and is comprised of approximately 5.0 acres of impervious surface (streets, roofs, driveways, etc.) and approximately 0.7 acres of pervious surface (primarily landscaping and unpaved areas). The proposed development will have approximately 4.8 acres of impervious surface and approximately 0.9 acres of pervious surface. This results in a net reduction in impervious surface area.

As part of the construction level design of the project, the final onsite storm pipe routing and plumbing plans will be completed. At that time a specific set of hydraulic calculations will be performed to confirm final pipe sizing for the onsite storm drain system as well as the connections to the public storm drain system.

Based on the fact that the proposed project will be reducing impervious surface and upsizing the relocated section of storm drain to maintain capacity, it can be generally assumed that the project will not have a significant impact on the public infrastructure and can be further deduced that the impacts on the public system will actually be reduced.

John Gaylord

REGISTERED PROFESSIONAL ENGINEER
JOHN GAYLORD
No. C62516
CIVIL
STATE OF CALIFORNIA

Appendix

J

Special Projects

Table of Contents

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J.2: Category A: Small Infill Projects
J.3: Category B: High Density Projects
J.4: Category C: Transit-Oriented Development
J.5: Calculating the LID Treatment Reduction Credits (Special Projects Worksheet)
J.6: Applying the LID Treatment Reduction Credits to Special Projects
J.7 LID Infeasibility Requirement for Special Projects
J.8 Special Projects Worksheet

J.1 Introduction

On November 28, 2011, the San Francisco Bay Regional Water Quality Control Board (Water Board) amended the MRP to allow LID treatment reduction credits for three categories of "Smart Growth" development, specifically urban infill, high-density, and transit oriented development projects, called "Special Projects". Special Projects were approved because, when considered at the watershed scale, smart growth development projects can either reduce existing impervious surfaces, or create less "accessory" impervious areas and automobile-related pollutant impacts, and thus these types of projects were recognized by the Water Board as having inherent water quality and other environmental benefits.

Projects that receive LID treatment reduction credits are allowed to use specific types of non-LID treatment, if the use of LID treatment is first evaluated and determined to be infeasible. As described in Section J.7, documentation must be provided to show why the use of LID treatment is infeasible and LID treatment reduction credits will be used.

The types of non-LID treatment that may be used are:

- High flow-rate media filters, and
- High flow-rate tree well filters (also called high flow-rate tree box filters).

The three categories of Special Projects are:

- Category A: Small Infill Projects (≤ ½ acre of impervious surface)
- Category B: High Density Projects (≤ 2 acres of impervious surface)
- Category C: Transit-Oriented Development

Any Regulated Project that meets all the criteria for more than one Special Project Category may only use the LID treatment reduction credit allowed under one of the categories. For example, a Regulated Project that may be characterized as a Category B or C Special Project may use the LID Treatment Reduction Credit allowed under Category B or Category C, but not the sum of both.

J.2 Category A: Small Infill Projects

The defining criteria and LID treatment reduction credits for Category A projects are described below.

CRITERIA FOR CATEGORY A (SMALL INFILL) SPECIAL PROJECTS

To be considered a Category A Special Project, a Regulated Project must meet all of the following criteria:

1. Be built as part of the municipality's stated objective to preserve or enhance a pedestrian-oriented type of urban design, such as that of a General Plan or a specific area plan.
2. Be located in the municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian oriented commercial district, or historic preservation site and/or district.
3. Create and/or replace one half acre or less of impervious surface area.
4. Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, Americans with Disabilities Act (ADA) accessibility, and passenger and freight loading zones.
5. Have at least 85% coverage of the entire project site by permanent structures. The remaining 15% portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

LID TREATMENT REDUCTION CREDIT FOR CATEGORY A (SMALL INFILL) SPECIAL PROJECTS

Any Category A Special Project may qualify for 100% LID treatment reduction credit, which would allow the Category A Special Project to treat up to 100% of the amount of stormwater runoff specified by Provision C.3.d with either one or a combination of the two types of non-LID treatment systems identified in Section J.1. Prior to receiving the LID treatment reduction credits, the applicant must demonstrate to the satisfaction of municipal staff that LID treatment is infeasible, as described in Section J.6.

J.3 Category B: High Density Projects

The defining criteria and LID treatment reduction credits for Category B projects are described below.

CRITERIA FOR CATEGORY B (HIGH DENSITY) SPECIAL PROJECTS

To be considered a Category B Special Project, a Regulated Project must meet all of the following criteria:

1. Be built as part of the municipality's stated objective to preserve or enhance a pedestrian-oriented type of urban design, such as that of a General Plan or a specific area plan.
2. Be located in a Permittee's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian oriented commercial district, or historic preservation site and/or district.
3. Create and/or replace greater than one-half acre but no more than 2 acres of impervious surface area.
4. Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, ADA accessibility, and passenger and freight loading zones.
5. Have at least 85% coverage of the entire project site by permanent structures. The remaining 15% portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

LID TREATMENT REDUCTION CREDIT FOR CATEGORY B (HIGH DENSITY) SPECIAL PROJECTS

For Category B Special Projects, the maximum LID treatment reduction credit allowed depends on the density achieved by the project in accordance with the criteria shown in Table J-1. Density is expressed as Floor Area Ratio (FAR)[1] for commercial and mixed-use development projects and as Dwelling Units per Acre (DU/Ac)[2] for residential development projects. The credits are expressed in percentages of the amount of stormwater runoff specified by Provision C.3.d for the Project's drainage area. The Special Project may treat the percentage of the C.3.d amount of runoff that corresponds to the project's density using either one or a combination of the two types of non-LID treatment systems listed in Section J.1. To be eligible to receive the LID treatment reduction credits, the applicant must demonstrate to the satisfaction of municipal staff that LID treatment not possible, as described in Section J.7. Any remaining amount of stormwater runoff must be treated with LID treatment measures.

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[1] Floor Area Ratio = (Total covered area of all floors of all buildings on a certain site) ÷ (Area of the site)

[2] Dwelling Units per Acre = (total number of residential units for all buildings) ÷ (Area of site) [as determined by Permittee's Zoning Code or other applicable ordinance]

Table J-1 Category B LID Treatment Reduction Credits, Based on the Density of Development		
% of the C.3.d Amount of Runoff that May Receive Non-LID Treatment	**Land Use Type**	**Density Required to Obtain the LID Treatment Reduction Credit**
50%	Commercial or Mixed Use	Floor Area Ratio 2:1
50%	Residential	50 dwelling units/acre
75%	Commercial or Mixed Use	Floor Area Ratio 3:1
75%	Residential	75 dwelling units/acre
100%	Commercial or Mixed Use	Floor Area Ratio 4:1
100%	Residential	100 dwelling units/acre

J.4 Category C: Transit-Oriented Development

The defining criteria and LID treatment reduction credits for Category C projects are described below.

CRITERIA FOR CATEGORY C (TRANSIT ORIENTED DEVELOPMENT) SPECIAL PROJECTS

To be considered a Category C Special Project, a Regulated Project must meet all of the following criteria:

1. Be characterized as a non auto-related land use project. That is, Category C specifically excludes any Regulated Project that is a stand-alone surface parking lot; car dealership; auto and truck rental facility with onsite surface storage; restaurant, bank or pharmacy with drive-through lanes; gas station, car wash, auto repair and service facility; or other auto-related project unrelated to the concept of Transit-Oriented Development.
2. If a commercial or mixed-use development project, achieve an FAR of at least 2:1.
3. If a residential development project, achieve a density of at least 25 DU/Ac.

LID TREATMENT REDUCTION CREDIT FOR CATEGORY C (TRANSIT-ORIENTED DEVELOPMENT)

For Category C Special Projects, the maximum LID treatment reduction credit allowed is the sum of three different types of credits for which the Category C Special Project qualifies. These credits are categorized as follows:

- Location Credits,
- Density Credits, and
- Minimized Surface Parking Credits.

The Special Project may use either one or a combination of the two types of non-LID treatment systems listed in Section J.1 to treat the total percentage of the C.3.d amount of stormwater runoff that results from adding together the Location, Density and Minimized Surface Parking credits for which the project is eligible. In addition, to be eligible to receive the LID treatment reduction credits, the applicant must demonstrate to the satisfaction of municipal staff that LID treatment is infeasible, as described in Section J.7. Any remaining amount of stormwater runoff must be treated with LID treatment measures.

Location Credits (Transit-Oriented Development)

Location credits are based on the project site's proximity to a transit hub[3], or its location within a planned Priority Development Area (PDA)[4]. Only one Location Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Location Credits. In order to qualify for a Location Credit, at least 50 percent or more of a Category C Special Project's site must be located within the ¼ or ½ mile radius of an existing or planned transit hub, or 100 percent of the site must be located within a PDA. The Location Credits, presented in Table J-2, are expressed in percentages of the amount of stormwater runoff specified by Provision C.3.d for the project's drainage area.

Table J-2
Location Credits for Category C: Transit Oriented Development
(Only one Location Credit may be used)

% of the C.3.d Amount of Runoff that May Receive Non-LID	Project Site Location
50%	50% or more of the site is located within a ¼ mile radius of an existing or planned transit hub
25%	50% or more of the site is located within a ½ mile radius of an existing or planned transit hub
25%	100% of the site is located within a PDA

[3] Transit hub is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes (i.e., a bus stop with no supporting services does not qualify). A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised April 2006), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area.

[4] A planned Priority Development Area (PDA) is an infill development area formally designated by the Association of Bay Area Government's / Metropolitan Transportation Commission's FOCUS regional planning program. FOCUS is a regional incentive-based development and conservation strategy for the San Francisco Bay area.

Density Credits (Transit-Oriented Development)

To qualify for any Density Credits, a Category C Special Project must first qualify for one of the Location Credits listed above. The Density Credits are based on the density achieved by the project in accordance with the criteria shown in Table J-3. Density is expressed as Floor Area Ratio (FAR) for commercial and mixed-use development projects and as Dwelling Units per Acre (DU/Ac) for residential development projects. The credits are expressed in percentages of the amount of stormwater runoff specified in Provision C.3.d. Commercial and mixed-use Category C projects do not qualify for Density Credits based on DU/Ac, and residential Category C Projects do not qualify for Density Credits based on FAR. Only one Density Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Density Credits.

Table J-3
Density Credits for Category C: Transit Oriented Development
(Only one Density Credit may be used)

% of the C.3.d Amount of Runoff that May Receive Non-LID Treatment	Land Use Type	Density Required to Obtain the Density Credit
10%	Commercial or Mixed Use	Floor Area Ratio 2:1
10%	Residential	30 dwelling units/acre
20%	Commercial or Mixed Use	Floor Area Ratio 4:1
20%	Residential	60 dwelling units/acre
30%	Commercial or Mixed Use	Floor Area Ratio 6:1
30%	Residential	100 dwelling units/acre

Minimized Surface Parking Credits (Transit-Oriented Development)

To qualify for any Minimized Surface Parking Credits, a Category C Special Project must first qualify for one of the Location Credits listed above. The LID treatment reduction credit is based on the amount of post-project impervious surface area that is dedicated to at-grade surface parking, in accordance with the criteria shown in Table J-4. The credits are expressed in percentages of the amount of stormwater runoff specified in Provision C.3.d. The at-grade surface parking must be treated with LID treatment measures. Only one Minimized Surface Parking Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Minimized Surface Parking Credits.

Table J-4 **Minimized Surface Parking Credits for Category C: Transit Oriented Development** (Only one Minimized Surface Parking Credit may be used)	
% of the C.3.d Amount of Runoff that May Receive Non-LID	**Percentage of the Total Post-Project Impervious Surface Dedicated to At-Grade, Surface Parking**
10%	10% or less
20%	0% (except for emergency vehicle access, ADA accessibility and passenger and freight loading zones)

J.5 Calculating the LID Treatment Reduction Credit (Special Projects Worksheet)

The Special Projects Worksheet at the end of Appendix J should be used to document that your project meets the criteria for Special Project Categories A, B, and/or C and to calculate the total allowable LID treatment reduction credit for which the project is eligible. As mentioned earlier, if the project meets all the criteria for more than one Special Project Category, it may only use the LID treatment reduction credit allowed under one of the categories. However, the worksheet may be used to compute the credit allowed under each category in order to determine which category would allow the most credit.

The municipality may require submittal of the Special Projects Worksheet, or a similar worksheet, as part of the stormwater management plan for the project. To download an electronic version of the worksheet, visit the Program's website www.scvurppp.org and click on "Low Impact Development."

J.6 Applying the LID Treatment Reduction Credits to Special Projects

The following steps should be used to develop the stormwater management plan for Special Projects and apply the LID treatment reduction credits allowed for the project.

1. Determine the total amount of impervious surface created and/or replaced on site that is subject to C.3 treatment requirements, and the associated C.3.d volume of runoff. This is the area and volume for which the LID treatment reduction credits will be applied to determine the maximum amount of runoff that can be treated using non-LID treatment measures.
2. Conduct the feasibility evaluation for infiltration and rainwater harvesting/use, using the worksheets described in Appendix I, for the portion of runoff that must be treated using LID treatment measures. The results of this evaluation will determine which LID practices can be used.

3. Define drainage management areas on the site, and identify self-treating and self-retaining areas, if any (see Chapter 4).
4. Adjust drainage management areas as needed to route the amount of runoff that needs to be treated with LID treatment measures and as much of the rest of the C.3.d amount of runoff as possible to LID treatment measures.
5. For the portion of runoff that must be treated with non-LID treatment measures (up to the allowable LID treatment reduction credit), document the reasons why LID treatment measures cannot be used (see Section J.7).

J.7 LID Infeasibility Requirement for Special Projects

In order to obtain approval for the LID treatment reduction credits, the applicant must provide a narrative discussion of the feasibility or infeasibility of using 100 percent LID treatment, onsite and offsite, as part of the stormwater management plan. Both technical and economic feasibility or infeasibility should be discussed, as applicable.

The narrative discussion should describe how the routing of stormwater runoff has been optimized to route as much runoff as possible to LID treatment measures. A discussion should also be provided for each area of the site for which runoff must be treated with non-LID treatment measures, and should include the following:

1. Uses of impervious surfaces that preclude the use of LID treatment; and
2. Technical constraints that preclude the use of any landscaped areas for LID treatment, such as:
    a. Inadequate size to accommodate biotreatment facilities that meet the sizing requirements for the drainage area;
    b. Slopes too steep to terrace;
    c. Proximity to an unstable bank or slope;
    d. Environmental constraints (e.g., landscaped area is within riparian corridor);
    e. High groundwater or shallow bedrock;
    f. Conflict with subsurface utilities;
    g. Cap over polluted soil or groundwater;
    h. Lack of head or routing path to move collected runoff to the landscaped area or from the landscaped area to the disposal point;
    i. Other conflicts or required uses that preclude use for stormwater treatment (explain).

In addition, the applicant must demonstrate to the municipality performing the project review that it is infeasible to provide LID treatment of an equivalent amount of runoff offsite either at a regional project or on other property owned by the project proponent in the same watershed (i.e., that alternative compliance, as described in Chapter 9, is infeasible). Check with the local municipality to determine if there are any regional projects available for alternative compliance purposes (at the time of completion of this Handbook, there were none in Santa Clara Valley).

Special Projects Worksheet

Project Name: MISSION TOWN CENTER

Project Address: THE ALAMEDA AND BENTON AVE

Applicant/Developer Name: THE IRVINE COMPANY

1. "Special Project" Determination:

Special Project Category "A"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[1];
- ☐ Creates and/or replaces 0.5 acres or less of impervious surface;
- ☐ Includes no surface parking, except for incidental parking for emergency vehicle access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment.

☐ No (continue) ☐ Yes – complete Section 2 of the Special Project Worksheet

Special Project Category "B"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[1];
- ☐ Creates and/or replaces an area of impervious surface that is greater than 0.5 acres, and no more than 2.0 acres;
- ☐ Includes no surface parking, except for incidental parking for emergency access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment;
- ☐ Minimum density of either 50 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial or mixed use projects)

☐ No (continue) ☐ Yes – complete Section 2 of the Special Project Worksheet

Special Project Category "C"

Does the project have ALL of the following characteristics?

- ☒ At least 50% of the project area is within 1/2 mile of an existing or planned transit hub[2] or 100% within a planned Priority Development Area[3];
- ☒ The project is characterized as a non-auto-related use[4]; and
- ☒ Minimum density of either 25 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial or mixed use projects)

☐ No ☒ Yes – complete Section 2 of the Special Project Worksheet

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[1] And built as part of a municipality's stated objective to preserve/enhance a pedestrian-oriented type of urban design.

[2] "Transit hub" is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes. (A bus stop with no supporting services does not qualify.)

[3] A "planned Priority Development Area" is an infill development area formally designated by the Association of Bay Area Government's / Metropolitan Transportation Commission's FOCUS regional planning program.

[4] Category C specifically excludes stand-alone surface parking lots; car dealerships; auto and truck rental facilities with onsite surface storage; fast-food restaurants, banks or pharmacies with drive-through lanes; gas stations; car washes; auto repair and service facilities; or other auto-related project unrelated to the concept of transit oriented development.

2. LID Treatment Reduction Credit Calculation:

Category	Impervious Area Created/Replaced (acres)	Site Coverage (%)	Project Density or FAR	Density/Criteria	Allowable Credit (%)	Applied Credit (%)
A			N.A.	N.A.	100%	
B				Res ≥ 50 DU/ac or FAR ≥ 2:1	50%	
				Res ≥ 75 DU/ac or FAR ≥ 3:1	75%	
				Res ≥ 100 DU/ac or FAR ≥ 4:1	100%	
C	4.8 ACRES	~65%	2.2:1	**Location credit (select one)[5]:**		
				Within ¼ mile of transit hub	50%	50%
				Within ½ mile of transit hub	25%	
				Within a planned PDA	25%	
				Density credit (select one):		
				Res ≥ 30 DU/ac or FAR ≥ 2:1	10%	10%
				Res ≥ 60 DU/ac or FAR ≥ 4:1	20%	
				Res ≥ 100 DU/ac or FAR ≥ 6:1	30%	
				Parking credit (select one):		
				≥ 10% at-grade surface parking[6]	10%	
				No surface parking	20%	20%
				TOTAL TOD CREDIT =		80%

x

[5] To qualify for the location credit, at least 50% of the project's site must be located within the ¼ mile or ½ mile radius of an existing or planned transit hub, as defined on page 1, footnote 2. A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised April 2006), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area. To qualify for the PDA location credit, 100% of the project site must be located within a PDA, as defined on page 1, footnote 3.

[6] The at-grade surface parking must be treated with LID treatment measures.